National Energy Board

Office national de l'énergie

ENVIRONMENTAL SCREENING REPORT

Pursuant to the *Canadian Environmental Assessment Act* (CEA Act)

Sea Breeze Juan de Fuca Cable Project

Applicant Name:	Sea Breeze Victoria Converter Corporation (Sea Breeze)		
Application Date:	30 November 2005	**CEA Act Registration Date:**	19 December 2005
National Energy Board (NEB or Board) File Number:	AFIPL – SBC – 01 (2200-S191-1)	**CEA Registry Number:**	05-01-16578
CEA Act Law List Trigger:	*National Energy Board Act* (NEB Act) Section 58.16	**CEA Act Determination Date:**	23 August 2006

Canada

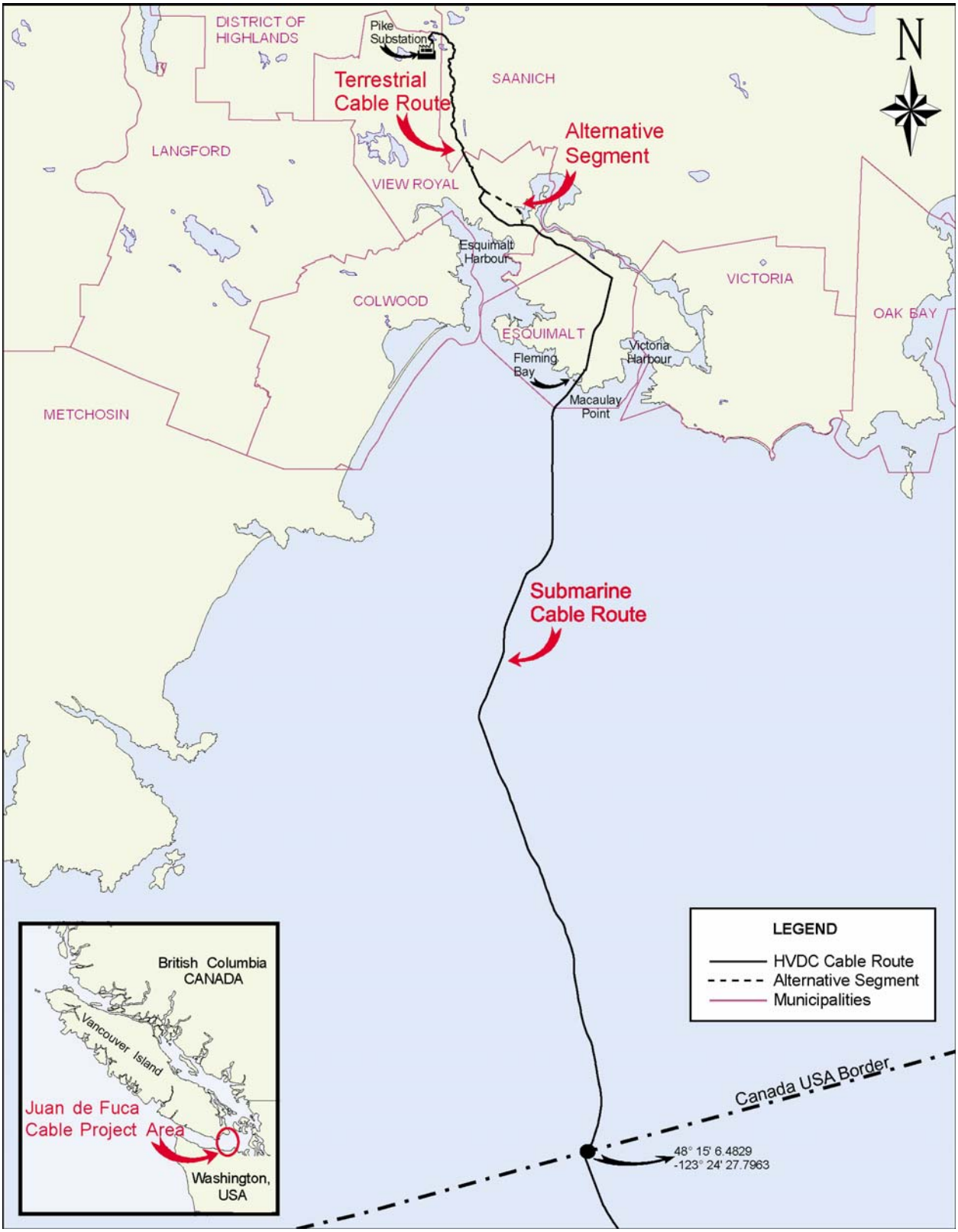

Figure 1: Sea Breeze map of the project within Canada.

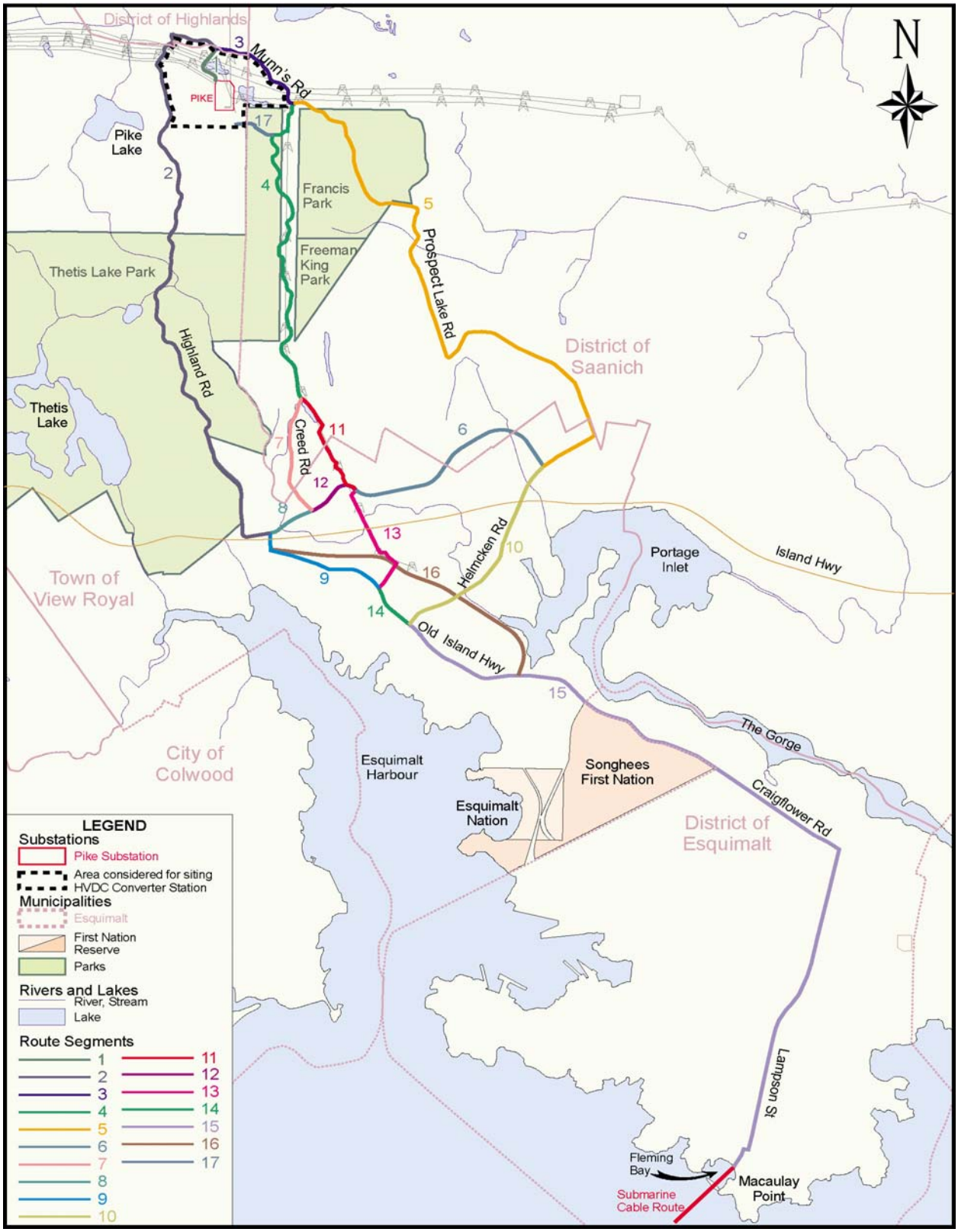

Figure 2: Sea Breeze map of potential route segment options for the Greater Victoria Region.

SCREENING SUMMARY

Sea Breeze has applied to the National Energy Board (the Board) to construct the Canadian portion of a 150 kilovolt (kV) high voltage direct current (HVDC) international power line (IPL) which extends for a length of 32 km between the Greater Victoria Region (GVR) in British Columbia (BC) and the international boundary situated in the Strait of Juan de Fuca.

The Sea Breeze Juan de Fuca Cable project includes a converter station, a 12 km terrestrial portion in the GVR, a 19 km marine portion to a point on the Canada-US border in the Juan de Fuca Strait and a 900 m long horizontal directional drill (HDD).

The main potential environmental issues related to the terrestrial portion of this IPL include impacts to vegetation, water quality and quantity, fish and fish habitat, human occupancy and resource use and human health. The main potential environmental issues related to the marine portion of this IPL include impacts to water quality, marine wildlife and habitat and human resources use.

The Board is of the view that taking into account the implementation of Sea Breeze's proposed environmental procedures and mitigative measures and any proposed conditions, the IPL would not likely cause significant adverse environmental effects.

Information Sources

The analysis for this environmental screening report is based on evidence submitted to the NEB. This includes the following information from Sea Breeze:

- 30 November 2005 Application to the NEB; including the Environmental and Socio-Economic Assessments (ESA) for both the marine and terrestrial environment
- 21 December 2005 Supplemental information (issue-specific supporting studies)
- 10 February 2006 responses to NEB information request (IR) #1
- 15 March 2006 partial responses to NEB IR #2
- 15 March 2006 partial responses to BC Hydro and British Columbia Transmission Corporation (BCTC) information request #1
- 21 March 2006 responses to NEB IR #2
- 21 March 2006 partial responses to BC Hydro and BCTC information request #1
- 23 March 2006 partial responses to BC Hydro and BCTC information request #1
- 24 March 2006 complete response to BC Hydro information request #1
- 24 March 2006 complete response to BCTC information request #1
- 20 April 2006 responses to NEB IR #3
- 8 May 2006 response to Environment Canada (EC) information request
- 15 May 2006 responses to NEB IR #4
- 26 May 2006 response to NEB IR #2.9(d)
- 23 June 2006 response to Department of Fisheries and Oceans Canada (DFO) letter of comment
- evidence submitted in the Oral hearing EH-1-2006 (transcribed)

The analysis also considers the comments received from the public that are summarized in Appendix 1 of this report.

To view this information please refer to the NEB website at:
https://www.neb-one.gc.ca/ll-eng/livelink.exe?func=ll&objId=390781&objAction=browse&sort=name
For more details on how to obtain documents, please contact the Secretary of the NEB at the address specified in the last Section 9.0 of this report.

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

AC	Alternating current
AIA	Archaeological Impact Assessment
ALR	Agricultural Land Reserve
BC	British Columbia
BCTC	British Columbia Transmission Corporation
BPA	Bonneville Power Authority
CEA	Canadian Environmental Assessment
CRD	Capital Regional District
CDFmm	Moist, Mild, Coastal Douglas Fir
CWS	Canadian Wildlife Service
dBA	Decibel (using “A” weighting filter)
DFO	Department of Fisheries & Oceans Canada
EC	Environment Canada
EMF	Electromagnetic field
ESA	Environmental and Socio-Economic Assessment
ESR	Environmental Screening Report
GVR	Greater Victoria Region
HADD	Harmful alteration, disruption or destruction
HDD	Horizontal directional drill
HVDC	High voltage direct current
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IPL	International power line
IR	Information Request
JdFC	Juan de Fuca Cable
km	Kilometre
KP	Kilometre post
kV	Kilovolts
ML/ARD	Metal leaching and acid rock drainage
m	Metre
MF	Magnetic field
mG	Milligauss
MMO	Marine mammal observer
MOE	Ministry of Environment
NEB	National Energy Board
NRCan	Natural Resources Canada
PAG	Potentially acid generating

ROV	Remotely Operated Vessel
RoW	Right of way
SARA	Species At Risk Act
Sea Breeze	Sea Breeze Victoria Converter Corporation
TC	Transport Canada
US	United States
VEC	Valued Ecosystem Component
WHO	World Health Organization

1.0 REGULATORY PROCESS

The application for the IPL was filed pursuant to section 58.16 of the *National Energy Board Act* (NEB Act), which triggers the CEA Act *Law List Regulations* thereby requiring the preparation of an Environmental Screening Report (ESR).

In considering which other federal authorities (FAs) to notify about the IPL, pursuant to the CEA Act *Federal Coordination Regulations*, the NEB considered the nature of the project, the environment and any potential project-environment interactions. The Table below identifies which FAs the NEB notified and summarizes their involvement with respect to the project. Refer to Appendix 4 for a summary of FA comments.

Involvement of other Federal Authorities pursuant to the CEA Act

Federal Authority (FA)	Responsible Authority	FA with Specialist Advice	No Involvement	No Response Received
Department of Fisheries & Oceans Canada (DFO)		X		
Transport Canada (TC)	X			
Environment Canada (EC)	X			
Canadian Transportation Agency				X
Health Canada		X		
Department of National Defence			X	
Indian and Northern Affairs Canada			X	
Natural Resources Canada (NRCan)		X		

2.0 RATIONALE FOR THE IPL

The IPL would provide a new interconnection between the transmission systems administered by British Columbia Transmission Corporation (BCTC) and the Bonneville Power Authority (BPA), resulting in an increased transmission transfer capacity across the Canada/US border and potential improvement of regional reliability for Vancouver Island and the Olympic Peninsula.

3.0 DESCRIPTION OF THE IPL

Table 3.1 below summarizes the different project components and activities for the construction phase of the IPL. Construction is anticipated to take approximately eighteen months with an expected in-service date of July 2008.

3.1 Description of the Project Construction Components and Details

Project Component	Project Activities
Converter Station and Access Road	**Description of Facility** ▪ 150 m x 100 m converter station ▪ Approximately 500 m of overhead 230 kV HVAC cable to connect to electrical grids ▪ Proposed site within BC Hydro's Pike Substation lands **Site Preparation, Installation and Reclamation** ▪ Construction through native and previously disturbed soils ▪ Bedrock blasting ▪ Vegetation clearing and grading ▪ Topsoil salvage and storage
Terrestrial Route	**Physical Description** ▪ 12 km of 6-8 m wide RoW of which 3 m is permanent right of way (RoW) ▪ one set of two ±150 kV HVDC cables in a trench ▪ Installed underground for more than 98% of its length ▪ Extra-wide workspaces required at Craigflower Creek crossing (3 m of permanent RoW and 8 m temporary workspace) **Site Preparation, Installation and Reclamation** ▪ Use of existing access ▪ Vegetation clearing in semi-natural to natural setting ▪ Topsoil salvage and stockpiling ▪ Trench to be excavated primarily beneath existing roads, which include both low standard access roads along an existing electrical transmission line and higher standard urban roads ▪ Crossing linear facilities including roads, highways, railways and other utilities ▪ Crossing watercourses ▪ Blasting where bedrock exists ▪ Excavation of trench, installation of cable and backfill of trench using excavators, backhoes, mechanical trenchers, tandem trucks and compaction equipment ▪ Clean-up from construction activities ▪ Restoration of topsoil in semi-natural to natural setting ▪ Impacts to landscaping, curb and gutter, sidewalks, grassed areas, drainage courses, etc. would be restored immediately after cable installation, weather permitting ▪ Special restoration requirements, e.g. on private property, would be documented and completed to owner's satisfaction ▪ Asphalt restoration to include a temporary patch and then, after a period of trench settlement, a 38 mm overlay of new asphalt
Marine Route	**Physical Description** ▪ 19 km of 100 m-wide permanent RoW within 300 m-wide corridor ▪ two ±150 kV HVDC cables, installed as a single bundle in a trench **Site Preparation, Installation and Reclamation** ▪ Marine geophysical survey, grab samples and cone penetration testing to determine exact final route and potential for burial

	▪ Cable would be buried to varying depths or laid on the seabed floor depending on results of ground-truthing verification ▪ Crossing other utilities including fibre optic lines and other electrical transmission lines ▪ Cable transport, laying and trenching via a vessel specifically designed and built for cable laying ▪ Depending on the installation method, ship-towed sea plow or a Remotely Operated Vessel (ROV) jetting tool, the marine trench width would be 5 to 7 m ▪ Trench is expected to infill through the natural slumping and transport of sediments along the seabed by currents ▪ Backfill of trench may require additional work of sea plough ▪ Areas with exposed bedrock or very dense soil, concrete blankets would be used to cover and protect the cable
Landfall (HDD)	**Physical Description** ▪ Transition area from land to marine cable would involve a HDD set up on land to drill out into the Strait of Juan de Fuca ▪ 700 – 900 m drill path length ▪ Small underground concrete structure to contain the transition joint that connects the land and marine cable ▪ Extra width for workspaces required at proposed HDD entry at Fleming Beach boat launch (3 m of permanent RoW and 17 m of temporary workspace) **Site Preparation, Installation and Reclamation** ▪ Drilling rig, tubular drill steel, a drill bit, reamers and down hole positioning and survey system set up in the Fleming Beach parking lot ▪ Mud pumps, containment tanks and vacuum trucks required ▪ Depending on geological conditions and biological constraints, drilling would take between 5 - 7 weeks ▪ Drilling suspended during evening and overnight unless a variance is received from the municipality

Table 3.2 below provides a brief summary of the main activities associated with the operation and abandonment phases of the project. The planned and expected life of the IPL facilities is anticipated to be ±60 years

3.2 Summary of Operation and Abandonment Phase Activities

Project Life Cycle Phase	Project Activities
Operations	▪ Routine maintenance include scheduled shut downs once a year for two week duration ▪ Vegetation management along RoW to limit development of trees and to prevent spread of weeds ▪ Facility inspections once a month ▪ ROV survey during post-construction, or as required, to check suitability of submarine conditions ▪ Noise monitoring at converter station ▪ Electromagnetic field (EMF) monitoring for converter station and cable

	▪ Marine Monitoring plan to include monitoring of marine portion of IPL for temperature change, magnetic field (MF) and burial of cable ▪ Post-construction monitoring of facility sites and RoW for two years and on an as-needed basis after that
Abandonment	▪ Sea Breeze shall ensure that, at time of deactivation and abandonment, applicable standards of the day are followed ▪ Based on current practices, it is anticipated that the cable and facilities would be abandoned in place, removed or be subjected to a combination of these methods ▪ Cable removal would likely require similar activities to cable installation therefore associated environmental effects would likely be similar to those caused by the construction phase ▪ Pursuant to the NEB Act, an application would be required to abandon the facility, at which time the environmental effects would be assessed by the NEB and other relevant agencies

4.0 DESCRIPTION OF THE ENVIRONMENT

Routed from a point within the GVR to the international boundary situated in the Strait of Juan de Fuca, the 32 km IPL would be constructed and operated within residential, commercial and marine environments.

Sea Breeze identified three potential overall routes consisting of several potential route segments (see Figure 2). Route 1, the central route that generally follows the existing BC Hydro transmission corridor through the Highland Golf Course development, south within the existing BC Hydro transmission corridor and along the Old Island Highway, Craigflower Road and Lampson Street, was selected as the preferred option. An existing rail corridor in View Royal, noted as Segment 16 within the application, has been presented as an alternative to much of the route along the Old Island Highway. The environmental interactions and effects discussed in this report focus on both route 1 as initially presented (using segments 13, 14 and 15) and the alternative route 1 (which uses Segment 16 instead of parts of segments 13 and 15 and all of segment 14).

The marine portion of route 1 was determined based on the optimal landfall location and would run within a 300 m corridor from Fleming Bay to the International Boundary Crossover Point.

Physical Environment - General

- Prevailing climate of the IPL area is Mediterranean with very few days below freezing; warm, dry summers; and mild winters where most precipitation falls as rain

- Air quality in the project area is usually good, maintained by prevailing ocean winds and low concentration of emissions

- The IPL area is in the Nanaimo Lowland Ecosection and the Moist, Mild, Coastal Douglas Fir (CDFmm) biogeoclimatic subzone, the most urbanized ecosection in BC with approximately 90 percent of the population of Vancouver Island living in this area

- Portions of the IPL are within a section of the Capital Regional District (CRD) with one of the largest concentrations of sensitive ecosystems, including Thetis Lake and Francis/King Regional Parks
- The IPL area contains the nationally-endangered Garry oak ecosystems and forests older than 100 years make up more than 50 percent of the land area
- Topography is characterized by rounded, often steep-sided outcrops, knolls and hills
- Metal leaching and acid rock drainage (ML/ARD) issues were identified as possible concerns and samples were taken from potentially acid generating (PAG) rocks along the proposed IPL footprint for analysis
- Areas of high seismicity exist along the IPL, with the potential for the occurrence of large earthquakes up to magnitude M8.2
- Present sources of noise include road, marine, rail and aircraft traffic

4.1 Terrestrial Environmental Setting

- The route would primarily follow transportation and utility corridors through a mix of urban residential and commercial-retail areas
- Existing infrastructure include utilities, arterial roads, a highway and a railway
- The terrestrial portion of the route crosses four municipal districts in the GVR: Town of View Royal, District of Highlands, District of Saanich, and Township of Esquimalt

Soils

- Surficial materials along the proposed route from KP 0.000 to KP 3.200 and at the converter station site and access road consist of sandy glacial till
- Surficial materials along the proposed route from KP 3.200 to KP 11.840 (approximately 70% of the IPL footprint) consist of silty clay glaciomarine materials

Water

- The IPL would cross eight streams (Craigflower Creek and seven unnamed watercourses) as well as a pond network to the east of the Pike Substation
- Two of the streams and the pond network are either fish-bearing or assumed to be fish-bearing
- No *Species at Risk Act* (SARA) Schedule-listed or Red-listed fish species exist within the project area

Vegetation

- The IPL RoW is 58% Industrial (asphalt), 26% Residential-Landscaped and 16% natural vegetation
- Federally-listed species occur in the project area and IPL construction RoW (two plant species on the RoW are listed on the federal SARA Schedule 1)
- Significant trees are protected by local bylaws and are located in forested areas of Thetis Lake Regional Park, along Lampson Street and along Segment 16
- Regionally significant plant communities within the project footprint (Segment 16) include three Garry oak – rock outcrop communities at the south eastern end of the segment and a mature riparian forest dominates the area southeast of Helmcken Road

Wildlife

- 37 provincially and federally-listed wildlife species are known to occur in the South Island Forest District
- Much of the route is through urban areas that have been severely modified by human development providing limited value for wildlife
- The most sensitive wildlife habitats in relation to this IPL are wetlands, riparian habitats along watercourses, rock outcroppings, intertidal shorelines and nearshore marine waters
- No known sharp-tailed snake locations exist along the proposed IPL; however, there is some highly suitable habitat
- Three at-risk butterfly species are expected to be present
- No significant staging area, breeding area or overwintering area for migratory birds exist within or very near the IPL
- Nearest wintering and staging area of importance is the Esquimalt Lagoon Migratory Bird Sanctuary, 4 km to the west of the proposed IPL
- Five listed wildlife species that are known to occur along the IPL: western screech-owls, brandt's and double-crested cormorants, red-legged frogs and common water shrews
- Based on butterfly habitat surveys along the proposed routes, three species at risk are expected: propertius duskywing, moss' elfin and the dun skipper

4.2 Landfall transition

- This is the transition area from terrestrial to marine cable

Geotechnical

- Geological formation is rock (granodiorite), overlain by a relatively thin layer (1 m to 2 m) of till and marine sediment
- The intertidal zone within Fleming Bay is primarily a fine sand/mud flat

Biological

- The rocky shoreline outside Fleming Bay supports a diverse algal community including bladed kelp
- A moderately dense eelgrass bed occurs at depths of 1 to 7 m
- A moderately dense geoduck bed occurs at depths of 10 to at least 40 m; this bed is closed to commercial harvesting due to a sanitary bivalve closure which encompasses most of the Victoria/Esquimalt waterfront
- Nearshore rocky substrates provide habitat for lingcod and inshore rockfish species

4.3 Marine Environmental Setting

- The marine cable would cross other utilities, including fibre optic lines and other operational and non-operational electrical transmission lines

Physical Environment

- Juan de Fuca Strait is a U-shaped, glacially-carved estuary, about 160 km long, ranging from 18 to 27 km in width, with a mean depth of 200 m
- It supports a variety of marine life and functions as a main marine corridor between the open Pacific Ocean waters to the west and the inside passage of the Strait of Georgia to the east
- Modern sediment accumulation is very limited in the Juan de Fuca Strait because of the high current velocities at the seafloor
- Several sand wave fields cross the proposed marine corridor
- A conspicuous zone of high seismicity trends approximately north-northwest-south-southeast through eastern Juan de Fuca Strait and encompasses the area of interest
- In Canadian waters, the most significant potential source of contamination to both sediments and the water column is from the Capital Regional District’s sewage outfalls at Clover Point and Macaulay Point

Biological

- No provincially or federally-listed, rare or endangered invertebrate species were documented in the intertidal or subtidal zone in Fleming Bay
- Eight of the marine mammal species inhabiting the southern Strait of Juan de Fuca area are listed as "at risk" nationally, most notable of these are killer whales, humpback whales, sea otters and fin whales
- Northern abalone are listed as Threatened under SARA and are associated with rocky habitat
- The Strait of Juan de Fuca is an important migratory corridor for all five species of salmon spawning in the Fraser River

4.4 Socio-Economic Description

Aboriginal Interests

- The IPL is within the traditional territory of the Songhees First Nation, the Esquimalt First Nation and the First Nations of the Sencot'en Alliance (the Tsawout, Tsartlip, Pauquachin and Semiahmoo First Nations)
- New Songhee No. 1A Reserve is bordered to the northeast by Craigflower Road, to the west by Admirals Road and the Esquimalt Nation Reserve
- The proposed route would pass near the reserve, but would remain within Craigflower Road, an existing RoW within View Royal
- The Esquimalt Nation Reserve is located on the east shore of Esquimalt Harbour
- A segment of the E&N railway passes through the Esquimalt Nation Reserve

Capital Regional District[1]

- The terrestrial portion of the IPL is within the regional boundaries of the Capital Regional District (CRD)

[1] The sub-regions are based on map sheet boundaries, rather than municipal boundaries. The sub-region referred to as "Greater Victoria" includes all the CRD municipalities except Metchosin, and includes the eastern half of the Greater Victoria Water District lands. The sub-region called "western sub-region" is the rest of the Capital Region, including Metchosin, Sooke and all lands west. (source: http://www.crd.bc.ca/rte/report/p-d4.htm)

- The municipalities within the CRD that would be directly affected by the IPL are the District of Saanich, the Township of Esquimalt, the Town of View Royal and the District of Highlands
- The District of Saanich is the largest of the core municipalities that make up the GVR
- Saanich contains 32% of the region's population and is a suburban/rural community with a large residential area
- The Township of Esquimalt is located on the southern tip of Vancouver Island, two km west of downtown Victoria
- Esquimalt's Official Community Plan has been in effect since 1996 and is currently being reviewed
- Canadian Forces Base Esquimalt is located west of the project area, beyond the Esquimalt Nation Reserve
- Esquimalt Harbour is heavily used by naval ships, and traffic and moorage at the harbour is constant
- Town of View Royal is located within the GVR, on the southern tip of Vancouver Island
- View Royal's Official Community Plan has been in effect since 1999
- The District of Highlands is a residential community that lies just northwest of Victoria
- Highland's latest Community Plan was released in draft form in July, 2005

Crown Land

- On Crown lands, land uses are governed by the Vancouver Island Land Use Plan
- The IPL is in the vicinity of two regional parks: Francis/King and Thetis Lake, which have both been designated Ecologically Significant Areas
- The IPL route is adjacent to Agricultural Land Reserve lands but does not traverse any agriculturally-zoned lands

Private Lands

- The IPL would run under a privately-owned recreational vehicle park which is located south of Island Highway
- North of Island Highway, the IPL would run under a proposed golf course

Fisheries

- Dungeness crab are common throughout the nearshore zone and are commercially fished to depths of approximately 50 m
- Spot prawns are commercially harvested from the project area, mostly at depths below 50 m to the international boundary
- Pacific halibut are commercially harvested by longline in the cable route area, primarily at depths below 100 m

Recreation

- At Fleming Beach, popular land-based recreation includes biking, bird-watching and rock-climbing
- Other land-based recreation in the area includes golfing, outdoor park activities including games, picnicking, multi-use trail activities
- Marine recreation includes fishing, whale watching (tours run April-October), boating, kayaking, canoeing (June-August)

Heritage Resources

- One submarine anomaly exists near the proposed HDD exit point

Water Supply and Service

- CRD provides water services, including infrastructure, planning, delivery and monitoring
- There are approximately 13 water wells within 200 m of the IPL

5.0 COMMENTS FROM THE PUBLIC

5.1 Project-related issues raised in comments received by the NEB

Please refer to Appendix 1 and 3.

5.2 Project-related issues raised through consultation conducted by Sea Breeze

Please refer to Appendix 2.

5.3 Comments received by the NEB on the draft Environmental Screening Report

Commercial fishers and Goodwill Investments Ltd. provided comments on the draft Environmental Screening Report (ESR). TC also provided comments on the draft ESR. The comments relevant to the assessment have been incorporated into this ESR.

6.0 METHODOLOGY OF THE NEB'S ENVIRONMENTAL ASSESSMENT

Scope of the factors to be considered:

In conducting the environmental screening, the NEB considered the factors set out in paragraphs 16(1) (a) through (d) of the CEA Act. Further, as the NEB deems it to be a relevant matter pursuant to paragraph 16(1)(e) of the CEA Act, the environmental screening also considered certain alternative routes for the IPL. The scope of the environmental assessment includes the life cycle of the IPL within the project area for those environmental elements listed in Section 7.1.

Baseline information and sources:

The analysis for this ESR is based on Sea Breeze's application and responses to information requests, environmental protection plans, letters of comment, evidence submitted at the hearing, Sea Breeze's environment-related manuals/procedures, etc. For more details on how to obtain documents, please contact the Secretary of the NEB at the address specified in Section 9.0 of this report.

Methodology of the analysis:

In assessing the environmental effects of the IPL, the NEB used an issue-based approach. In its analysis within Section 7.1, the NEB identified interactions expected to occur between the proposed project activities and the surrounding environmental elements. Also included were the consideration of potential accidents and malfunctions that may occur due to the project and any change to the project that may be caused by the environment. If there were no expected element/project interactions then no further examination was deemed necessary. Similarly, no further examination was deemed necessary for interactions that would result in positive or neutral potential effects. In circumstances where the potential effect was unknown, it was categorized as a potential adverse environmental effect.

Section 7.2.1 provides an analysis for potential adverse environmental effects and includes mitigation measures, explanations as to why mitigation measures are not required and issue-specific recommendations.

Section 7.2.2 provides a detailed analysis for each potential adverse environmental effect that requires more background information and context. The analysis specifies mitigation measures, ratings for criteria used in evaluating significance, monitoring and/or follow-up programs, views of the NEB and any issue-specific recommendations.

Section 7.3 addresses cumulative effects, Section 7.4 addresses follow-up programs and Section 7.5 lists recommendations for any subsequent regulatory approval of the project.

7.0 ENVIRONMENTAL EFFECTS ANALYSIS

7.1 Project - Environment interactions

	Environmental Element	Project Inter-action? Y/N/U	Description of Interaction (How, When, Where)	Type of Potential Effect P/Ntl/Adv	Potential Adverse Environmental Effect
Terrestrial Bio-Physical	Physical Environment (Acid Rock)	Y	▪ Trenching through potentially acid generating rock formations	Adv	▪ Acid rock drainage or metal leaching
	Soil and Soil Productivity	Y	▪ Topsoil stripping and restoration during construction activity on the RoW	Adv	▪ Erosion, compaction or mixing of soils
	Vegetation	Y	▪ Ground disturbance prior to and during construction and operation of the line ▪ Increases in soil temperature in close proximity of the cables during operation	Adv	▪ Change/loss of vegetation ▪ Injury/loss of mature trees ▪ Noxious weed introduction
	Water Quality and Quantity	Y	▪ Disruption of groundwater quality and quantity during rock blasting or drilling	Adv	▪ Deleterious impact on water wells (see assessment under Human Health)
	Fish and Fish Habitat (freshwater)	Y	▪ Excavation of trench through watercourses ▪ Rock blasting in watercourse	Adv	▪ Disturbance/Destruction of Fish and Fish Habitat (freshwater) ▪ Increased sediment load (freshwater)
	Wetlands	Y	▪ Excavation of trench adjacent to and across wetlands	Adv	▪ Impact to wetland functions
	Wildlife and Wildlife Habitat	Y	▪ Removal of trees and shrubs during clearing ▪ Noise level increases during construction (terrestrial)	Adv	▪ Disturbance of wildlife/Loss of habitat ▪ Disturbance of migratory birds ▪ Injury/loss of mature trees
	Species at Risk (federal)	Y	▪ Disturbance of *SARA* listed species during: clearing, site preparation and equipment operation	Adv	▪ Loss of *SARA* species/loss of habitat
	Species of Special Status (provincial, territorial, local)	Y	▪ Disturbance of listed species during: clearing, site preparation and equipment operation	Adv	▪ Loss of *SARA* species/loss of habitat

	Environmental Element	Project Inter-action? Y/N/U	Description of Interaction (How, When, Where)	Type of Potential Effect P/Ntl/Adv	Potential Adverse Environmental Effect
	Air Quality	Y	▪ Emissions from vehicles and equipment during construction ▪ Dust generated by vehicles and equipment on gravel roads ▪ Dust generated during blasting	Adv	▪ Decrease in local air quality during construction
Marine Biophysical	Vegetation	Y	▪ Disturbance of ocean vegetation during trenching	Adv	▪ Disturbance/destruction of ocean vegetation
	Water Quality	Y	▪ Trenching/HDD of ocean floor	Adv	▪ Increased sediment load (marine) ▪ Re-suspending contaminated sediment within the ocean
	Marine Wildlife	Y	▪ Trenching of ocean floor ▪ Laying of cable ▪ Operation of any unburied portions of the cable	Adv	▪ Disturbance of marine mammals ▪ Change in MF, temperature and voltage leaks in marine environment
	Marine Habitat	Y	▪ Trenching of ocean floor ▪ Use of concrete mats ▪ Operation of any unburied portions of the cable	Adv	▪ Loss/alteration of marine habitat
	Species at Risk (federal)	Y	▪ Disturbance of *SARA* listed species during site preparation and equipment operation	Adv	▪ Loss of *SARA* species/loss of habitat
	Species of Special Status (provincial, territorial, local)	Y	▪ Disturbance of listed species during site preparation and equipment operation	Adv	▪ Loss of *SARA* species/loss of habitat

	Environmental Element	Project Inter-action? Y/N/U	Description of Interaction (How, When, Where)	Type of Potential Effect P/Ntl/Adv	Potential Adverse Environmental Effect
Socio-Economic	Human Occupancy/ Resource Use	Y	▪ Construction interference with access to residences and businesses ▪ Operation of converter station ▪ Unburied portions of the cable interfering with fishing ▪ HDD interfering with recreational pursuits	Adv	▪ Traffic accidents, injury to pedestrians during construction ▪ Change in noise level in proximity to the HDD site (potential affect on people) ▪ Inability of fishermen to grapple for lines and traps ▪ Change in MF and EMF levels in terrestrial environment (potential affect on people) ▪ Disruption to recreational pursuits in Macaulay Point and Fleming Beach
	Heritage Resources	U	▪ Possible HDD interference with submarine anomaly near the proposed HDD exit point ▪ Possible construction interference with previously unidentified heritage resources	Adv	▪ Destruction or damage to potential submarine heritage resource at HDD exit site ▪ Destruction or damage to previously unidentified heritage resources
	Traditional Land and Resource Use	U	▪ Disruption to traditional land and resource use during construction	Adv	▪ Disruption to traditional land and resource use during construction
	Socio and Cultural Well-being	N			
	Human Health/ Aesthetics	Y	▪ HDD noise impact on residents at Fleming Beach ▪ Operation of the converter station and overhead HVAC power lines causing EMFs that affect residents and land users ▪ Impact of construction and blasting on water wells ▪ Impact of converter station on visual aesthetics ▪ Construction impacts including noise, vibration, dust, property damage	Adv	▪ Change in noise level in proximity to the HDD site (potential affect on people) ▪ Change in MF and EMF levels in terrestrial environment (potential affect on people) ▪ Deleterious impact on water wells and the users ▪ Negative impact on the visual aesthetics for residents living near the converter station ▪ Harm caused by noise, vibration, dust, property damage during construction

	Environmental Element	Project Inter-action? Y/N/U	Description of Interaction (How, When, Where)	Type of Potential Effect P/Ntl/Adv	Potential Adverse Environmental Effect
Other	Accidents/Malfunctions	Y	▪ Operation and fuelling of machinery on the RoW and temporary workspace ▪ Complications with HDD during construction	Adv	▪ Contamination of soil, surface water, groundwater and/or ocean
	Effects of the Environment on the Project	U	▪ Soil liquefaction or ground failure during construction or operation due to earthquake	Adv	▪ Potential of fire if cable breaks

Legend: Y (Yes); N (No); U (Uncertain); P (Positive); Ntl (Neutral); Adv (Adverse)

7.2 Potential adverse environmental effects

7.2.1 Analysis of potential adverse environmental effects to be mitigated through standard measures

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
Acid rock drainage or metal leaching	▪ Samples were taken from 22 areas along the proposed preferred alignment for testing and results indicated one area contained PAG rocks ▪ Samples were taken from 3 areas along the proposed alternate route of Segment 16 and results of that testing will be submitted once completed ▪ Avoidance would be used in small anomalous areas ▪ Sea Breeze would develop an engineered site-specific plan to implement in the event that an area identified from the lab test results cannot be avoided [The Board recommends that Sea Breeze submit the site-specific plan for any area identified as containing PAG rocks at least 90 days prior to the planned start of construction per s. 7.5 recommendation D]
Erosion, compaction or mixing of soils	▪ Trenching primarily under existing roads to reduce impact on native soils ▪ When trenching previously undisturbed soils or soils with a defined topsoil or A horizon, topsoil would be removed from the whole RoW and stored at the edge of the RoW; subsoil would be stored on the opposite side of the trench to avoid admixing ▪ Site-specific measures to control erosion and sediment would be applied where necessary ▪ Excavated soil materials would be protected during wet weather with geotextile or similar materials ▪ Erosion control measures would be utilized in areas where vehicle activity leads to rutting including: laying a thin layer of brush or slash over the area, putting sediment traps in place, or using drainage collectors to channel water into vegetated areas ▪ Sediment entry into storm drains and surface waters would be controlled by geotextile ▪ Silt fences would be installed to intercept sediment before it can enter any watercourse ▪ Compaction of replaced soils in the trench to avoid subsurface piping in backfill materials ▪ Application of erosion-control seed mixes, including fertilizer, to disturbed areas on the cable RoW ▪ Environmental Inspector would stop work when wet conditions exist or conditions could lead to degradation of the environment
Change/loss of Vegetation	▪ Rare plant survey of route and converter station site will be completed before construction activities commence and protection strategies developed if species at risk found [The Board recommends that Sea Breeze submit the results of this survey at least 90 days prior to the planned start of construction per s. 7.5 recommendation C] ▪ Possible protection strategies include: o Narrow down the proposed area of disturbance and protect the site using fencing or clearly mark the site using flagging

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
	○ Inform all users of access restriction in the vicinity of flagged or fenced sites ○ Temporarily cover the site with geotextile pads, flex net or swamp mats ○ Drill or bore under the site ○ Realign the route to avoid the site; or ○ Propagate rare plants or specific portions of sensitive communities, via vegetative or reproductive means ▪ In natural areas where thermal backfill is required, upper part of the trench can be backfilled with natural soil ▪ Restrict all project traffic to paved or previously disturbed surfaces and designate parking areas ▪ Prepare a Restoration Plan for the project area before construction activities begin
Noxious weed introduction	▪ Conduct a weed survey to identify any species and extent of coverage of those species along the route and at the converter station site [The Board recommends that Sea Breeze submit the results of this survey at least 90 days prior to the planned start of construction per s. 7.5 recommendation B] ▪ Develop a weed control program for noxious and invasive plant species of concern and implement prior to construction activities, following restoration and during operation of the converter station [The Board recommends that Sea Breeze submit this program at least 90 days prior to the planned start of construction per s. 7.5 recommendation B] ▪ Mechanical means for routine vegetation control would be preferred ▪ Chemical means of vegetation control would be warranted at landowner request or under special circumstances ▪ Chemical application for vegetation control would require strict conditions for application including: ○ Licensed applicator ○ Appropriate selective, non-residual herbicide(s) ○ All appropriate provincial and municipal permits would be acquired ▪ Prior to leaving any weed infested areas, undercarriages or tracks of vehicles and equipment would be cleaned ▪ Capital Regional District (CRD) Parks would be contacted regarding approved weed control methods within regional parks ▪ BC Hydro would be contacted regarding approved weed control methods within Crown lands under their administration
Disturbance/Destruction of Fish and Fish Habitat (freshwater)	▪ Develop a watercourse crossing plan establishing a project-specific Reduced Risk Work Window from August 15 to September 15, that would include site-specific mitigation strategies based on species of fish present, type of habitat and construction technique to be employed; would be finalized during detailed design phase in consultation with DFO and TC [The Board recommends that Sea Breeze submit this watercourse crossing plan at least 90 days prior to the planned start of construction per s. 7.5 recommendation B] ▪ Retain as much vegetation as possible at watercourse crossings; banks would not be grubbed unless grading is required for safety reasons

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
	▪ Removed vegetation would be stored for replacement as directed by the Environmental Inspector ▪ Unavoidable loss of riparian vegetation during construction would be temporary and a qualified botanist or reclamation specialist would develop a site-specific re-vegetation plan to ensure the recovery of the riparian plant community is as rapid as possible [The Board recommends that Sea Breeze submit this plan at least 90 days prior to the planned start of construction per s. 7.5 recommendation B] ▪ At locations where culverts would need to be replaced, the work would be conducted in accordance with the Best Management Practices (as per BC *Water Act* approval and guidelines) ▪ HDD would be used at select stream crossings, intertidal areas and shorelines, where suitable, to reduce time required for instream work ▪ Any materials or equipment used in construction would be marked in accordance to the Collision Regulations of the *Canada Shipping Act* when located on or in the waterway ▪ Construction material and debris would not be allowed to become waterborne ▪ Bed and banks of the waterway would be restored to their original contour ▪ All temporary false works, debris, etc., would be completely removed from the waterway
Increased sediment load (freshwater)	▪ Use of sediment control structures in areas where sediment generated from construction could enter a waterbody ▪ Road sediments and all construction materials and fluids would be prevented from entering the shallow water pond adjacent to the Pike Substation access road ▪ No pumping of trench water directly into a waterbody ▪ Containment and proper disposal of drilling fluids and cuttings ▪ Proper stormwater design for the converter station site ▪ Disturbed upland areas (potential sources of sediment) would be re-vegetated immediately after construction ▪ Qualified Environmental Inspector would be on site to ensure work in or near streams, proceeds according to current Best Management Practices ▪ Construction of small clear-span bridges would follow DFO's Pacific Region Operation Statement to avoid harmful alteration, disruption or destruction (HADD) of fish habitat ▪ Any work placed in, on, over, under, across or through a navigable waterway would occur in consultation with TC – Navigable Waters Protection Program
Increased sediment load (marine)	▪ Conduct a forward reaming HDD to limit the amount of drilling mud and cuttings released into the marine environment ▪ Composition and nature of drilling fluids would be water, bentonite and drill cuttings (ground rock particles) ▪ Addition of biodegradable polymers to the drilling fluids would be determined by the contractor and information regarding need and specific type would be provided to Environment Canada in support of final permitting approvals ▪ Drilling mud returns would be monitored to ensure that drilling mud and cuttings are not inadvertently released (frac-out) into the environment during

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
	drilling of the pilot hole and reaming ▪ A depression would be constructed to try and limit the dispersion of drilling fluids and cuttings in the marine environment based on their higher specific gravity and potential flocculation in salt water ▪ A ship-mounted vacuum would be used to try and remove the bulk of the captured drilling fluids and cuttings ▪ Onshore drilling mud returns would be contained within a lined and impermeable sump or tank ▪ Disposal of drilling mud and cuttings will require separation of solids and liquids; solids will be disposed of at an authorized off-site location and clear water will be discharged into Fleming Bay using a temporary pipe and dissipaters ▪ Preliminary modelling of the HDD discharge plume would be carried out and verified prior to the mobilization of drilling equipment
Disturbance of marine mammals	▪ Ships would operate at speeds less than 5 knots during cable laying operation ▪ Qualified personnel would act as marine mammal observers (MMOs) on board the cable laying vessel ▪ Ten minutes prior to commencement of cable laying, the MMO would make a visual check to see if any marine mammal Valued Ecosystem Components (VECs) are within 500 m of the boat; if so, operations would be delayed until they have moved away, allowing 15 minutes since last sighting to confirm departure ▪ MMO would scan area for marine mammals regularly (four times per hour) and cable laying would stop if marine mammal VECs approach within 500 m of the cable laying operation ▪ If a marine mammal is in threat of entanglement, a remotely activated “seal scarer” pinger suspended from the vessel would be activated for short 10 second periods ▪ No underwater noise is associated with ongoing operation of the cable ▪ The static EMF produced by the bipolar DC cable tends to cancel out close to zero ▪ A small residual MF remains but that is not expected to impact marine mammal movement or behaviour ▪ IPL footprint is to remain as small as possible
Loss/alteration of marine habitat	▪ HDD installation technique avoids direct impact to nearshore species and habitats ▪ Concrete mats may be placed over the cable in areas where substrate conditions preclude trenching, i.e., bedrock ▪ Location and size of concrete mats to be included on as-built drawings [The Board recommends that Sea Breeze submit as-built drawings per s. 7.5 recommendation O] ▪ Environment Canada would be consulted regarding the information obtained during the marine geophysical survey ▪ Ground-truthing by sediment grab samples and coring would be required to verify substrate types ▪ Location of HDD exit point is beyond the vegetated area, outside of valued and

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
	sensitive habitats including kelp and eelgrass beds and rocky areas suitable for Northern abalone ▪ Monitoring recovery rates for geoduck clams recommended [The Board recommends that Sea Breeze submit a post-construction geoduck recovery monitoring report per s. 7.5 recommendation Q]
Impact to wetland functions	▪ Silt fencing installed on road bank to ensure road sediments do not enter wetland areas ▪ Contractors would ensure that no staging areas are located in wetlands and equipment use would be limited within wetlands ▪ Wetlands would be allowed to re-vegetate naturally or an appropriate seed mix, representative of the local species, would be used, as approved by the appropriate landowner or regulatory agency
Disturbance of wildlife/Loss of habitat	▪ Route would lie along existing road and utility RoWs and avoid vegetated "natural" areas, wetlands, rock outcrops as much as possible ▪ Disturbed areas would be promptly re-vegetated with appropriate plants ▪ A sharp-tailed snake hibernacula survey would be conducted prior to construction in those locations identified on the environmental alignment sheets ▪ If hibernacula are located along route, mitigative measures would be implemented after consultation with Canadian Wildlife Service (CWS) and BC Ministry of Environment (MOE) and may include the following: o Abide by timing constraints within the recommended set back distances o Abide by daily timing restrictions on construction activities o Alter or delay certain construction activities to avoid sensory disturbance o Narrow down the proposed RoW and protect the site using fencing or clearly mark the site using flagging o Realign the route to avoid the site o Relocate dens, nests, hibernacula or other habitat features or individuals, if feasible and permitted ▪ If a sharp-tailed snake is found, the Environmental Inspector would move the snake a reasonable distance away from the blasting area and record the siting ▪ Identified pockets of good habitat (Carex and Sedum sp.) for rare butterflies would be avoided where possible, between KP 1.070 and 3.160; where disturbance is unavoidable, sites along the RoW would be vegetated with appropriate plants for rare butterflies, if necessary ▪ Mechanical means for vegetation management would be preferred ▪ Appropriate selective, non-residual herbicides may be used for vegetation management at landowner request or if special circumstances warrant it ▪ IPL footprint is to remain as small as possible
Disturbance of migratory birds	▪ Clearing and much of construction on terrestrial route segments would occur outside of the main bird breeding season (May- August) or else construction areas would be surveyed by a qualified professional prior to beginning work to ensure no active bird nests are present ▪ Construction along marine route segments would occur during low density

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
	periods (late May through August/September) outside of peak use seasons for marine birds ▪ Migratory bird nests would be assessed based on the following criteria: position of the wildlife or habitat feature with respect to the proposed RoW, timing of construction versus the critical timing constraints for the species and potential for an alteration of construction activities to minimize or avoid sensory disturbance ▪ If a nest is located, mitigative measures that may be implemented would be determined in consultation with CWS and BC MOE and include the following: o Take into account timing constraints within the recommended set back distances o Daily timing restrictions on construction activities o Alter or delay certain construction activities to avoid sensory disturbance o Narrow down the proposed RoW and protect the site using fencing or clearly mark the site using flagging o Realign the route to avoid the site o Salvage and transplant vegetation or native seed of critical importance to species if the habitat site cannot be avoided o Relocate nests or other habitat features or individuals, if feasible and permitted ▪ Site-specific wildlife report would be completed in consultation with the CWS and BC MOE ▪ Proposed mitigation measures would appear on a revised Environmental Alignment Sheet ▪ If an active migratory bird nest is found during construction, work would be suspended immediately and would not resume until the Environmental Inspector assesses the discovery and implements the Active Nest Discovery Contingency Plan if appropriate ▪ Blasting would be scheduled to occur from 1 July to 31 January to reduce disturbance to nesting raptors and Great Blue Herons in areas identified by the project wildlife specialist ▪ If blasting must take place outside of this period, a raptor and Great Blue Heron nest survey would be conducted up to 1 km from the RoW or converter station area
Loss of SARA species/loss of habitat	▪ Rare plant survey and applicable mitigation measures as referred to in Change/Loss of Vegetation section of the ESR would be implemented ▪ Breeding bird survey if construction activities occur outside of the main bird breeding season (May- August) as referred to in Disturbance of Migratory Birds section of the ESR would be implemented
Decrease in local air quality during construction	▪ Minimizing vehicle idling ▪ Complying with an efficient project schedule to minimize emissions and dust, including adhering to local bylaws regarding work hours ▪ Aggregate loads would be sprayed when necessary to reduce dust ▪ Aggregate loads would be covered during transport ▪ Retaining native vegetation wherever possible

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
Traffic accidents, injury to pedestrians during construction	▪ During non-work hours, suitable barricades, fencing, warning lights, security would be used ▪ Work vehicles would be parked in designated parking areas ▪ Flag people/traffic controllers would be in place; notice to municipalities and residents would be provided; construction signs would be in place; one lane would remain open at all times ▪ Project-specific EPP would deal with construction impacts on traffic
Disruption to recreational pursuits in Macaulay Point and Fleming Beach	▪ A portion of the existing parking lot would provide ample room for set up and operation of the drilling rig and associated equipment ▪ This impact would be short term, during HDD construction only
Destruction or damage to potential submarine heritage resource at HDD exit site	▪ Anchors and chains would be placed so as not to interfere with this area
Disruption to traditional land and resource use during construction	▪ Species for replanting would be indigenous and selected in consultation with First Nations ▪ Efforts would be made to minimize disturbance to plants by marking, pruning, avoiding tree roots and branches ▪ Where possible, plants would be removed and replaced following construction ▪ Efforts would be made to minimize duration of construction through areas of quality habitat ▪ Mitigation measures would be developed through consultation with First Nations ▪ First Nations would be notified prior to access restrictions being implemented ▪ In areas that have little or no prior disturbance, such as the converter station site and segments of the route north of Island Highway, Sea Breeze would consult with First Nations to coordinate possibility of having a band member on site to monitor area during construction ▪ In event that culturally significant plants are discovered, appropriate mitigation (developed through consultation with First Nations prior to construction), would be applied
Negative impact on the visual aesthetics for residents living near the converter station	▪ Exterior design of building would incorporate suggestions gathered from public consultation and local planning officials; consideration would be given to: existing structures in the area, visual impacts, noise levels, design constraints, ease of access for operation & maintenance, security, heat conductivity, etc.
Harm caused by noise, vibration, dust, property damage during construction	▪ Where close to utilities, owners of the utilities would be contacted regarding requirements for protection, isolation, rock removal methods ▪ Sea Breeze has expressed interest in holding smaller, focused meetings with affected residents to gain a better understanding of local concerns and discuss mitigation ▪ Prior to construction, an insurer would inspect each home where blasting would occur. Sea Breeze would be liable for any damage as a result of blasting ▪ Keep worksite clean, take measures to reduce dust, minimize vehicle idling ▪ Project-specific EPP would address blasting affects on noise and groundwater ▪ The Board expects Sea Breeze to comply with local noise bylaws and other

Potential Adverse Environmental Effect	Proposed Design or Mitigation Measures and Recommendations
	applicable requirements
Contamination of soil, surface water, groundwater and/or ocean	▪ All fuel, chemical and lubricants are housed and handled in an area isolated from direct contact to the environment ▪ Proper refuelling procedures would be used to prevent spills ▪ Spill containment materials or other appropriate procedures or materials would be on hand at all refuelling sites ▪ Follow the Waste Management Plan to reduce the likelihood of an accidental release ▪ Report any accidental spills or releases of toxic materials to the Environmental Inspector immediately ▪ Implement the Spill Contingency Plan in case of an accidental release ▪ Implement the Directional Drilling Procedures and Instream/Landfall Drilling Mud Release Contingency Plan during directional drilling
Potential of fire if cable breaks	▪ Leave the cable unburied and with slack in areas of high probability earthquake activity ▪ Avoid faults where possible ▪ Cross faults at close to right angle, leaving the cable unburied and with slack for 50 m to either side of the fault
Sea Breeze's ESA and EPP specify further details on standard mitigation.	

The Board is of the view that for this IPL, if Sea Breeze follows the above-mentioned design, mitigative measures and recommendations, these potential adverse environmental effects would not likely be significant.

7.2.2 Detailed analysis of potential adverse environmental effects

7.2.2.1 Injury/loss of mature trees

Background/Issues	Within the application, Sea Breeze committed to preparing a tree protection plan before construction to minimize impacts on protected, veteran and mature trees. Sea Breeze filed later information presenting Segment 16 as an alternative to the originally preferred route. Sea Breeze's JdFC Project Vegetation Technical Report, which was submitted as a supplemental report for Segment 16, identified Garry oaks and Douglas fir with diameters greater than 30.5 cm as protected trees within the IPL footprint. This report also identified three regionally significant Garry oak – rock outcrop communities within the IPL footprint. Sea Breeze's JdFC Project Marine Report - Wildlife Assessment identified three "at-risk" butterfly species that are expected to be present along the IPL. This report recommended that these species could be protected by protecting Garry oaks.
Mitigation Measures	▪ A Registered Professional Forester and Registered Professional Biologist developed the procedure for documenting the trees adjacent to the road and identifying the trees that would potentially be affected by the Sea Breeze IPL ▪ A tree protection plan would be prepared before construction that would ensure project activities have minimal impact on protected, veteran and mature trees that occur on the cable route

<table>
<tr><td></td><td>

Protection plan would be prepared by a certified arborist
An arborist would be onsite when construction activities occur within the root zone of protected, veteran and mature trees
An arborist would delineate the potential root zone of all protected trees on the road surface prior to construction
Wherever possible, trenching would be avoided in the delineated root zone of the protected trees by altering the line location within the road prism
The root zone of all veteran trees (greater than 250 years old) would be avoided
If excavation is required in root zones the work should be done slowly and carefully so roots are identified before they are damaged
Hand digging or use of an air spade should be considered around the large lateral roots to prevent damage
Low-lying limbs of protected trees should be flagged so construction equipment operators can avoid them
All pruning of protected trees should be carried out under the supervision of a certified arborist
Every effort should be made to avoid damage to or the removal of protected trees
If removal is necessary a permit is required from local government

</td></tr>
<tr><td>Monitoring</td><td>As listed in the tree protection plan, if applicable.</td></tr>
<tr><td>Views of the NEB</td><td>The Board expects that Sea Breeze’s tree protection plan would be modified to include the communities identified along Segment 16. The plan should be expanded to include a report that discusses the environmental impacts of removing the Garry oak – rock outcrop communities and what mitigation measures could be used to address these impacts. The Board recommends that Sea Breeze submit this plan at least 90 days prior to the planned start of construction per recommendation B in s. 7.5.</td></tr>
<tr><td>Evaluation of Significance</td><td>
<table>
<tr><td>Frequency</td><td>Duration</td><td>Reversibility</td><td>Geographical Extent</td><td>Magnitude</td></tr>
<tr><td>Multiple</td><td>Long-term</td><td>Irreversible</td><td>IPL Corridor</td><td>Moderate</td></tr>
<tr><td colspan="5">Adverse Effect</td></tr>
<tr><td colspan="5">Unlikely to be significant</td></tr>
</table>
</td></tr>
</table>

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.2 Re-suspending contaminated sediment within the ocean

<table>
<tr><td>Background/Issues</td><td>
Sea Breeze proposes to trench the cable into the ocean floor for a distance of approximately 19 km within Canada.

CRD samples an array of benthic sediment stations within an 800 m radius of both the Macaulay and Clover Point outfalls. Recent sampling indicates that all stations at a distance of 200 m or more from Macaulay Point outfall (closest outfall to the proposed IPL) meet CRD’s sediment quality guidelines. As the sample results indicate that the contaminant levels are below the stated guidelines, re-suspension of contaminated sediments during cable laying was not considered a potential issue by Sea Breeze.

Sea Breeze concluded that generally, mixing in the adjacent Strait is sufficiently intense that the potentially harmful constituents are diluted rapidly so that they are far below environmentally damaging values
</td></tr>
<tr><td>Mitigation Measures</td><td>

Marine geophysical surveys would be conducted to confirm appropriateness of the selected corridor

</td></tr>
</table>

<table>
<tr><td></td><td>▪ Grab samples would be obtained in advance of construction to confirm material properties and potential contamination</td></tr>
<tr><td>Monitoring</td><td>To be determined</td></tr>
<tr><td>Views of the NEB</td><td>Environment Canada (EC) raised this issue in their letter of comment and required additional information from Sea Breeze during the application process. While the information presented by Sea Breeze indicates that re-suspending contaminated marine sediments during trenching is not expected, there is still that potential. Based on the information provided in the application and Sea Breeze's response to EC, the Board recommends that Sea Breeze be required to identify the selected marine corridor on a map or diagram and provide results of the sampling program as described in recommendation L in s. 7.5.</td></tr>
<tr><td>Evaluation of Significance</td><td>
<table>
<tr><th>Frequency</th><th>Duration</th><th>Reversibility</th><th>Geographical Extent</th><th>Magnitude</th></tr>
<tr><td>Rare/Single</td><td>Short-term</td><td>Reversible</td><td>Local</td><td>Low</td></tr>
<tr><td colspan="5">Adverse Effect</td></tr>
<tr><td colspan="5">Unlikely to be significant</td></tr>
</table>
</td></tr>
</table>

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.3 Change in MF, electric field, temperature, and voltage leaks in Marine Environment

<table>
<tr><td>Background/Issues</td><td>Sea Breeze indicated that the temperature changes due to the operation of the cable would be minimal as direct burial allows the heat to dissipate readily into the environment and reduces the thermal resistance of the cables. Increases in water temperature would be limited to a distance of 1 m from the cable and should not exceed 1°C. If direct burial is not possible, Sea Breeze indicated that the heat produced by the cable would rapidly dissipate throughout the ocean's waters via convection.

Sea Breeze noted that while the cable would generate a MF during operation, this MF would be weaker than the earth's natural MF. Sea Breeze submitted that if the cable was not buried and the surrounding water current was relatively high, the cable could induce an electric field to a maximum level of 0.0171 volts per metre in the surrounding materials. Sea Breeze indicated that any changes in the Earth's magnetic or electric fields introduced by the cable would be restricted to a narrow region on either side and above the cable; therefore, even if the fields are detected by marine species very close to the cable, the narrow linear nature of Project makes it unlikely to affect long distance navigation or migration. Sea Breeze submitted that voltage leakage does not occur with HVDC Light technology because the cables are operated in bipolar mode with no possibility of ground return, and thus there is no possibility of stray voltages.

Views of the Parties

The commercial fishers raised concerns regarding impacts of temperature change, MFs , induced electric fields and voltage leaks generated from the operation of the cable. The fishers also indicated that if the cable was buried and remained buried, based on the evidence submitted by Sea Breeze, there may be no effect. They proposed a condition on the Certificate requiring Sea Breeze to ensure that the cable remains buried.

The commercial fishers proposed a condition on the Certificate requiring Sea Breeze to complete a pre-installation study that would provide essential stock distribution and movement information.

Sea Breeze submitted that burial of the cable is not an operational requirement; however, it also noted that the intent was to bury the cable and to have it remain buried to the extent possible. Sea Breeze committed to preparing a Marine Monitoring Plan that would</td></tr>
</table>

<table>
<tr><td></td><td>describe the frequency, methodology and reporting criteria for the marine monitoring of the cable. The Marine Monitoring Plan would include a discussion on mitigation measures to be used to keep the cable buried as well as a monitoring program for temperature changes and MFs for the marine portions of the IPL relevant to licensed fishing areas. Sea Breeze confirmed that it would consult with DFO on development of the plan and that it would also like to consult with the commercial fishers if they would be willing to participate</td></tr>
<tr><td>Mitigation Measures</td><td>▪ Development of a Marine Monitoring Plan to include a monitoring program to check cable burial conditions and to monitor for temperature changes and MFs</td></tr>
<tr><td>Monitoring</td><td>To be developed in consultation with DFO and the commercial fishers</td></tr>
<tr><td>Views of the NEB</td><td>The Board notes that DFO acknowledged the evidence presented by Sea Breeze and agreed to assist Sea Breeze in developing an appropriate monitoring plan.

The Board also notes that the evidence submitted by Sea Breeze indicates that the operation of the IPL would generate minimal changes in temperature and induced electric fields, a MF weaker than the earth’s natural MF and that no voltage leakage could occur. This evidence indicates that a residual effect, if any, would be minimal. The Board is of the view that any residual effects would be minimal and notes that no contrary evidence was submitted to persuade the Board otherwise. The Board concurs with Sea Breeze that a pre-installation study providing stock distribution and movement information is not required due to lack of scientific evidence supporting the need for such a study.

The Board expects that Sea Breeze would develop the Marine Monitoring Plan in consultation with DFO and, if possible, the commercial fishers. Marine Monitoring Plan should include but not be limited to, the frequency, methodology and reporting criteria for the marine monitoring and a discussion on mitigation measures to be implemented if required.

With respect to the condition proposed by the commercial fishers, the Board is of the view that development of this Marine Monitoring Plan would ensure that the cable remain buried to the extent feasible and would provide mitigative measures to be employed if the cable were to become unburied. Therefore, the Board is of the view that a separate condition requiring that the cable remain buried is unnecessary.

The Board recommends that Sea Breeze submit the Marine Monitoring Plan at least 90 days prior to the planned start of construction per recommendation B in s. 7.5.</td></tr>
<tr><td>Evaluation of Significance</td><td>
<table>
<tr><td>Frequency</td><td>Duration</td><td>Reversibility</td><td>Geographical Extent</td><td>Magnitude</td></tr>
<tr><td>Continuous</td><td>Long-Term</td><td>Possible</td><td>IPL Corridor</td><td>Low</td></tr>
<tr><td colspan="5">Adverse Effect</td></tr>
<tr><td colspan="5">Unlikely to be significant</td></tr>
</table>
</td></tr>
</table>

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.4 Change in MF and EMF Levels in Terrestrial Environment (Potential affect on People)

Background/Issues	**Converter Station** Sea Breeze submitted that the EMF around the HVDC Light converter installation would be quite low because the valves, AC filters, DC filters and converter reactors are located in a building designed to be a very efficient shield. Shielding is needed to minimize emissions in the radio frequency range (ie: radio interference). **Terrestrial Portion of IPL: Views of the Parties** Sea Breeze submitted that the IPL would generate magnetic fields (MF). The MF on a

<table>
<tr><td></td><td>person standing at the edge of the RoW, 1.5 m from the centerline of the buried IPL, would be about 440 milligauss (mG). The International Commission on Non-Ionizing Radiation Protection (ICNIRP) recommends a maximum limit for human exposure to DC MF of 400,000 mG.

In contrast with alternating current (AC) 50-60 hertz (Hz) power lines, the MFs emitted by DC are static fields and have not been found to have any significant associations with negative health effects.

Residents who live along the proposed IPL corridor submitted that the World Health Organisation (WHO) has found that the research on static EMFs has been carried out in an unsystematic way and that coordinated research is necessary in the area. The WHO has recommended that a “cautionary policy” for EMFs should be used, and has endorsed a position of “prudent avoidance” in relation to EMF exposure.

Residents along Lampson Street expressed concerns about the effects of the IPL on their health.

The Township of Esquimalt and the Town of View Royal proposed a condition on the Certificate requiring Sea Breeze to monitor EMF levels at the ground surface, above the cable.

Sea Breeze submitted that in Canada, maximum safety guidelines for EMF exposure to static (DC) fields have not yet been identified due to lack of evidence that they may impair health.

Sea Breeze acknowledged that the precautionary approach to EMF exposure is recommended as the prudent one, and that most countries that currently have regulations have adopted this approach. Sea Breeze submitted that the cable’s field would be less than 1% (440 mG) of the guidelines suggested by the ICNIRP, an internationally recognized commission that provides research and guidelines on EMF exposure, and by using this technology, Sea Breeze is being prudent in its consideration of the public’s well-being.

Residents submitted that the ICNIRP is currently undertaking to revise its guidelines for exposure for the whole EMF frequency range from static fields to terahertz; but there is no timeline for the completion of this work.</td></tr>
<tr><td>Mitigation Measures</td><td>Converter Station:

The valves, AC filters, DC filters and converter reactors would be located inside the converter station building which is designed to be a very efficient shield.

EMF emissions from converter station and associated overhead cable would be monitored

Terrestrial Portion of IPL: The IPL would be buried and would be constructed and operated as a bipolar, paired cable system. In a bipolar system, the MFs from each cable partially cancel each other out, resulting in a much lower total MF then would be present in a mono-polar system.</td></tr>
<tr><td>Views of the NEB</td><td>The Board recognizes that the ICNIRP is currently reviewing its guidelines on EMF exposure from static level to terahertz, but notes that the proposed IPL is expected to emit much less than 1% of the current ICNIRP limit on DC MF exposure levels.

Evidence indicates that a residual effect, if any, would be minimal. Therefore, the Board is of the view that monitoring EMF levels at the ground surface, above the cable is not required.

In the event that the proposed IPL is approved, the Board expects that Sea Breeze would fulfill the mitigation measures as set out in the application and any subsequent submissions.</td></tr>
<tr><td>Evaluation of Significance (Change in MF and EMF Levels)</td><td><table>
<tr><th>Frequency</th><th>Duration</th><th>Reversibility</th><th>Geographical Extent</th><th>Magnitude</th></tr>
<tr><td>Continuous</td><td>Long-Term</td><td>Possible</td><td>IPL Corridor</td><td>Low</td></tr>
</table></td></tr>
</table>

	Adverse Effect
	Unlikely to be significant

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.5 Change in Noise Level in Proximity to the HDD Site (Potential Affect on People)

Background/Issues	According to Sea Breeze, the noise level within 15 m of the project site of the HDD drilling rig at Fleming Beach will be 70-85 decibels (dBA)[2] and the HDD will last from 5-7 weeks. At Fleming Beach, there are residential homes located within 20 m to 40 m of the proposed HDD drilling location. Although in its application and other submissions, Sea Breeze has indicated that it intends to use some noise mitigation measures at the HDD site at Fleming Beach, the evidence shows that it will include an 85 dBA limit as part of the development of contract specifications for the HDD work. Although the Township of Esquimalt Noise Bylaw does not include a noise level limit, Sea Breeze used the 85 dBA limit given as the construction noise level limit in the Victoria Noise Bylaw. ***Potential for 24-hour Operation*** Sea Breeze anticipates HDD activities at Fleming Beach will take place between 7 a.m. and 7 p.m. in accordance with the Esquimalt Noise Bylaw. In the event that detailed design shows that the HDD will require longer drilling hours, Sea Breeze will discuss this issue with the residents and the municipality and, if necessary, will apply for a variance order. The Town of View Royal proposed that recommendation K(2) be broken out of recommendation K and made more general to reflect the noise abatement and hours of work along the entire route, not just at the Township of Esquimalt.
Mitigation Measures	Sea Breeze will design site-specific noise abatement barriers to reduce the noise emissions at the directional drill site Sea Breeze has indicated that it will include a maximum 85 dBA as part of the contract specifications for the HDD work
Views of the NEB	With respect to the proposal from the Town of View Royal, as indicated in Table 7.2.1 above, the Board expects Sea Breeze to comply with local noise bylaws and other applicable requirements. The Board is of the view that a more general condition is not necessary. The Board notes that construction (including HDD) noise abatement measures have been modeled, implemented and required in other jurisdictions on various types of projects. The Board is of the view that 85 dBA, 12-hours per day, 5-7 weeks for the HDD at Fleming Beach could be excessive for nearby residents. It is the view of the Board that additional studies are required to determine to what extent the HDD noise at Fleming Beach can be minimized. Therefore, in the event that the proposed IPL is approved, the Board recommends that Sea Breeze file, for approval of the Board, a noise assessment for HDD at Fleming Beach. In addition, the Board recommends that Sea Breeze file for approval of the Board noise control plans for daytime and night time operation of the HDD at Fleming Beach.

Background [2] The decibel (**dB**) is a logarithmic unit used to measure sound level. If the "A" weighting filter is used, the sound pressure level is given in units of **dB(A)** or **dBA**.

	In addition, if Sea Breeze applies to the Township of Esquimalt for a variance from the Noise Bylaw in order to operate beyond the bylaw-stipulated hours of 7 a.m. to 7 p.m., the Board recommends that Sea Breeze concurrently file a copy of that application with the Board. Refer to recommendations A and K in s. 7.5.
Evaluation of Significance (Noise Level)	Frequency / Duration / Reversibility / Geographical Extent / Magnitude Single / Short-term / Reversible / Local / Moderate Adverse Effect Unlikely to be significant

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.6 Destruction or Damage to Previously Unidentified Heritage Resources

Background/Issues	The evidence confirmed that a permit has been issued pursuant to the BC *Heritage Conservation Act* to undertake an Archaeological Impact Assessment (AIA) for the IPL. The permit allowed for further archaeological assessment. Sea Breeze submitted that, for the terrestrial portion of the IPL, a qualified archaeologist would conduct a preliminary assessment along the final route in areas of moderate to high archaeological potential to ascertain the precise footprint of the IPL and take necessary measures should new artifacts or remains be discovered. Sea Breeze also submitted that, for the marine portion of the IPL, a qualified marine archaeologist would review the results of videography and other survey data taken during 2005 regarding the locations of archaeological features and provide recommendations, including requests, for further investigation or route modification to Sea Breeze and its contractors.
Mitigation Measures	Sea Breeze would adopt the recommendations contained in the AIA Care would be exercised so that any anchors and chains set around the HDD exit point do not impact the anomaly near this area (unless Sea Breeze establishes in advance that the anomaly is not part of a wreck site) If impact during trenching is suspected, cable must be rerouted and allowances made for an AIA (by diver) If route change is required, avoid rock outcrops or obstructions buried by shifting and accumulating sediments to avoid potential conflicts with protected archaeological remains Subsurface testing is required for all areas not under existing road (e.g., BC Hydro RoW, Trans Canada Highway crossing, converter station location, HDD location at Fleming Beach) During construction, trenching would be monitored by an archaeologist and First Nations assistants in areas of high potential. In areas of moderate potential, monitoring by First Nations assistants with intermittent monitoring by an archaeologist would be conducted. No monitoring of trenching in areas of low potential is proposed but equipment operators and environmental consultants would receive Archaeological Awareness Training If archaeological materials are identified work would stop and an archaeologist would visit to assess and give directions (mitigation could include avoidance, controlled excavation and data recovery) Project-specific EPP would include Heritage Resource Discovery Contingency Plan
Views of the NEB	In the event that the proposed IPL is approved, the Board expects Sea Breeze to fulfill the undertakings for mitigation as set out in the application and any subsequent submissions. In addition, the Board recommends that, prior to construction, Sea Breeze file the AIA

	and preliminary reports by the archaeologists for the terrestrial and marine portions of the IPL, any further mitigation plans and any correspondence in relation to the AIA from the responsible provincial authorities. Refer to recommendations H, I and M in s. 7.5.

Evaluation of Significance	Frequency	Duration	Reversibility	Geographical Extent	Magnitude
	Single	Long-term	Irreversible	IPL Corridor	Moderate
	Adverse Effect				
	Unlikely to be significant				

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.7 Deleterious impact on water wells

Background/Issues	Sea Breeze's application indicated that there are 11 water wells within 200m of the IPL footprint, mostly near Pike Substation and 3 to 5 are domestic water wells. Subsequent filings indicated that 2 additional wells are located along segment 16 (along the E&N railway). **Views of the Parties** At the oral hearing, Goodwill Investments Ltd. (Goodwill) expressed concern that Sea Breeze was only intending to test domestic water wells but not commercial water wells. Goodwill submitted that it has several irrigation wells and was concerned about the water quantity issue and requested amendment to the NEB's proposed conditions concerning water well testing.
Mitigation Measures	A professional hydrologist would be retained to identify wells within 200m of blasting activities along the route. The professional hydrologist would conduct pre-construction water quality and water flow survey of wells within 100 m of any blasting activities, including sampling for fecal coliform, turbidity and total metals as well as a well pump test for porosity, hydraulic conductivity, transmissivity and strativity. Monitoring of surveyed wells would occur during construction and post-construction. For wells within 200 m of blasting activities, Sea Breeze is prepared to provide a pre-construction and post-construction water well report on information gathered by the professional hydrologist. All wells, including those on the Goodwill properties, would be tested.
Views of the NEB	In the event that the proposed IPL is approved, the Board expects that Sea Breeze fulfills the undertakings for mitigation and testing as set out in the application and any subsequent submissions. In addition, the Board recommends that Sea Breeze carry out pre-construction water quality and quantity testing and post-blasting testing and file the results with the Board and with the well owners. Refer to recommendations J and N in s. 7.5 which include the amendments recommended by Goodwill.

Evaluation of Significance	Frequency	Duration	Reversibility	Geographical Extent	Magnitude
	Multiple	Short-term	Possible	Local	Moderate
	Adverse Effect				
	Unlikely to be significant				

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.8 Noise Impact on Local Residents during Operation of Converter Station

Background/Issues	Converter cooling fans, air conditioning equipment, Power Line Carrier (PLC) filters, power transformers, AC & DC filters, Insulated Gate Bipolar Transistors (IGBT) valves and cooling pumps produce noise Series reactors and voltage source converters are the main sources of noise at the converter station
Mitigation Measures	▪ AC & DC filters, IGBT valves and cooling pumps would be located inside the converter building, so only a small amount of noise that escapes through ventilation system would be heard outside the building ▪ To prevent the high-frequency noise from spreading to the power grid and valve areas, the following would be included: high frequency damping circuits, radio interference capacitors, shielding of the housing and proper grounding; the series reactors would be housed in an aluminium enclosure and transformers located outside would be designed with low flux density ▪ Metal wall cladding on the converter building is normal and can be installed with sound barriers to achieve the required noise level
Views of the NEB	In the event that the proposed IPL is approved, the Board expects that Sea Breeze fulfills the undertakings for mitigation as set out in the application and any subsequent submissions. In additional, the Board recommends that Sea Breeze carry out a noise assessment at the converter station and file the results with the Board. Refer to recommendations G and P in s. 7.5.
Evaluation of Significance	Frequency: Multiple; Duration: Medium-term; Reversibility: Reversible; Geographical Extent: IPL Corridor; Magnitude: Moderate Adverse Effect Unlikely to be significant

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

7.2.2.9 Inability of fishermen to grapple for lines and traps

Background/Issues	Commercial fishers expressed concern that their gear could become snagged on the cable, resulting in lost gear. Because of the strong currents in the area, fishing gear can move more than a kilometre from where it is set and this increases the concern that it could become snagged on the cable. The commercial fishers proposed three conditions on the Certificate to deal with this issue. First, they proposed a condition requiring a communication plan between Sea Breeze and the fishers that would allow for the reporting of snagged gear and for compensation for lost gear. Second, they proposed a condition acknowledging that it would be imprudent for fishers to fish in areas where the cable is known to be exposed and for compensation in such an event. Third, they proposed a condition for indemnity against legal action in the event that snagged fishing gear causes damage to the cable. Sea Breeze submitted that burial of the cable is not an operational requirement; however, it also noted that the intent was to bury the cable and to have it remain buried to the extent possible. Sea Breeze committed to preparing a Marine Monitoring Plan that would describe the frequency, methodology and reporting criteria for the marine monitoring of the cable. The Marine Monitoring Plan would include a discussion on mitigation measures to be used to keep the cable buried. Sea Breeze confirmed that it would consult with DFO on development of the plan and that it would also like to consult with the

<table>
<tr><td></td><td>commercial fishers if they would be willing to participate.</td></tr>
<tr><td>Mitigation Measures</td><td>▪ Cable would be buried below the low water mark and the banks would be restored to original contours and protected from erosion as necessary
▪ Cable would be laid well clear of any navigational buoys, lights, markers or anchorage areas
▪ Location of the work would be permanently marked by constructing cable warning signs on each bank above the high water mark and facing the lay of the crossing (signs are to be of durable construction and of a size and shape suitable to the breadth of the waterway being crossed)
▪ The site/work would be adequately marked/lit during all phases of construction to safeguard marine navigation
▪ Debris control and removal would be the responsibility of Sea Breeze
▪ Equipment used during construction would not interfere with navigation</td></tr>
<tr><td>Monitoring</td><td>To be developed in consultation with DFO and the commercial fishers</td></tr>
<tr><td>Views of the NEB</td><td>With respect to the conditions proposed by the commercial fishers, the Board is of the view that the communication plan is adequately addressed through recommendation F which deals with the unrecoverable fishing gear and recommendation B which deals with the marine monitoring plan. The Board is of the view that compensation for lost gear, compensation for the inability to fish due to exposed cable and matters of indemnity are outside of the Board’s jurisdiction.
In the event that the proposed IPL is approved, the Board expects that Sea Breeze fulfills the undertakings for mitigation as set out in the application and any subsequent submissions.
In addition, the Board recommends that Sea Breeze prepare a Marine Monitoring Plan in consultation with DFO and, if possible, the commercial fishers, to establish methodology and frequency of monitoring and to deal with significant changes in burial conditions. The Board recommends that Sea Breeze submit the plan at least 90 days prior to the planned start of construction per s.7.5 recommendation B.
The Board further recommends that Sea Breeze prepare an Unrecoverable (Fishing) Equipment Mitigation Plan. The Board recommends that Sea Breeze submit the plan at least 90 days prior to the planned start of construction per s.7.5 recommendation F.</td></tr>
<tr><td>Evaluation of Significance</td><td>
<table>
<tr><th>Frequency</th><th>Duration</th><th>Reversibility</th><th>Geographical Extent</th><th>Magnitude</th></tr>
<tr><td>Multiple/Frequent</td><td>Short-term</td><td>Reversible</td><td>IPL Corridor</td><td>Low</td></tr>
<tr><td colspan="5">Adverse Effect</td></tr>
<tr><td colspan="5">Unlikely to be significant</td></tr>
</table>
</td></tr>
</table>

Refer to Appendix 4 for definitions of the Evaluation of Significance Criteria

The Board recommends that Sea Breeze submit, for approval, an updated EPP at least 60 days prior to the planned start of construction per s. 7.5 recommendation E. This would ensure that all applicable environmental protection measures committed to throughout the entire application process (including the oral hearing) have been compiled into one comprehensive document for the purpose of communicating required commitments and conditions to field staff.

7.3 Cumulative effects assessment

The main residual effect that would remain from the IPL after the application of mitigative measures is the long-term loss of a 100 m x 150 m parcel of land required for the proposed

converter station; however, this is within BC Hydro's Pike Substation lands. There is also a potential loss of mature trees along the corridor when clearing can not be avoided. As noted in s. 7.2.2.1, a tree protection plan would be developed to minimize clearing and loss of mature trees.

As the majority of the terrestrial portion of the IPL would be located in developed urban areas with the cable trench to be excavated primarily under existing roads, the residual effects would be negligible. With respect to the marine portion, the main residual effect, after construction and the implementation of mitigation, would be the presence of the cable and associated potential temperature and MF changes. To address this, Sea Breeze has committed to monitoring for changes in temperature and MFs along the marine portion of the cable.

The NEB has considered the potential for cumulative environmental effects and determined that there are unlikely to be any interactions between the environmental effects of this project and environmental effects of other projects or activities that have been or will be carried out.

Therefore, it is unlikely that there would be any significant cumulative environmental effects resulting from this project.

7.4 Follow-up program

The IPL and its associated activities are routine in nature. Most of the potential adverse environmental effects of the IPL are well understood based on past projects in a similar environment. For these reasons, the NEB is of the view that a follow- up program would not be required for this IPL.

7.5 Recommendations

It is recommended that in any Certificate that the NEB may grant, a condition be included requiring the applicant to carry out all of the environmental protection and mitigation measures outlined in its application and subsequent submissions.

Further, other recommendations include:

A. Sea Breeze shall file with the Board for approval, at least one hundred and twenty (120) days prior to the planned start of construction, a noise assessment report for the HDD at Fleming Beach that includes:

a. existing ambient noise levels at the most affected residences;

b. predicted noise level at the most affected residences caused by the HDD without mitigation;

c. predicted noise level at the most affected residence with implementation of different, available HDD noise mitigation measures;

d. noise contour map(s) showing the potentially affected residences at various noise levels; and

e. a description of the potential health impacts of exposure to predicted noise levels over various exposure periods.

B. Sea Breeze shall file with the Board, at least ninety (90) days prior to the planned start of construction, the following reports or plans:

a. Weed survey results and applicable weed control program;

b. Tree protection plan;

c. Watercourse crossing plan, with site-specific mitigation strategies and construction techniques;

d. Riparian re-vegetation plan; and

e. Marine monitoring plan.

C. Sea Breeze shall file with the Board for approval, at least ninety (90) days prior to the planned start of construction, a Rare Plant survey that includes:

a. the results of the Survey, including all mitigation strategies to protect any identified Species at Risk; and

b. evidence of consultation with Environment Canada regarding satisfaction with the proposed mitigation.

Construction shall not commence until Sea Breeze has received approval of its Rare Plant Survey from the Board.

D. Sea Breeze shall file with the Board for approval, at least ninety (90) days prior to the planned start of construction, a project-specific, potentially acid generating rock (PAG) Plan that includes:

a. Sea Breeze’s mitigation goals and measurable objectives regarding the PAG Plan;

b. the methods and procedures to be used to achieve the mitigation goals;

c. the criteria to determine if the mitigation goals have been met; and

d. the frequency of monitoring activities at area(s) of concern along the right of way and in temporary workspaces.

Construction shall not commence until Sea Breeze has received approval of its PAG Plan from the Board.

E. Sea Breeze shall file with the Board for approval, at least sixty (60) days prior to the planned start of construction, an updated, project-specific Environmental Protection Plan (EPP). This EPP shall be a comprehensive compilation of all environmental protection procedures, mitigation measures, and monitoring commitments, as set out in Sea Breeze's application for the Power Line, subsequent filings, evidence in the EH-1-2006 proceeding, or as otherwise agreed to in its related submissions. The EPP shall describe the criteria for the implementation of all procedures and measures, and shall confirm Sea Breeze's

intention to implement all of its commitments. Construction shall not commence until Sea Breeze has received approval of its EPP from the Board.

The EPP shall include, but is not limited to, the following elements:

a. environmental procedures including site-specific plans, criteria for implementation of these procedures, mitigation measures and monitoring applicable to all project phases and activities;

b. orientation program detailing the manner and frequency of communicating the commitments within the EPP to field staff;

c. a reclamation plan which includes a description of the condition to which Sea Breeze intends to reclaim and maintain the right-of-way once the construction has been completed, and a description of measurable goals for reclamation; and

d. evidence of consultations, with relevant regulatory authorities, landowners or other stakeholders, that either confirms satisfaction with the proposed mitigations or describes any remaining concerns and explains why satisfaction can not be achieved.

F. Sea Breeze shall file with the Board for approval, at least sixty days (60) prior to the planned start of construction, an Unrecoverable (Fishing) Equipment Mitigation Plan that includes:

a. the frequency and methodology to be used to share information with the fishing industry about known sections of unburied or shallow buried cable;

b. the frequency and methodology to be used to share information with the fishing industry about best management practices for gear setting and recovery in the cable corridor;

c. the frequency and methodology to be used to share information with the fishing industry about standard protocols for lost fishing gear recovery within the cable corridor including criteria for abandoning recovery effort due to vessel and crew safety as well as other concerns; and

d. a description of consultation that was undertaken with members of the fishing industry in the development of the Plan.

G. Sea Breeze shall file with the Board, at least sixty (60) days prior to the planned start of construction, a noise assessment for the converter station. The assessment shall include:

a. the existing day-time and night-time ambient noise levels without the converter station operating;

b. a discussion of the Permissible Sound Levels proposed (AEUB Guide 38 or other industry standard) for the station;

c. any further mitigation that Sea Breeze would undertake to address (b); and

d. a discussion of the consultation undertaken with local residents and the municipality about this issue, including any concerns and how those concerns have been, or would be, addressed.

H. Sea Breeze shall file with the Board, at least thirty (30) days prior to the planned start of construction:

a. the AIA of the transmission route, substations and HDD platform; and

b. copies of any correspondence from, or a summary of any discussions with, the Provincial authorities responsible for Archaeological and Heritage Resources regarding the acceptability of Sea Breeze's AIA and proposed mitigation measures for the transmission route, substations and HDD platform.

I. Sea Breeze shall file with the Board, at least fourteen (14) days prior to the planned start of construction:

a. a copy of the archaeologist's preliminary assessment of the areas of moderate to high archaeological potential along the final terrestrial route to ascertain the precise footprint of the Power Line and identify necessary measures should new artifacts or remains be discovered; and

b. a copy of the marine archaeologist's report regarding the locations of submarine archaeological features, including any recommendations or requests for further investigation or route modification, based on a review of the videography and other survey data previously taken.

J. Sea Breeze shall file with the Board and owners of the wells, at least fourteen (14) days prior to the planned start of construction, a report on the quality and quantity of water in water wells within 200 m of the Power Line footprint. The report shall provide the results of the pre-construction water well testing as well as the methodology and a discussion of the results.

K. (1) Sea Breeze shall file for approval at least ninety (90) days prior to the start of HDD at Fleming Beach, a noise control plan containing information on day-time and potential night-time HDD operations, including but not limited to:

a. existing ambient noise levels at the most affected residences;

b. predicted noise level at the most affected residences caused by the HDD without mitigation;

c. proposed HDD noise mitigation measures;

d. predicted noise level at the most affected residence with implementation of the mitigation measures;

e. noise contour map(s) showing the potentially affected residences at various noise levels;

f. a noise monitoring program including locations, methodology and schedule;

g. criteria that will be used to determine when a shut down of the HDD will be required due to noise;

h. criteria that will be used to determine when to notify the Township of Esquimalt and the Board of any noise spikes;

i. confirmation that residents potentially affected by HDD noise have received contact information for Sea Breeze in the event they have concerns about the HDD noise; and

j. a program for addressing noise complaints.

(2) Should Sea Breeze apply for a variance from the Township of Esquimalt Noise Bylaw, it shall concurrently file a copy of its application with the Board. If not included within its application to the Township of Esquimalt, Sea Breeze shall also file with the Board:

a. the expected night time noise levels; and

b. a description of consultation that has taken place with the Township of Esquimalt and with potentially affected residents, including any concerns and how Sea Breeze will address those concerns.

L. Sea Breeze shall file with the Board, at least thirty (30) days prior to the planned start of marine construction, a report that:

a. identifies the selected marine corridor on a map or diagram; and

b. provides the results of the sampling program including, but not limited to, the contamination verification sampling near Macaulay Point.

M. Sea Breeze shall file with the Board, at least fourteen (14) days prior to the planned start of the HDD at Fleming Beach, either:

a. a report describing the anomaly near the HDD exit point (identified in the Archaeological Overview Assessment [AOA]) if the site is ground-proofed; or

b. the method(s) undertaken to ensure that anchors and chains set around the HDD exit point do not impact this area if the site is not ground-proofed.

N. Within three (3) days after blasting occurs at any single blasting location, Sea Breeze shall conduct tests on the quantity and quality of water in water wells that are within 200 m of that single blasting location. Sea Breeze shall file a report with the Board and the owners of those wells, within thirty (30) days of all tests being completed, discussing the outcome of these tests and potential mitigation measures, if any.

O. Sea Breeze shall file with the Board, within sixty (60) days after the in-service date of the Power Line, as-built drawings identifying the location of all facilities

including, but not limited to, the converter station, cable and submarine protection mats.

P. Sea Breeze shall file with the Board, within ninety (90) days after the in-service date of the Power Line, a post-construction noise assessment to assess the effectiveness of any mitigative measures implemented at the converter station as a result of recommendation G.

Q. On or before the 31 of January of the first, second and fifth year following the in-service date of the Power Line, Sea Breeze shall file with the Board a Post-Construction Geoduck Recovery Monitoring Report that:

a. identifies on a map or diagram the follow-up location(s) for the geoduck recovery monitoring;

b. provides a discussion of the scientific methodology applied for the recovery program;

c. provides the criteria to be used to verify the accuracy of the environmental assessment predictions;

d. assesses the effectiveness of the mitigation applied before, during and after construction;

e. identifies the current status of any issues identified, and whether those issues are resolved or unresolved; and

f. provides proposed measures and a schedule by which Sea Breeze would address any unresolved concerns.

8.0 THE NEB'S CONCLUSION

The NEB is of the view that with the implementation of Sea Breeze's environmental protection procedures and mitigation measures and the NEB's recommendation(s), the proposed Project is not likely to cause significant adverse environmental effects.

This environmental screening report was approved by the NEB on the date specified on the cover page of this report under the heading CEA Act Determination Date.

9.0 NEB CONTACT

Michel L. Mantha
Secretary
National Energy Board
444 Seventh Avenue S.W.
Calgary, Alberta T2P 0X8
Phone: 1-800-899-1265

Facsimile: 1-877-288-8803
secretary@neb-one.gc.ca

APPENDIX 1: Project-related issues raised in comments received by the NEB

Stakeholders	Summary of Comments
Town of View Royal, property owners, Goodwill Investments Ltd.	Water Quality and Quantity • impact on waterways at crossings (8 waterways to be crossed, including Craigflower Creek) • impact to water wells
Commercial fishers	Fish and Fish Habitat • impact to fish stocks (halibut, Dungeness crab, prawns)
Township of Esquimalt	Air Quality • dust and mud during construction
Property owners, business owners, Township of Esquimalt, Town of View Royal	Human Occupancy/ Resource Use • disruption to local residents, businesses and emergency services during construction
Property owners	Human Occupancy/ Resource Use • IPL planned for roads that are central to communities' emergency evacuation route • disruption to recreational pursuits in Macaulay Point and Fleming Beach during HDD operation
Songhees First Nation, Esquimalt First Nation	Traditional Land and Resource Use
Township of Esquimalt	Human Health/ Aesthetics • noise: blasting and HDD
Property owners, business owners, Goodwill Investments Ltd.	Human Health/ Aesthetics • electromagnetic fields • noise: blasting and HDD
Property owners	Accidents/Malfunctions • earthquake may break IPL in proximity of gas line, resulting in arcing and explosion
Property owners	Effects of the Environment on the project • earthquake may break IPL in proximity of gas line, resulting in arcing and explosion

APPENDIX 2: Project-related issues raised through consultation conducted by Sea Breeze

Stakeholder	Summary of Comments
Property owners	Water Quality and Quantity • impact on waterways at crossings (8 waterways to be crossed, including Craigflower Creek)
Commercial fishers	Fish and Fish Habitat • impact to fish stocks (halibut, Dungeness crab, prawns)
Property owners, business owners	Human Occupancy/ Resource Use • disruption to local residents, businesses and emergency services during construction
Songhees First Nation, Esquimalt First Nation	Traditional Land and Resource Use
Property owners, business owners	Human Health/ Aesthetics • electromagnetic fields • noise: blasting and HDD
Property owners	Accidents/Malfunctions • earthquake may break IPL in proximity of gas line, resulting in arcing and explosion
Property owners	Effects of the Environment on the project • earthquake may break IPL in proximity of gas line, resulting in arcing and explosion

APPENDIX 3: Project-related advice provided by Responsible Authorities/Federal Authorities in Possession of Specialist Advice

Department / Agency	Level of Participation		Summary of Comments
	RA	FA Specialist Advice	
Environment Canada	X		Disposal at Sea permit requirements including sediment samples, drilling mud characterization, volume of sediment to be removed while trenching and the risk of potential spread of sediment contaminants. Rare plant survey required and further detail on use of herbicides and potential impacts to wetlands.
Transport Canada	X		Specific mitigation measures relating to the *Navigable Waters Protection Act.* TC indicated that they would provide guidance to the proponent relating to leave required under the *National Energy Board Act* to construct crossings of navigable waters.
Fisheries and Oceans		X	Discussion of heat production, MFs, installation procedures including HDD and how they relate to the harmful alteration, disruption and destruction of fish habitat (HADD). DFO also indicated that it requires additional information to determine whether it would be triggered as an RA under the CEA Act.

APPENDIX 4: Significance criteria definitions

Criteria	Rating	Definition
All criteria	Uncertain	When no other criteria rating descriptor is applicable due to either lack of information or inability to predict
Frequency	Single/Rare	One-time event within any one phase of the project lifecycle
	Multiple/Frequent	Multiple occurrences during any phase of the project lifecycle
	Continuous	Continuous through any phase of the project lifecycle
Duration	Short-term	Effect duration is in the order of months and/or limited to the proposed construction period
	Medium-term	Effect duration is in the order of a few years
	Long-term	Effect would remain evident throughout the planned operation of the IPL or longer
Reversibility	Reversible	Effect expected to return to baseline conditions within the life of the project
	Possible	Effect may or may not return to baseline conditions within the life of the project
	Irreversible	Effect would be permanent, or reversible beyond the lifecycle of the project
Geographic Extent	IPL Corridor	Effect would be limited to within the proposed IPL row
	Local	Effect may extend beyond the IPL corridor but would be confined to within the study area around the proposed row (varies depending on discipline and issue)
	Regional	Effect reaches beyond the study area
Magnitude	Low	• Effect is negligible, if any, or • Effect anticipated to be restricted to a few individuals or only slightly affect the resource or parties involved • Factors related to a species' population levels would not be affected • Proposed project is consistent with, and effect is confined to, land use zoning • Effect could impact quality of life for some, but individuals commonly adapt or become habituated, and the effect is widely accepted by society
	Moderate	• Effect would impact many individuals or noticeably affect the resource or parties involved • Factors related to a species' population levels would be affected to a degree that change within natural limits of variability would occur • Proposed project is not inconsistent with land use zoning but effect would encroach on neighbouring land use sensitivities • Effect could impact quality of life but the effect is normally accepted by society

Criteria	Rating	Definition
	High	• Effect would affect numerous individuals or affect the resources or parties involved in a substantial manner; • Factors affecting species' population levels would be altered to a degree that change beyond natural limits of variability would occur; resilience would be impaired; • Effect crosses a critical threshold • Proposed project is inconsistent with land use zoning or inconsistent with other land uses and sensitivities • Effect would impact quality of life, result in lasting stress and is generally not accepted by society except under extenuating circumstance
Evaluation of Significance	Likely to be significant	Effects that are of high magnitude, or of continuous frequency, irreversible, long-term in duration and regional in extent
	Not likely to be significant	Any adverse effect that does not meet the above criteria for 'Significant'