Plutonic Hydro Inc.

Email: bill.irwin@plutonic.ca

December 19, 2008

Mr. Steve Chapman
Acting Associate Director
Western Division
Canadian Environmental Assessment Agency
Place Bell Canada
160 Elgin Street, 22nd Floor
Ottawa, ON K1A 0H3

Ms. Kathy Eichenberger
Project Assessment Director
BC Environmental Assessment Office
PO Box 9426 Stn Prov Govt
Victoria, BC V8W 9V1

Mr. Adam Hendriks
Director
Natural Resources Canada - Major Projects Management Office
55 Murray Street, 6th Floor, Room 600
Ottawa, ON K1N 5M3

Dear Mr. Chapman, Ms. Eichenberger, and Mr. Hendriks:

Re: Revised Project Description for the Bute Inlet Hydroelectric Project

As reflected in our letter dated November 27, 2008, the amended Project Description for the Bute Inlet Hydroelectric Project (Project) reflects the following changes:

- Removal of the Elliot Neighbour Creek facility from the Project
- Removal of the Southgate River 3 facility from the Project
- Additional of the Allaire Creek facility to the Project
- Amended location for the Raleigh Creek powerhouse
- Amended location for the Jewakwa River powerhouse
- Removal of the Bute Inlet to Campbell River transmission line route.

In addition, information requested by agencies over the past several months has been incorporated.

1.0 INTRODUCTION

Plutonic Power Corporation (Plutonic) is pleased to submit a revised Project Description of the proposed Project for review under the Canadian Environmental Assessment Act (CEAA) and the British Columbia Environmental Assessment Act (BCEAA). This revision incorporates information required by the Major Project Management Office (MPMO) of Natural Resources Canada (NRCan) as outlined in the October 16, 2008 version of the guidance document entitled *Guide to Preparing a Project Description for a Major Resource Project*. In addition, other information that was specifically requested by agencies following their early engagement (per Section II of the MPMO document) review of the May 7, 2008 version of the Project Description, have been incorporated.

As proposed, the Bute Inlet Hydroelectric Project will have a rated nameplate capacity 1,027 MW, and 227 km of 500 kV electrical transmission line extending from Bute Inlet to the point of interconnection at the BCTC Malaspina substation. Under the CEAA Comprehensive Study List Regulations, a comprehensive study is triggered by a hydroelectric generating station with a production capacity of 200 MW or more and/or the construction of transmission line with a voltage of 345 kV or more on 75 km or more of new right of way. Under the BCEAA Reviewable Projects Regulation (BC Reg. 370/2002), the reviewability threshold for a new hydroelectric power plant facility is a rated nameplate capacity of 50 MW or more. Therefore, the Project triggers the CEAA Comprehensive Study List Regulations, as well as the BCEAA Reviewable Projects Regulation. It is anticipated that a harmonized Federal – Provincial environmental assessment procedure will be required. The harmonized review will be facilitated and streamlined by the MPMO.

This document is organized into the following sections:

1.0 INTRODUCTION
2.0 GENERAL PROJECT INFORMATION
3.0 PROPONENT INFORMATION
4.0 PROJECT DEVELOPMENT RATIONALE
5.0 PROJECT CHARACTERISTICS
6.0 SITE CONDITIONS AND CONSIDERATIONS
7.0 MAXIMIZING THE POTENTIAL OF THE RESOURCE
8.0 POTENTIAL EFFECTS

2.0 GENERAL PROJECT INFORMATION

The Project will be comprised of three interconnected groups of run-of-river hydro facilities on tributaries to rivers that drain to Bute Inlet on British Columbia's central coast. In total, the three groups will be comprised of 17 run-of-river facilities, generating a total nameplate capacity of 1,027 MW. Six facilities (Southgate Group) will be located in the Southgate River Drainage, three facilities (Orford Group) in the Orford River Drainage, and eight facilities (Homathko Group) will be located in or near the Homathko River Drainage. Figure 1 illustrates the Project location and general Project layout.

Each group of facilities will be connected to the proposed substation near the mouth of the Southgate River (referred to as the Pigeon Valley Collector Substation in figures associated with this document) through 216 km of 230 kV collector transmission lines on new right of way. From the proposed substation located near the mouth of the Southgate River, electricity will be transmitted 227 km through a 500 kV trunk transmission line to the point of interconnection with the British Columbia Transmission Corporation (BCTC) grid, at the BCTC Malaspina substation near Earls Cove. Plutonic has chosen to develop the Project strategically, with a significant portion of the proposed 500 kV transmission line paralleling the existing East Toba River and Montrose Creek Hydroelectric Project (Toba Montrose Project) transmission line, thereby reducing the 'spider web effect' of transmission lines on the environment.

Due to the nature and location of the Project, the basis for the clustering of the 17 facilities and related infrastructure into a single Project is the physical, operational, and financial interdependence of each individual component on each of the other individual components. Use of shared infrastructure such as transmission lines and roads, also reduces the 'spider web effect' of transmission lines on the landscape. As such, the construction and operation of each individual facility is dependant upon the existence of the other individual facilities. Similarly, construction and operation of the facilities is dependent on the existence of supporting infrastructure (e.g. barge landings, roads, water crossings, etc.) as well as the common transmission trunk line that connects production with consumption.

3.0 PROPONENT INFORMATION

Name: Plutonic Power Corporation
Address: Suite 600, 888 Dunsmuir Street
Vancouver, BC, V6C 3K4
Phone: 604-669-4999
Fax: 604-682-3727
Email: bruce.ripley@plutonic.ca and bill.irwin@plutonic.ca

Name of Representative Managing the Project:

Company representative: Bruce Ripley, President and Chief Operating Officer
(604-669-4999)
bruce.ripley@plutonic.ca

Bill Irwin, Director, Land and Resource Management
(604-669-4999)
bill.irwin@plutonic.ca

Lead technical consultant: Sam Mottram, P.Eng, Knight Piésold Ltd.
(604-685-0543)
(smottram@knightpiesold.com)

Company Incorporation and Structure:
Plutonic Power Corporation through its wholly owned subsidiary Plutonic Hydro Inc.

Stock Exchange Listing:
PCC - TSX

Company Website:
www.plutonic.ca

4.0 PROJECT DEVELOPMENT RATIONALE

The demand for electricity in British Columbia is increasing beyond what we can produce and our province now supplies up to 15% of its demand with electricity from Alberta and the U.S that is produced primarily from fossil fuels. The recently released BC Energy Plan looks to all forms of clean, alternative energy in meeting BC's growing energy demands.

This BC Energy Plan shows great environmental leadership, including:

- Zero greenhouse gas emissions from coal fired electricity generation.

- All new electricity generation projects will have zero net greenhouse gas emissions for existing thermal generation power plants by 2016.

- Ensure clean or renewable electricity generation continues to account for at least 90 per cent of total generation.

- No nuclear power.

- Best coalbed gas practices in North America.

- Eliminate all routine flaring at oil and gas producing wells and production facilities by 2016 with an interim goal to reduce flaring by 50 per cent by 2011.

- Achieve electricity self-sufficiency by 2016.

The proposed Project will generate “Green Power” as defined by BC Hydro from 17 run-of-river hydroelectric generation facilities. The Project is being developed in response to the November 2008 Clean Power Call issued by BC Hydro. If selected, the Project will greatly advance the ability of British Columbia to meet self-sufficiency targets, while maintaining compliance with the strong environmental objectives of the BC Energy Plan.

The Project will fit well with the mandate of the Province to reduce greenhouse gas emissions (GHG). The BC government has set an ambitious goal for reducing the province’s GHG emissions and committed to achieving that goal through action across all sectors of the economy. Key components of BC's provincial strategy on climate action are:

- Aggressive but achievable targets for provincial emissions reduction for 2012, 2016, 2020 and 2050;

- Legislated mandatory caps on major BC emitters, as part of a GHG trading system being developed in partnership with other jurisdictions; and

- A comprehensive set of sectoral actions to help achieve the provincial reduction targets.

The Project will help BC meet its growing demand for electricity and also help to reduce the frequency of relying on imported electricity, while supporting the objectives of the Kyoto Protocol to the United Nations Framework Convention on Climate Change.

The Project will be a $3 to 4 billion capital investment with significant construction employment opportunities and economic benefits to First Nations and local communities. During operations, the Project will generate seasonal and full time employment, while contributing tax revenue to Provincial and Regional governments.

5.0 PROJECT CHARACTERISTICS

5.1 Project Location

Figure 1 shows a conceptual plan of the Project, including facility locations and the transmission line routing that will connect the proposed facilities to the provincial grid. The Project facilities generally center around the head of Bute Inlet at approximately 50° 53' 60" N latitude and 124° 47' 24" W longitude.

5.2 Project Capacity and Energy Generation Potential

Table 1 provides a summary of facility capacities and energy generation potentials. Also included in the table are the design flows and gross heads associated with each facility.

5.3 Project Access

Barge Landings

A total of five permanent barge landings including the Homathko, Bear, Potato Point, Southgate, and Orford facilities will be used to access the Project area during construction and operation phases. Locations of the five barge landings are shown on Figure 2. The Potato Point, Southgate, and Orford barge landings will require upgrades to accommodate the needs of the heaviest loaded barges that will be used during the construction phase of the Project. The designs of the barge landings will account for daily and seasonal tide levels.

Temporary barge landings are likely to be required to accommodate construction of the transmission trunk line from the substation located near the mouth of the Southgate River to the point of interconnection at Malaspina. Figure 2 illustrates the anticipated locations of temporary barge landings required for construction of the transmission trunk line.

As practical, float planes, fixed wing aircraft, and helicopters will also be used to access the Project area. In the case of fixed wing aircraft, existing airstrips in the Homathko, Southgate, and Orford River drainages will be utilized.

Southgate Group

Access to the Southgate River 1, Southgate River 2, Allaire Creek, Raleigh Creek, Icewall Creek, and Elliot Creek facilities will be via an existing forestry mainline road (that will need to be reactivated) that follows the Southgate River Valley from the head of Bute Inlet as indicated in Figure 3. An existing mainline road extends up the Southgate River valley from the head of the inlet. Additional mainline road and various spur roads will need to be constructed up individual catchments to provide access to facility powerhouse and intake sites. A total of approximately 92 km of permanent road (existing, reactivated, and new) will be associated with the Southgate Group. A detailed illustration of the proposed road design is provided in the Road Report figures included in Appendix A. Approximately 20 sites for bridges have been identified for crossings of the Southgate River and its tributaries.

Orford Group

Algard Creek, North Orford and East Orford River facilities will be accessed through the existing barge facility in Orford Inlet, and the existing forestry mainline road that follows the Orford River valley from the barge facility. As indicated in Figure 4, a mainline road exists, which will need to be refurbished for use during the Project. Existing logging roads extend up the East Orford River, North Orford River and Algard Creek valleys for most of the proposed alignments; these roads will be upgraded and extended to provide access to the intake structures. A total of approximately 40 km of permanent road (existing, reactivated, and new) will be associated with the Orford Group. A detailed illustration of the proposed road design is provided in the Road Report figures included in Appendix A. Approximately 21 sites for bridges have been identified for crossings of the Orford River and its tributaries.

Homathko Group

Coola Creek, Scar Creek, Whitemantle Creek, Brew Creek, Jewakwa River and Heakamie River facilities will be accessed by an existing forestry road mainline that follows the Homathko River Valley north from Waddington Harbour at the head of Bute Inlet along the Homathko River. As shown in Figure 5, a mainline access road exists along the Homathko River. Two major bridges crossing the Homathko River will be required, one near the mouth of the Homathko River and the other to access the Heakamie and Jewakwa River facilities, via upgraded existing logging roads. Gargoyle Creek will be accessed via upgraded existing access roads from the Homathko barge facility located a short distance up the

Homathko River from the mouth. Existing logging roads are also located further up the Scar, Brew, Jewakwa, Coola and Whitemantle Creek valleys, which will be used to access these facilities for construction and operation. A total of approximately 135 km of permanent road (existing, reactivated, and new) will be associated with the Homathko Group. A detailed illustration of the proposed road design is provided in the Road Report figures included in Appendix A. Approximately 63 sites for bridges have been identified for crossings of the Homathko River, Teaquahan River and their tributaries.

Access to Bear River is shown on Figure 6. Access will be via barge from Bear Bay barge facility located in Bute Inlet. New access roads will be constructed to connect the barge landing to facility components. A total of approximately 3.6 km of permanent road (existing, reactivated and new) will be associated with the Bear River Facility.

Transmission Trunk Line Access

On a site by site basis, permanent and temporary roads will be required for access during construction of the transmission trunk line extending from the proposed substation located near the mouth of the Southgate River to the BCTC Malaspina Substation. Access road construction will be limited to necessary areas. Much of the proposed transmission line corridor and road network will be shared with the existing Toba Montrose Project right of way.

Temporary Access

In addition to the permanent roads that are required to access the intakes and powerhouses, short sections of temporary road may also be required to provide construction access.

Borrow and Fill

Borrow and fill requirements for road construction will be addressed on a site by site basis; however, movement of materials will be optimized to reduce impacts that may result from importation, exportation and transportation of materials. Plutonic is committed to avoiding Project impacts to fish and fish habitat, through careful selection of construction material borrow sites. Borrow sites will be developed as rock quarries adjacent to the upslope side of access roads along the valley sidewalls where there are no fish-bearing streams or wetlands in the associated disturbance areas. In the unlikely event that suitable gravel deposits are identified elsewhere these will only be developed where the associated disturbance area does not conflict with fish habitat.

5.4 Project Layout

The overall Project layout is illustrated in Figure 1 and layouts for each of the individual facilities can be found in Figures 6 through 22. All Project facilities are considered permanent structures. The following subsections provide descriptions of each facility structural component.

Intake

There are three design combinations of weir and intake types (referred to collectively as 'intake styles') that are incorporated in Project facilities, including:

1. Free overflow weir and Coanda screen intake (referred to as Coanda screen intake style in this document),

2. Rubber weir and open portal intake (referred to as rubber weir intake style in this document), and

3. Free overflow weir and open portal intake (referred to as an open portal intake style).

All three intake styles will have the following common design features:

1. Concrete retaining walls and earth embankments, and

2. An intake structure comprised of a sediment trap, penstock isolating gate and sluice gate that will transfer a portion of the creek's flow to the penstock.

Basic design parameters for the intakes are as follows:

- Each intake weir structure will be sized to pass the 1:200 year instantaneous peak flood event.

- Sediment and bedload transported by the creek will be passed directly over the deflated rubber weir or Coanda screen. In the case of the rubber weir arrangement, a sluice gate will also be installed to allow the operator to flush the area directly in front of the intake screens.

- Floating debris (logs, etc) will be allowed to pass over the top of the concrete weir.

- The intake structure will be sized to transfer the design flow to the penstock.

- Minimum instream flow requirements will be delivered to the diversion section.

The facilities that divert larger design flows will utilize a rubber weir intake (with the exception of Heakamie River facility), while those with smaller design flows or with significant sediment load will utilize Coanda screen intakes. The selection of the open portal design for the Heakamie River facility is based on the combination of high design flows and physical constraints in the vicinity of the intake structure.

Geographic coordinates, elevations and intake styles of each of the facilities are summarized in Table 2. Figures 23 and 24 show typical rubber weir and Coanda screen style intakes, respectively; and the open portal intake style design is a combination of the free overflow weir depicted on Figure 23 and the open portal intake depicted on Figure 24.

Water Conveyance System

The proposed water conveyance system installed at each facility will be steel high-pressure penstock. Each water conveyance system will be designed to minimize its length, footprint, cost and hydraulic loss, while maximizing constructability and energy production. A summary of the proposed conveyance system for each facility is shown in Table 3. The alignment of each facility's water conveyance system is shown on Figures 6 through 22.

Powerhouse

The powerhouses at each of the facilities will share the following common features:

- Reinforced concrete foundations and substructure.

- Reinforced concrete and steel framework superstructure with block walls and steel roof.
- Turbine generator sets with either a Pelton or a Francis turbine runner.
- Switchyard with a 13.8 kV to 230 kV step-up transformer.
- Tailrace structure.

A summary of the number and type of turbines installed in each powerhouse is presented in Table 2. The proposed location of each facility's powerhouse is shown on Figures 6 through 22. A typical powerhouse arrangement illustrating a 2-turbine operation and a typical tailrace cross section are shown on Figures 25 and 26, respectively.

230 kV Collector Transmission Lines

The routing of the individual collector legs of transmission line, which connect each individual facility to the trunk transmission line is illustrated on Figure 1 and Figures 6 through 22. All electricity transmitted from the facilities will be carried on 230 kV collector lines to the proposed substation located near the mouth of the Southgate River. Preliminary estimates indicate 216 km of 230 kV transmission collector line will be required to connect the facilities to the proposed substation located near the mouth of the Southgate River. At the proposed substation located near the mouth of the Southgate River, the voltage will be stepped up to 500 kV for transmission to the BCTC Malaspina Substation.

Southgate Group

The Southgate Group facilities will be connected to the proposed substation located near the mouth of the Southgate River by a transmission collector line that roughly follows the Southgate mainline road, running sequentially to each facility in turn, along either upgraded existing roads and/or proposed roads. The proposed alignment of the Southgate Group collector transmission line is shown on Figures 1 and 27.

Orford Group

The Orford Group facilities will also be connected to the proposed substation located near the mouth of the Southgate River by a transmission collector line that roughly follows the Orford mainline road, and north parallel to the transmission trunk line right of way. The proposed alignment of the Orford Group collector transmission line is shown on Figures 1 and 28.

Homathko Group
Coola Creek, Scar Creek, Whitemantle Creek, Brew Creek Jewakwa River, Heakamie River, and Gargoyle Creek facilities will be connected by a shared transmission collector line that roughly follows the Homathko River mainline road. The transmission collector line will run sequentially to each facility in turn, running along either the existing or proposed access roads, and will connect to the proposed substation located near the mouth of the Southgate River. The Bear River facility's collector line will connect to the rest of the Homathko Group collector line at the Homathko Tap Station located near the mouth of the Homathko River. The location of the Homathko Tap Station is presented in Figure 1. The proposed alignment of the Homathko Group collector transmission line is shown on Figures 1 and 29.

500 kV Transmission Trunk Line and Interconnection

The proposed point of interconnection for the Project is the existing BCTC Malaspina Substation, near Earls Cove. Transmission trunk line routing and connection to the BCTC Malaspina Substation location from the proposed substation located near the mouth of the Southgate River is shown on Figure 1. Preliminary estimates indicate that 227 km of 500 kV transmission trunk line will be required for the Project.

The proposed transmission trunk line route extends from the proposed substation located near the mouth of the Southgate River to the Algard River valley, over the crest of the mountain, through the Brem River valley, along the north side of Toba Inlet. At that point, the transmission line will be located parallel to the Toba Montrose Project transmission line right-of-way (currently under construction) from Toba Inlet to the new BCTC Saltery Bay Substation. The transmission trunk line will then run parallel to the existing BCTC transmission line from Saltery Bay to the existing BCTC Malaspina Substation.

Ancillary Development and Services

Numerous temporary and permanent support infrastructure/resources will be required throughout the construction phase of the Project. Examples include barge landings, water supply, waste disposal, material requirements, energy supply, work camps, radio towers, and staging areas. Final locations and arrangements for these infrastructure/resources continue to be investigated, but Plutonic intends to situate and select locations and arrangements that make the most efficient and benign use of available resources. Required ancillary services such as fuel and equipment delivery will be determined on an as needed basis and will also be managed in a manner that meets provincial and federal regulations and minimizes potential impacts.

6.0 SITE CONDITIONS AND CONSIDERATIONS

6.1 Hydrology

All 17 of the proposed facilities are located in the Southern Coast Mountains of British Columbia. This area is characterized by steep, mountainous terrain, with dense forest cover at low elevations and significant glacier cover at high elevations. Runoff is derived from a combination of rainfall, snow melt, and glacier melt. The annual hydrographs are generally characterized by rising flows during the spring freshet; high summer flows resulting from a combination of snow melt and glacial melt; receding flows during the late summer and fall when glacial melt diminishes; and low flows during the winter when the majority of the region is frozen. The monthly distribution of annual runoff varies from site to site according to a basin's elevation range, surface cover including glacier presence and extent, and proximity to the coast. Peak runoff events typically occur during the spring and summer months due to snow and or glacier melt, or during the autumn and early winter months due to intense precipitation events from large Pacific frontal systems that often combine with the melt of immature snowpacks.

To ensure that the design and operation of the proposed hydroelectric facilities are consistent with water availability, and in order to properly assess their electricity generating potential, it is necessary to determine the long-term flow regimes of the creeks. Ideally, these would be derived from more than 20 years of continuous flow monitoring data on each creek, but, as is commonly the case, long-term historical flow records are not available. Rather, data recorded over the last year or more are used in conjunction with long-term regional flow records collected by Water Survey of Canada (WSC) to develop estimates of the long-term mean annual discharges and the frequency distributions of daily flows in the different watersheds. Locations and watershed characteristics of the regional stations were reviewed and the Elaho River (WSC 08GA071) and Bridge River (WSC 08ME023) datasets were identified as the most appropriate available for modeling flows for the 17 proposed facilities, both in terms of similarity of hydrologic characteristics and having long-term periods of record that overlap the site-specific short-term periods of record. The locations of the regional WSC stations and all 17 facilities are presented on Figure 27, while the watershed characteristics of the regional WSC stations are listed in Table 5. The frequency distributions of daily flows for concurrent periods of record were compared by regression analysis, on a seasonal basis, to develop seasonal scaling relations between the flows in each creek and either the Elaho River or Bridge River flows. These relations were then applied to the long-term daily flow records for the Elaho River and/or Bridge River to produce a long-term synthetic daily flow series for the stream gauging location of each facility. For each creek where the stream gauge was not located at the proposed intake site, the synthetic streamflow series was then scaled to the intake location by use of a site-specific scaling curve developed with the University of British Columbia Watershed Model. These curves account for differences in basin size, glacier cover, and elevation range.

These long-term synthetic flow series provide the basis for the hydrologic assessment of the Project. A summary of the physical watershed characteristics and a few select streamflow statistics for each facility is provided in Table 5.

6.2 Instream Flow Requirements

The Instream Flow Requirements (IFRs) for sustaining the aquatic ecosystems in each facility's creek will be determined through detailed fisheries and habitat studies in the next stage of project development. At this early stage, preliminary IFRs have been utilized as place holders during modeling exercises. Preliminary IFRs are summarized in Table 2. Each facility's predicted capacity and energy generation potential presented in this report are based on these preliminary IFRs.

6.3 Fisheries

Freshwater (Project Facility Watercourses)

The following subsections, supported by Table 6 summarize current information regarding fisheries resources and habitat considerations in the facility watercourses (based on field studies conducted in 2007 and 2008). Specific details relating to each facility (e.g. water depth, hydrographs, aquatic and riparian vegetation, barriers to fish passage, marine information, etc.) will be provided during the assessment phase of the Project.

Bear River

The proposed intake is located 3.5 km upstream of the mouth of Bear River where it flows to Bear Bay on Bute Inlet. The powerhouse is sited 1.4 km upstream of the mouth above an impassable fish migration barrier at 0.6 km. Fish sampling has confirmed the presence of char above the intake. The numbers of char detected was very low relative to the level of effort. The habitat upstream of the powerhouse has been confirmed as inaccessible to anadromous species.

Coola Creek

The proposed intake and powerhouse are located approximately 4.7 km and 1.1 km upstream from the mouth of Coola Creek at its confluence with the Homathko River. No confirmed fish migration barriers have been identified within the diversion section although an impassable barrier is present upstream of the proposed intake 5.1 km from the mouth. Fish sampling has confirmed the presence of char in the upper diversion section. The number of char detected was very low based on the level of effort. It is speculated that very high glacial influences in the watershed limit productivity and the use of Coola Creek by other fish species. While the habitat appears to be very marginal further studies are required to assess fish utilization. Studies to date have not detected any anadromous use of the diversion section.

Scar Creek

The proposed intake and powerhouse are located approximately 12.6 km and 3.9 km upstream of the mouth respectively. A potential migration barrier has been identified approximately 4.1 km upstream of the mouth. A resident char population has been identified upstream of this potential barrier. The habitat upstream of the powerhouse is likely too marginal to support significant use by anadromous species.

Whitemantle Creek

The proposed intake and powerhouse are located approximately 6.7 km and 0.9 km upstream from the mouth of Whitemantle Creek at its confluence with the Homathko River. The powerhouse is sited at the outlet of a steep canyon section that includes several impassable barrier falls. Fish sampling has confirmed the upper diversion section as non fish-bearing. The short reach upstream of the powerhouse is dominated by steep cascade pool habitat. Fish habitat is this short section is extremely marginal. The habitat located upstream of the powerhouse is too marginal to support significant use by anadromous species.

Brew Creek

The proposed intake and powerhouse are located approximately 6.9 km and 0.9 km upstream from the mouth of Brew Creek at its confluence with the Homathko River. The powerhouse is sited near the outlet of a steep canyon section that includes several impassable barrier falls. Fish sampling has confirmed the upper diversion section as non fish-bearing. The short reach upstream of the powerhouse is dominated by moderate gradient cascade pool habitat. Fish habitat is this short section is marginal. The habitat upstream of the powerhouse is too marginal to support significant use by anadromous species.

Jewakwa River

The proposed intake and powerhouse are located approximately 13.9 km and 7.7 km upstream from the mouth of Jewakwa River at its confluence with the Homathko River. The powerhouse is sited 0.5 km downstream of a potential fish migration barrier. Fish habitat in this short section is marginal. No fish have been detected after intensive sampling of the reach upstream from the potential barrier located 14.4 km from the mouth. Fish sampling has confirmed the upper diversion section as non fish-bearing.

Heakamie River

The proposed intake and powerhouse are located approximately 11.1 km and 7.5 km upstream from the mouth of Heakamie River at its confluence with the Homathko River. The powerhouse is sited at the outlet of a short canyon section that includes several cascades. Char, rainbow trout, and cutthroat trout have been detected in the reach immediately above the canyon. Fish sampling has confirmed the upper diversion section as non fish-bearing. No coho salmon juveniles or adults have been detected in the reach above the first canyon located about 7.6 km from the mouth.

Gargoyle Creek

The proposed powerhouse is located upstream of a migration barrier at the mouth of Gargoyle Creek. Fish sampling has confirmed the diversion section as non fish-bearing.

Elliot Creek

The proposed intake and powerhouse are approximately 7.7 km and 1.3 km upstream from the mouth of Elliot Creek at its confluence with the Southgate River. Fish sampling has confirmed the upper diversion section as non fish-bearing above the falls 1.8 km from the mouth. Approximately 0.5 km of Elliot Creek that is accessible to anadromous fish species falls in the proposed diversion section. The powerhouse is appropriately sited near the outlet of a confined canyon section that includes an impassable barrier falls. The short reach upstream of the powerhouse is dominated by moderate gradient cascade pool habitat. Fish habitat is this short section is marginal. The habitat upstream of the powerhouse is too marginal to support significant use by anadromous species.

Icewall Creek
The proposed intake and powerhouse are located 3.5 km and 0.4 km upstream of the mouth of Icewall Creek at its confluence with the Southgate River. A series of fish migration barriers have been documented starting approximately 0.6 km upstream of the mouth. Fish sampling has confirmed the upper diversion section as non fish-bearing above these falls. The powerhouse is appropriately sited near the toe of the valley sideslope just below the first migration barrier. The short reach upstream of the powerhouse is dominated by moderate gradient cascade pool habitat. Fish habitat in this short section is marginal. The habitat upstream of the powerhouse is too marginal to support significant use by anadromous species.

Raleigh Creek
The proposed intake and powerhouse are located approximately 3.4 km and 0.7 km upstream of the mouth of Raleigh Creek at its confluence with the Southgate River. A series of potential fish migration barriers have been documented starting approximately 1.2 km upstream of the mouth. Fish sampling has confirmed the upper diversion section as non fish-bearing above these falls. The powerhouse is sited about 0.5 km downstream based on terrain constraints. The reach upstream of the powerhouse is dominated by moderate gradient cascade pool habitat. Fish habitat in this short section is marginal.

Southgate River 1
The proposed intake and powerhouse are located approximately 55 km and 46 km upstream of the mouth of the Southgate River. The powerhouse is located about 0.7 km upstream from the Southgate-Bishop confluence at the outlet of narrow canyon. A series of potential fish migration barriers have been documented starting approximately 0.3 km upstream of the powerhouse. Fish sampling has confirmed the upper diversion section as non fish-bearing above the inaccessible gorge. The accessible reach upstream of the powerhouse is

heavily confined within a bedrock gorge. Fish habitat in this section is marginal. The habitat upstream of the powerhouse is too marginal to support significant use by anadromous species.

Southgate River 2
The proposed powerhouse is located upstream of the Southgate River 1 intake. Fish sampling has confirmed the diversion section as non fish-bearing.

Allaire Creek
The proposed powerhouse is also located upstream of the Southgate River 1 intake. Fish sampling has confirmed the diversion section as non fish-bearing.

Algard Creek
The proposed intake and powerhouse are located approximately 7.8 km and 2.7 km upstream from the mouth of Algard Creek at its confluence with the Orford River. An impassable migration barrier has been documented approximately 3.4 km upstream of the mouth although several potential barriers are present in the confined canyon reach just upstream of the powerhouse. A resident char population has been identified upstream of the intake. The habitat upstream of the powerhouse is too marginal to support significant use by anadromous species.

East Orford River
The proposed intake and powerhouse are located approximately 27 km and 20 km upstream from the mouth of Orford River where it flows to Orford Bay on Bute Inlet. An impassable migration barrier has been documented approximately 5.5 km upstream of the mouth. Fish sampling has confirmed the upper diversion section as non fish-bearing. Resident char have been captured in the lower diversion section. An impassable barrier falls limits anadromous use of the Orford River to its lower watershed, well below the proposed powerhouse location.

North Orford River
The proposed intake and powerhouse are located approximately 3.9 km and 1.3 km upstream from its confluence with the Orford River. A migration barrier has been documented approximately 2.6 km upstream of the mouth. Fish sampling has confirmed the upper diversion section as non fish-bearing. Resident char have been captured in the lower diversion section. An impassable

barrier falls limits anadromous use of the Orford River to its lower watershed, well below the proposed powerhouse location.

Marine

Marine environments associated with the Project area are restricted to the five permanent barge landing locations and any temporary barge landing locations associated with construction of the transmission trunk line. To date, marine surveys have not been carried out at these barge landing sites, but they are planned for the 2009 field season. Marine species inhabiting the area are expected to be similar at all of the barge landing sites. The most important fish species occurring in these barge landing areas include juvenile salmonids (six *Oncorhynchus* species and two *Salvelinus* species), lingcod (*Ophiodon elongatus*), flounder species, s*piny dogfish* (*Squalus acanthias*), and rockfish species (genus Sebastes). Eulachon (*Thaleichthys pacificus*) are included in this list due to their historical importance to First Nations although it is unknown if they currently use these areas. Other fish species are likely to include kelp greenling (*Hexagrammos decagrammus*), surfperch species, and sculpin species (genus *Cottus*) and shrimp species including spot prawn (*Pandalus platyceros*) are also prevalent in the area. Rockweed (*Fucus gairdneri*), enteromorpha *(Enteromorpha* sp.), barnacles (*Balanus* spp.) and blue mussel (*Mytilus edulis*) are expected to be common in intertidal rocky areas.

Freshwater (General Project Area)

Based on field investigations and desktop studies, fish species that **may** reside in watercourses located in the broader Project area (not restricted to facility watercourses) include:

- Bull trout *Salvelinus confluentus*
- Chinook salmon *Oncorhynchus tshawytscha*
- Chum salmon *Oncorhynchus keta*
- Coho salmon *Oncorhynchus kisutch*
- Cutthroat trout *Oncorhynchus clarkii*
- Cutthroat trout (anadromous) *Oncorhynchus clarkii*
- Cutthroat trout (coastal) *Oncorhynchus clarkii clarkii*
- Dolly Varden *Salvelinus malma*
- Dolly Varden (anadromous) *Salvelinus malma*
- Dolly Varden/Bull trout (hybrid) *Salvelinus malma x S. confluentus*
- Eulachon *Thaleichthys pacificus*
- Longnose dace *Rhynichthys cataractae*
- Longnose sucker *Catostomus catostomus*

- Pink salmon *Oncorhynchus gorbuscha*
- Rainbow trout *Oncorhynchus mykiss*
- Steelhead *Oncorhynchus mykiss*
- Steelhead (winter-run) *Oncorhynchus mykiss*
- Redside shiner *Richardsonius balteatus*
- River lamprey *Lampetra ayresi*
- Sculpin (general) *Cottus spp.*
- Sockeye salmon *Oncorhynchus nerka*
- Starry flounder *Platichths stellatus*
- Threespine stickleback *Gasterosteus aculeatus*

6.4 Biogeoclimatic Ecosystem

The Project is located within the Coastal Western Hemlock biogeoclimatic zone. On average, this zone is the rainiest biogeoclimatic zone in British Columbia, with a cool mesothermal climate. Mean annual temperature can range from approximately 5.2 to 10.5°C. Mean annual precipitation for the zone as a whole is 2,228 mm, and may range from 1,000 to 4,400 mm with less than 15% of total precipitation occurring as snowfall. Western hemlock is usually the most common species in the forest cover with a sparse herbaceous layer and variety of moss species. Infrastructure development and construction timing will be planned to minimize impacts on the vegetative community in the Project area.

6.5 Wildlife and Wildlife Habitat

A wide variety of wildlife habitat types exist across the Project area. These habitats include old growth coniferous forests, seral and managed second growth forests, mixed coniferous and deciduous forests, rocky cliffs, sparsely vegetated rock faces, riparian area, rivers and streams. These habitats support a wide variety of wildlife (e.g. deer, bears, wolves, goats, rodents, raptors, common birds, reptiles, amphibians and fish). Infrastructure development and construction timing will be planned to minimize impacts to wildlife and wildlife habitat. Additionally, timing and spatial considerations including migration and seasonal habitat use will be incorporated into the study of potential impacts on wildlife and wildlife habitat. A visual representation of some wildlife habitat types is presented in Appendix B.

6.6 Species of Concern

The project passes through one provincial Forest District and 12 Landscape Units (LUs). In addition, there is the potential that the Project will pass through three ecosections and 10 biogeoclimatic subzone variants. Due to the ecologically diverse landscape in the study area, a considerable number of rare ecosystems, plants, and animal species could be affected by the construction and operational maintenance of the Project. Attention to construction siting, timing of works and work methods are anticipated to reduce potential impacts.

A conservative approach for the baseline assessment of species at risk has been adopted and initiated. The scope includes an investigation of all proposed facilities, including transmission line route options with a 1 km buffer, resulting in an approximate 2 km wide study corridor. All publicly-available map products are being compiled and used as a base for the habitat mapping. A number of mapping projects have already been completed within various portions of the study area, including Terrestrial Ecosystem Mapping (TEM) in Tree Farm Licence (TFL) 39; Vegetation Resource Inventory (VRI) in TFL 43; forest cover mapping in TFL 10; and habitat mapping in TFL 10 and 43. Mapping will be at a scale of 1:20,000.

Within the study area, all spatially-defined boundaries and point features that are important for assessing potential impacts to vegetation and wildlife are being identified. Anticipated boundaries include provincial park boundaries, established and proposed Wildlife Habitat Areas (WHAs), Ecological Reserves, Ungulate Winter Ranges (UWRs), and Old-Growth Management Areas (OGMAs). Anticipated point features include known locations of known rare plants, bird nests for species that utilize the same nest year to year (e.g. eagles), den sites and other important wildlife locations.

During the assessment, the spatial extents of sensitive habitats (e.g., wetlands) will be defined, and the total areas (in hectares) of these habitats will be quantified within the study area. Currently, mapping within the Homathko and Southgate LUs has identified that 10% of the valley bottom consists of wetlands (14% in Homathko and 4% in Southgate).

A number of potential focal or priority species have already been identified, including plants (216 species), invertebrates (10 species), herptiles (4 species), birds (10 species), mammals (7 species), fish (4 species) and rare ecological communities (86 communities). Species that have been identified as being of particular importance, at this stage, include: grizzly bear (*Ursus arctos*), marbled murrelet (*Brachyramphus marmoratus*), and mountain goat (*Oreamnos americanus*).

At this time, no critical habitat for listed plant species under Species at Risk Act (SARA) that is identified in a recovery strategy or action plan or any rare plant species or vegetation assemblages identified by recognized federal or provincial organizations have been identified in the Project area.

The following plant species, listed under the SARA may potentially exist within the Project area:

Latin Name	**Common Name**	**SARA Status**
Abronia umbellata var. breviflora	pink sand-verbena	Endangered
Aster curtus	white-top aster	Threatened
Balsamorhiza deltoidea	deltoid balsamroot	Endangered
Bidens amplissima	Vancouver Island beggarticks	Special Concern
Cephalanthera austiniae	phantom orchid	Threatened
Corydalis scouleri	Scouler's corydalis	Threatened
Heterodermia sitchensis	seaside centipede	Endangered
Limnanthes macounii	Macoun's meadow-foam	Threatened
Lotus pinnatus	bog bird's-foot trefoil	Endangered
Lupinus Lepidus	prairie lupine	Endangered
Lupinus rivularis	Streambank lupine	Endangered
Meconella oregano	white meconella	Endangered
Nephroma occultum	Cryptic Paw	Special Concern
Psilocarphus elatior	tall woolly-heads	Endangered
Sanicula bipinnatifida	purple sanicle	Threatened
Viola praemorsa ssp. praemorsa	yellow montane violet	Threatened
Hypogymnia heterophylla	Seaside Bone	Special Concern
Pseudocyphellaria rainierensis	Oldgrowth Specklebelly	Special Concern

Plutonic also recognizes that the following wildlife species and wildlife habitat, listed under the SARA may potentially exist within the Project area:

Latin Name	**Common Name**	**SARA Status**
Accipiter gentilis laingi	Northern Goshawk, *laingi* subspecies	Threatened
Ascaphus truei	Coastal Tailed Frog	Special Concern
Brachyramphus marmoratus	Marbled Murrelet	Threatened
Bufo boreas	Western Toad	Special Concern
Falco peregrinus anatum	Peregrine Falcon, *anatum* subspecies	Threatened
Histrionicus histrionicus	Harlequin Duck	Special Concern
Megascops kennicottii kennicottii	Western Screech-Owl, *kennicotii* subspecies	Special Concern
Rana aurora	Red-legged Frog	Special Concern
Ursus arctos	Grizzly Bear	No Status
Ardea herodias fannini	Great Blue Heron, *fannini* subspecies	Special Concern
Asio flammeus	Short-eared Owl	Special Concern
Myotis keenii	Keen's Long-eared Myotis	Special Concern

Studies focusing on migratory birds and birds of prey will consider areas of known migratory bird concentrations including the Homathko and Southgate estuaries, Marbled Murrelet daily migration corridors and identification of nests for priority species.

The Project focal species list will be further refined through discussions with federal and provincial authorities, but will include provincially Red- or Blue-listed taxa, migratory birds, taxa listed under SARA, taxa listed under the provincial Identified Wildlife Management Strategy (IWMS), and species of regional importance (i.e., mountain goat). Species of particular importance to First Nations will also be included based on input obtained through the consultation process.

6.7 Wetlands

Within the Project area, locations exist where proposed or existing infrastructure occurs in or adjacent to existing wetlands. Within the Homathko River valley no new roads are proposed that would impact wetland areas, while existing roads occur in and along six classified wetland areas. The largest wetland in the Homathko River valley is Cumsack Slough located at approximately E364200 N5648600, where the existing road is located between its eastern boundary and the Homathko River. An existing road crosses two W5 classified wetlands at 50^{o} 58’ 52” N latitude, 124^{o} 56’ 3” W longitude and at 51^{o} 10’ 47” N latitude, 125^{o} 02’ 35” W longitude (near the Homathko Airstrip). The

Orford River valley has only one wetland area that is affected by an existing road. This existing road passes through an arm of an unnamed W3 wetland located at 50^{o} 35' 38" N latitude, 124^{o} 50' 42" W longitude. Two wetland crossings are proposed within the Southgate River valley. These proposed wetland crossings are required to realign an existing road away from the Southgate River riparian area. These proposed wetland crossings are located at 50^{o} 49' 49" N latitude, 124^{o} 33' 7" W longitude and 50^{o} 51' 15" N latitude, 124^{o} 373' 41" W longitude.

For all locations where existing or proposed roads occur in proximity to wetlands, best management practices will be applied to minimize or avoid potential impacts. Any potential conflicts between Project infrastructure and wetlands are anticipated to be mitigated through environmental design considerations.

6.8 Geology

All of the proposed facilities lie within the Pacific Range of the British Columbia Coast Mountains. The Pacific Range, consisting mainly of granitic rocks, extends north from the Fraser River for about 500 km to the Bella Coola River. This range contains the highest peaks in the Coast Mountains, many of which are over 3,000 m high.

The land in the region was heavily loaded with glaciers during the Pleistocene and many areas adjacent to the coast were submerged below sea level. The high peaks have matterhorns (arêtes) and well-developed cirques, while peaks and ridges below about elevation 2,000 m are rounded and subdued by the effects of ice-sheet movement. Valley walls were steepened by ice sheet movement, which typically resulted in U-shaped slope profiles. The oversteepened slopes following glaciation have resulted in numerous types of earth movements such as rock slides, rock falls, debris slides, debris flows, and channelized debris flows.

Surficial geology in the Project area consists of recent river alluvium, colluvium, and minor glaciofluvial and till deposits.

Glaciofluvial and till deposits, found in the Project area, form a mantle of variable thickness that overlies bedrock. Generally these deposits are dense, less than 3 m thick and consist of angular to sub-rounded sand and gravel with some silt and cobbles.

6.9 Seismicity

The proposed Project is situated in the Coast Mountains. Historically, the level of seismic activity in the Coast Mountains region is low. However, there is the potential for large earthquakes within the region of south-western BC. The region can be affected by both crustal earthquakes in the continental North American Plate, and by great subduction earthquakes that are generated by Juan de Fuca Plate subducting under the continental plate.

There has been much study in recent years concerning the potential for a great interplate earthquake of magnitude 8 to 9 along the Cascadia subduction zone, which is located west of Vancouver Island and extending as far south as Northern California. Geological evidence indicates that these great Cascadia subduction earthquakes occur, on average, approximately every 500 years, but this interval varies from about 300 to 800 years. The last great Cascadia earthquake occurred about 300 years ago, in 1700. Such an event would likely be located over 200 km west of the Project area, and therefore the amplitude of ground motions experienced at the site would be moderate due to attenuation over such a large distance. However, the damage potential from such an event can be high, due to the very long duration of ground motion associated with a large magnitude earthquake.

Large crustal earthquakes of magnitude 6.9 and 7.3 have occurred within central Vancouver Island in 1918 and 1946 respectively. The closest of these events was the 1946 magnitude 7.3 earthquake, located between 100 and 200 km south of the Project area. To the south, lies the Northern Cascades seismic region where a large crustal earthquake with an estimated magnitude of 7.0 to 7.5 occurred in Washington State in 1872.

6.10 Groundwater

Significant groundwater discharge areas or springs are not expected at the proposed powerhouse and intake locations, or along the access road/penstock right of ways. Additional fieldwork is planned to confirm this assumption.

6.11 Surface Water Quality and Sedimentation

Each of the proposed facilities is located in a coastal mountain catchment. Generally, all of the glacially fed watercourses have extreme seasonal fluctuations in water quality associated with turbidity and sedimentation. Studies have been initiated to characterize water quality in each of the facility creeks.

7.0 MAXIMIZING THE POTENTIAL OF THE RESOURCE

Plutonic and their consultants have reviewed many potential development alternatives for the proposed facilities, the most favourable of which are presented in this project description. Based on the following criteria, it is expected that the Project will fully develop the potential of the available resources:

- Environmental Impact;
- Minimization of the ‘spider web’ effect of transmission lines on the landscape;
- Cost / Benefit ratio (Total Capital Cost / Average Annual Generation);
- Construction and Permitting Risks;
- Schedule and Construction Risks, and
- BC Hydro’s Green Criteria Compliance.

8.0 POTENTIAL EFFECTS

8.1 Environmental

The Project will be developed to minimize impacts on the environment through information gathering and analysis, identification of mitigation measures, and re-design of facility components where required. Existing information along with a complimentary suite of field studies has been used to develop current plans for facility siting, access, and interconnection to the BCTC grid. The next step in the planning process involves the continuation of detailed studies for input to the environmental assessment phase of the Project.

Consultation with stakeholders is planned in order to assist in the identification of environmental issues to be addressed by the proponent.

8.2 Economic

The Project will be a $3 to 4 billion capital investment with significant construction employment opportunities and economic benefits to First Nations and local communities. During operations the Project will generate seasonal and full time employment, while contributing tax revenue to Provincial and Regional governments.

8.3 First Nations

All 17 run-of-river facilities are located within the asserted traditional territory of the Homalco First Nation. One of the 17 facilities, Bear River facility, is located within the asserted traditional territory of both the Homalco and We Wai Kai Nations. The Malaspina transmission corridor travels from Homalco territory across the asserted traditional territory of the Klahoose, Sliammon, and shíshálh First Nations.

Plutonic is committed to working closely with these First Nations to ensure their issues are fully addressed, including those related to the protection of sites with traditional, archaeological or heritage importance. Engagement discussions with these First Nations have been ongoing. Plutonic has a strong history of working in partnership with First Nations in all stages of project development, and that business approach is envisioned for the Bute Inlet Hydroelectric Project.

8.4 Social

The Project will help BC meet its growing demand and also help to reduce the frequency of relying on imported electricity, while supporting the objectives of the Kyoto Protocol to the United Nations Framework Convention on Climate Change. The Project will also fit well with the mandate of the Province to reduce GHG emissions. The Project will also provide social benefits to First Nations and local communities though economic, employment, and training opportunities.

9.0 LAND USE SETTING

9.1 Ownership and Zoning of Project Area Land

The Project generating facilities are situated on Crown Land, within the Sunshine Coast Timber Supply Area (TSA). The Malaspina transmission corridor will traverse TFL 10 and TFL 39. Project facilities do not intrude upon the boundaries of any National or Provincial Parks.

Land tenure on Crown land will be obtained through agreements with the Integrated Land Management Bureau (ILMB). Additionally, numerous Project features will require water licences under the *Water Act* obtained from the Ministry of Environment (MoE).

A portion of the Elliot Creek facility and Southgate transmission line and access road are on Private Land. Plutonic has entered into an Option to Purchase a Statutory Right-of-Way agreement and Right of First Refusal to Purchase the Private Lands with the owner.

Where the Project is proposed on Crown land, the activities that are associated with the proposed water power project and transmission line are subject to the amendment to Section 121 in the Utilities Commission Act (Order in Council 426/2006, BC Reg. 174/2006); accordingly no rezoning is required.

The set of drawings provided in Appendix B summarizes land tenure in the Project area.

9.2 Current Land and Water Use Plans in the Project Area

A search of publicly available information identified numerous current and planned land and water resource uses in the vicinity of the Project area. The search identified:

- The Johnstone – Bute Coastal Plan – This provincial land use plan covers the waters and shoreline in Bute Inlet that support a wide range of uses and activities, including First Nation current and traditional uses, commercial and public recreation, aquaculture, recreational and commercial fishing, sports fishing lodges, log handling and storage, marine transportation and navigation;

- The Project falls within the Sunshine Coast Sustainable Resource Management Plan; however, these areas do not yet have any approved Landscape Unit plans; and

- The southern extent of the transmission alignment traverses TFL 39, within which lies the Stillwater Pilot project, created as a management plan under a Regulation of the *Forest Practices Code of BC Act*, passed in 2001. Among other directives of the Pilot Project, the land base was zoned to reflect specific values including wildlife, old growth, and recreation. The designations within the Stillwater Pilot Project lands have been taken into account during the planning and design of the proposed transmission alignment for the Project.

The set of drawings provided in Appendix B summarizes land and water use in the Project area.

Consultation with stakeholders is planned to ensure that proposed infrastructure development will minimize impacts on the land and water users/uses that have been identified.

9.3 First Nations Traditional Land Use in the Project Area

During the assessment phase of the Project, First Nation traditional and cultural use assessments will be conducted in a manner that is acceptable to each First Nation. Plutonic intends to plan infrastructure development in a manner that minimizes impacts in areas that have been identified through First Nation traditional and cultural use studies.

9.4 Residential Land Use near the Project Area

The nearest residential communities to the Project are Powell River and Sechelt. From Powell River, the transmission corridor is located approximately 20 km away and the closest generating facility is located approximately 100 km away. From Sechelt, the closest generating facility is located approximately 145 km away and the point of interconnection at the BCTC Malaspina Substation is approximately 25 km away. No sensitive human receptors have been identified in the immediate vicinity of the Project area. The set of drawings provided in Appendix B summarizes residential land use in the Project area.

9.5 Protected Areas in the Project Area

A search of publicly available information indicated that there are no existing or proposed protected areas or special management areas such as migratory bird sanctuaries, national wildlife areas, marine protected areas, Ramsar sites, western hemispheric shorebird network sites, national historic sites, etc. within the Project area. The set of drawings provided in Appendix B summarizes land use in the Project area.

10.0 CONSULTATIONS

10.1 First Nations Consultation

Initial consultation activities have been undertaken by Plutonic with each First Nation. Details regarding the nature of each consultation session are presented below. Consultation will continue to occur throughout the Project with all involved First Nations.

Homalco First Nation

The 17 generating facilities and parts of the transmission infrastructure are located within the Homalco First Nation's asserted traditional territory. Some of the engagement activities to date have included:

- On July 3, 2007 the Homalco First Nation, through its company (Bute Inlet Development Corporation), signed a Negotiation Agreement with Plutonic Power. This agreement was a framework for negotiating an Impact Benefit Agreement with the Homalco First Nation.

- Information/permitting workshop held in Vancouver on October 10th and 11th, 2007 attended by Chief and two Councillors.

- A Memorandum of Understanding with the Bute Inlet Development Corporation was signed for Plutonic to fund a Traditional Use Study of Homalco traditional territory.

- On November 22, 2007 an open house was held for Homalco First Nation members at the Homalco Cultural Centre.

- A meeting with held with the Chief, Council and several other community members on February 22, 2008. Plutonic provided an update on the Project and general information about the company. Company and Project information was available at the meeting.

- A Career Fair was held on March 11, 2008 at the Homalco Cultural Centre. Plutonic, our consultant (Knight Piésold), current construction contractor (Peter Kiewit Sons) and two Job Coaches from the Vancouver Aboriginal Skills Employment Partnership (VanASEP) gave information to the Homalco community on potential training and job opportunities arising from the proposed project in the future.

- On April 22, 2008 a dinner and presentation of the Homalco Tradition Use Study was held at the Homalco Cultural Centre. The event was attended by the Chief, Elders and others in the community.

- On July 18, 2008, an information package was given to the Homalco, which included a draft Terms of Reference, Working Group Presentations and Study Plans for the Project.

- On October 5 and 6, 2008 Plutonic provided community updates to Homalco members in Vancouver and Campbell River.

- On October 11 2008, Homalco elected a new Chief and Council. Plutonic met with the new Chief to discuss future engagement activities regarding the Plutonic's Bute Inlet project on October 24, 2008.

- During November, Plutonic met with the Homalco several times and on November 21, 2008, a Letter of Undertaking was signed. The parties agreed to advance negotiations as soon as practicable.

- Consultation and negotiation will be continuing with the Homalco First Nation regarding the Project with the goal of completing an IBA in 2009.

Klahoose First Nation

The Malaspina transmission corridor travels across the Klahoose First Nation's asserted traditional territory. Engagement activities to date have included:

- On January 31, 2007 an Impact Benefit Agreement was signed with the Klahoose First Nation for the Toba Montrose Project. The IBA includes a framework for proceeding with negotiations on future projects.

- Plutonic is in constant communication with Klahoose through the partnership on our Toba Montrose Project. Communication with the Klahoose regarding the Project have occurred informally for some time.

- More project specific communication began in Spring 2008 with a telephone discussion and e-mail correspondence, providing a map which presented a Project overview and the two possible transmission line routings. Notification was also given regarding archaeological studies, to commence in the Summer of 2008, around the proposed transmission line route through Klahoose traditional territory.

- A revised Project Description was sent to Klahoose on May 28, 2008.

- Plutonic is currently in negotiations with the Klahoose on a new IBA which includes accommodation for routing the Project's transmission line through Klahoose traditional territory. Consultation and negotiation with the Klahoose First Nation regarding the Project will be ongoing, with the goal of completing an IBA in early 2009.

Sliammon First Nation

The Malaspina transmission corridor travels across the Sliammon First Nation's asserted traditional territory. Engagement activities to date have included:

- On April 16, 2007 an Impact Benefit Agreement was signed with the Sliammon First Nation for the Toba Montrose Project. The IBA includes a framework for proceeding with negotiations on future projects.

- On July 18, 2008, Plutonic sent an information package to the Sliammon Crown Lands Manager, which included a draft Terms of Reference, Working Group Presentations and Study Plans for the Project.

- Plutonic met with the new Chief, Council members and staff from Sliammon on October 15, 2008 to discuss the Project, and reached a verbal consensus to enter into a Participation Agreement to begin negotiations for routing the transmission line through Sliammon territory to the BCTC Malaspina substation.

- On November 20, 2008, Plutonic and the Sliammon First Nation signed a Participation Agreement.

- Consultation and negotiation with the Sliammon First Nation regarding the Project will be ongoing, with the goal of completing an IBA in 2009.

shíshálh Nation (Sechelt Indian Band)

The Malaspina transmission corridor travels across the shíshálh Nation's asserted traditional territory. Engagement activities to date have included:

- On February 22, 2008 an Impact Benefit Agreement signed with the shíshálh Nation for the Toba Montrose Project. The IBA includes a comprehensive agreement on how future projects will be addressed.

- On July 18, 2008, Plutonic sent a letter and information package to shíshálh, which included a draft Terms of Reference, working group presentations and Study Plans for the Project.

- Plutonic and the shíshálh Nation met several times from September to November and signed a Term Sheet for the Project on November 21, 2008.

- Consultation and negotiation with the shíshálh Nation regarding the Project will be ongoing, with the goal of completing an IBA in early 2009.

We Wai Kai Nation (Cape Mudge Indian Band)

The Bear River facility is located in the asserted traditional territories of the We Wai Kai and Homalco Nations. Engagement activities to date have included:

- On February 22, 2008 Plutonic met with Councilor Brian Assu as part of the Hamatla Treaty Society. At this meeting Plutonic provided an overview of the company and our proposed projects in Bute Inlet. A follow-up letter was sent to Councilor Assu on February 29, 2008.

- A copy of the Bute Inlet Project Description was delivered to the We Wai Kai Nation on April 17, 2008.

- A draft Terms of Reference, Study Plans and Working Group Presentations for the Project were sent to the We Wai Kai on July 15, 2008.

- On August 8, 2008, Plutonic held discussions with We Wai Kai regarding notice of an advertisement in the local newspaper regarding Plutonic's application for land tenure for the transmission line option from Bute Inlet to Campbell River.

- Plutonic met with Chief Ralph Dick and Councilor Brian Assu on September 16, 2008 to discuss the terms for BC Hydro's Clean Power Call and Transmission options associated with the Project.

- Plutonic will take instruction on further discussions with the We Wai Kai on the Project based on the outcome of First Nation's discussions related to the Bear River facility.

10.2 Government Consultation

Consultation with federal and provincial agencies has been initiated and will continue throughout the development of the Project. To date, the main communications have included:

- On March 6, 2008 a meeting was held with Dave Carter (Senior Program Officer) of the CEA Agency. During this meeting the first draft of the Project Description was submitted;

- On April 7, 2008, the first draft of the Project Description was delivered to the BC EAO;

- On April 16, 2008, a meeting was convened with the BC EAO representatives Kathy Eichenberger (Project Assessment Director) and David Eirikson (Project Assessment Officer). During the meeting, the EAO provided a Section 10 Order under BCEAA; and

- In April 2008, discussions with MPMO representative Adam Hendriks (Director) were initiated.

- Second revision of the Project Description submitted on May 7, 2008

- Introductory Provincial and Federal Working Group Meetings held on July 10, 2008 and July 24, 2008, respectively.

- Additional information request received from CEA Agency on June 17, 2008 and August 15, 2008 and Plutonic provided the requested information in August 2008.

- Transport Canada completed a requested site visited on August 28, 2008.

- Fisheries and Oceans Canada completed a requested site visited on September 17 and 18, 2008.

- Additional information request received from CEA Agency on October 8, 2008 and Plutonic provided the requested information in November 2008.

- A Working Group Meeting was held to provide an update on Project studies and discuss the draft Terms of Reference on October 23, 2008.

10.3 Public Consultation

Public consultation will continue throughout the Project, including, but not limited to, the following:

- Public Open Houses in Powell River and Sechelt.
- Powell River Regional District.
- Strathcona Regional District.
- Sunshine Coast Regional District.
- City of Powell River.
- City of Sechelt.
- Forest Companies active in the area.
- Recreational, tour and guide operators in the area.

11.0 PROJECT DEVELOPMENT SCHEDULE

The construction and development of the Project will be staged due to its size. The major milestones associated with the Project are summarized below:

- Submittal of the Project Description to the BC Environmental Assessment Office, Canadian Environmental Assessment Agency, and the Major Project Management Office – May 2008
- Complete draft Terms of Reference – May 2008
- Submittal of revised Project Description to the BC Environmental Assessment Office, Canadian Environmental Assessment Agency, and the Major Project Management Office – December 2008
- Complete Terms of Reference – January 2009
- Complete federal scoping document – January 2009

- Notice of Awarded Electricity Purchase Agreement (EPA) – June 2009
- Submission of the Environmental Assessment Application – Sept. 2009
- Anticipated Environmental Approval of the Project – July 2010
- Granting of Provincial and Federal Permits – Sept. 2010
- Initiate construction of facilities - 2011
- Early commissioning of some of the generating facilities – 2014
- Final commissioning of the generating facilities – 2016
- Operation of the generating facilities – 2014 through 2114
- Re-fits and major upgrades of the generating facilities – 2039, 2064 and 2089
- Potential decommissioning of facilities, with potential for plant life extension - 2114

12.0 FEDERAL AGENCY INVOLVEMENT TRIGGERING CEAA

The following section summarizes aspects of the Project that would normally require a federal EA to be completed and trigger agency(s) involvement as a Responsible Authority (RA) under CEAA.

12.1 Fisheries and Oceans Canada (DFO) Involvement

For the purpose of the project description, Fisheries Act triggers have been defined as an unavoidable loss or harmful alteration of fish habitat, or in the case of potential fish entrainment direct harm to fish, under the habitat provisions of the Fisheries Act. Wherever possible and practical, Plutonic proposes to utilize siting, designs and operating procedures that avoid Harmful Alteration, Disruption or Destruction of fish habitat (HADD). Examples include maintaining sufficient flows within the diversion reach and downstream of the tailrace, locating intakes (and where possible, tailraces) upstream of fish populations, etc. Despite these efforts, Project facilities and infrastructure including, but not limited to, intakes, penstocks, powerhouses, tailraces, roads, bridges, barge terminals and transmission lines have the potential to affect fish and fish habitat.

In this document, the concept of a risk management assessment has been incorporated to rank likely Fisheries Act triggers associated with this Project. The purpose if this approach is:

1. To provide DFO staff with the type of information that will aid in Project review; and

2. To rank the potential HADDs according to relative risk to the fisheries resource.

A list of potential Fisheries Act triggers organized by group of facilities is summarized in Tables 7 to 10, while Table 11 summarizes the number of triggers by risk category. Figures 1 through 22, Figures 27 through 29, and road design maps included in Attachment B provide reference of locations of possible Fisheries Act triggers. Specific to the access roads, these tables include activities that deviate from routine stream crossings such as stream bank armouring, construction of large bridges with instream piers, and construction of roads into areas (i.e. wetlands) that may support fish.

Facilities

Of the potential Fisheries Act triggers that are associated with hydroelectric facility sites, none are likely to result in a significant adverse effect that would require re-design, or re-location based on the results of habitat assessments and fisheries information collected to date. The Coola Creek facility carries elevated risk due to the absence of confirmed fish migration barriers and therefore, a higher potential for anadromous use. The remaining facilities are appropriately sited in proximity to either confirmed or potential fish migration barriers, and in some cases upstream of migration barriers.

Access Roads

Of the potential Fisheries Act triggers that are associated with Project access roads, none are likely to result in a significant adverse effect that would require re-design or re-location. Some activities, such as the placement of rip-rap within the wetted perimeter of a stream have the potential to provide productive rearing habitat for juvenile salmonids and therefore, the potential negative impact will be mitigated.

Several sections of the road will encroach upon fish habitat at locations where road relocation is not possible. These habitat losses are permanent and will therefore have to be offset with compensatory habitat to ensure a no net loss of productive capacity. This is common to other approved developments along the BC coast, and can be addressed using methods familiar to DFO.

Transmission Lines

Of the potential Fisheries Act triggers that are associated with transmission lines in the Project area, none are likely to result in a significant adverse effect that would require re-design or re-location. Since the site visit conducted by DFO in September, the transmission line has been re-routed to minimize riparian impacts by crossing streams at right angles, minimizing the number of large watercourse crossings, and following the upslope side of existing roads along the valley sidewall.

Waterbody information along the transmission corridor was inventoried using Habitat Wizard in conjunction with the Fisheries Information Summary System (FISS). Unnamed first and second order streams were not included in the assessment unless fish species information was available using the query tool in Habitat Wizard. Using this approach, 68 watercourse crossings have been identified, which are presented in Table 10.

DFO Pacific Region has developed an operational statement for overhead line construction of small distribution powerlines. This Project exceeds the maximum voltage and corridor width thresholds named in the operational statement and thus, will require DFO review. However, the mitigation measures are still relevant towards avoiding and minimizing transmission related impacts on fish habitat. The primary mitigation measures to protect fish and fish habitat listed in the operational statement for overhead line construction will be incorporated in design, construction, operation, and maintenance of the transmission line.

Based on the assumption that due diligence would be exercised in the application of these mitigation measures to both the design and construction of the transmission line the potential for likely Fisheries Act triggers is very low. As a conservative approach we assumed a higher risk of likely Fisheries Act triggers at nine major river crossings and at one intermediate crossing (Cumsack Creek) due to high fisheries values, elevated importance of adjacent riparian areas, and the increased scale of riparian disturbance at larger crossings.

Barge Landings

Three barge facilities located on Bute Inlet (Potato Point, Southgate, and Orford) will require upgrades that are likely to require Section 35(2) Fisheries Act authorizations. Locations of these barge facilities are shown on Figure 2. Designs for upgrades at these three barge facilities are presented in Figures 31, 32, and 33. Additionally, numerous temporary barge landings required for construction of the transmission trunk line may also require upgrades. The anticipated locations of the temporary barge facilities are presented on Figure 2. Required alterations are likely to consist of limited dredging to accommodate the draft of the largest barges, potential clearing of riparian vegetation and placement of rip rap armouring along the upland margin to protect the shoreline.

Of the potential Fisheries Act triggers that are associated with barge facilities in the Project area, none are likely to result in a significant adverse effect that would require re-design or re-location.

Borrow Sites

Plutonic is committed to avoiding Project impacts to fish and fish habitat through careful selection of construction material borrow sites. Borrow sites will be developed as rock quarries adjacent to the upslope side of access roads along the valley sidewalls where there are no fish-bearing streams or wetlands in the associated disturbance areas. In the unlikely event that suitable gravel deposits are identified elsewhere these will only be developed where the associated disturbance area does not conflict with fish habitat. Based on these borrow site development criteria no likely Fisheries Act triggers were identified.

Sediment Storage and Transport

With respect to potential fish habitat losses related to sediment storage and sediment transport associated with intakes and headponds, the following has been considered.

Coanda screen intake structures are planned at twelve of the seventeen facilities, while rubber weir intake structures are planned for Bear River, Brew Creek, Jewakwa River and Southgate River 1 and an open portal intake structure is planned for Heakamie River. Both Coanda screen and rubber weir intake structures require an elevated concrete weir foundation to increase water depth so water will flow into the penstock. The open portal intake structure will require an earth-fill weir foundation to increase water depth so water will flow into the penstock. All of these intake structures create a headpond behind the weir where sediment (i.e. bed material and suspended sediment) is deposited as the result of reduced current velocities in the headpond. Over time or during flood events the headpond can potentially fill with sediment.

Coanda intake structures can function with the headpond full of sediment although some water depth is preferred just upstream of the weir to maintain laminar flow. Bed material that introduces turbulence to this laminar flow would have to be removed as part of regular maintenance. Sluice gates are incorporated into the weir design to pass accumulated sediment if required during high flows. Maintenance schedules would be site specific depending on rates of sediment accumulation, ability of the Coanda screen to function efficiently, and fisheries issues related to water quality and maintenance of downstream bed materials. Sediment supply and transport studies would also be required to determine mitigation and maintenance requirements. In summary mitigation options are available to maintain sediment transport processes with Coanda screen intake designs.

Rubber weir intake structures are designed to pass accumulated sediment through deflation of the rubber weir during high flows. Maintenance schedules would be specified depending on rates of sediment accumulation and fisheries issues related to water quality and maintenance of downstream bed materials. Sediment supply and transport studies would also be required to determine mitigation and maintenance requirements. In summary mitigation options are available to maintain sediment transport processes with rubber weir intake designs.

The intake structure will pass accumulated sediments and debris through a sluice gate integrated with the intake box at the discretion of the operator. This operation will typically take place during high flow at which time the high volume of water and associated energy will effectively purge sediments through the sluice gate; although, periodic sediment purging may be accommodated to mitigate environmental requirements for downstream sediment recharge. During times of extreme flow (>200 year), sediment and debris may pass, uncontrolled, over the earthfill overflow berm.

The headpond sizes related to the intake structures for the fish-bearing intakes locations are as follows:

- Algard Creek intake = 0.34 ha
- Bear River intake = 0.60 ha
- Coola Creek intake = 0.27 ha
- Scar Creek intake = 0.71 ha

These are also representative of the range of headpond sizes for the remaining facilities that do not have fish populations above the intake location.

Char have been confirmed above the intake locations on Scar Creek, Algard Creek, and Bear River. The number of char detected was very low based on the level of effort. The presence of char at the Coola Creek intake is considered likely, but not confirmed.

Of the potential Fisheries Act triggers that are associated with sediment storage and transport, none are likely to result in a significant adverse effect that would require re-design or re-location.

Fish Entrainment

With respect to potential fish mortality related to fish entrainment associated with intakes, the following have been considered.

Coanda screens are proposed to address fish entrainment mortality at 3 of the 4 fish bearing intake sites (Coola Creek, Scar Creek, and Algard Creek). Plutonic considers Coanda Screens as the best available technology to exclude fish and sediment from being entrained to the penstock. Typical Coanda screen sizes have 2-mm wire spacing with wire reposed at an angle of five to ten degrees. The probability of small fish being entrained at this approach angle into such a small spacing is extremely low. Typical rubber weir and Coanda screen intake configurations are shown on Figures 23 and 24, respectively.

The Coanda screen technology is not feasible at Bear River due to the large screen surface area that would be required to support the relatively large design flow. Feasible mitigation options to address fish entrainment associated with the rubber weir intake design are still under investigation.

The fish species potentially subject to entrainment are char, likely Dolly Varden char in the case of Algard Creek and Bear River and bull trout in the case of Scar Creek and Coola Creek.

At the project description stage we do not have the necessary information to fully address specific details concerning fish entrainment. The intent is to adopt aspects of BC Hydro's fish entrainment strategy to estimate fish losses associated with entrainment, identify feasible risk mitigation options, and identify any residual impacts and compensation if necessary.

Flow Ramping Rates

With respect to potential fish habitat loss related to flow ramping rates the following methodology has been considered.

Ramping protocols will be developed in consideration of several criteria including the flow travel time through the diversion section. For shutdowns a threshold low flow would be identified in affected fish bearing sections (normally below the powerhouse) and this threshold flow would be maintained during a shutdown event until such time that flows "catch up" from the intake. Some consideration as to how the headpond is drained (if applicable) may also be required. For startups there would need to be a commitment as to the rate at which the headpond fills (if applicable) and consideration as to how fast diversion flow can be added to the downstream environment without inducing bank erosion or fish stranding from temporary high flows. Normally the penstock is full of water and never drained.

Fifteen of the seventeen facilities incorporate Pelton turbines that have flow deflectors to maintain run-of-river penstock flows during a load rejection. Multiple needle valves are used to slowly increase or decrease flow through the penstock. Two of the facilities (Bear and Heakamie) incorporate Francis turbines that will utilize either a bypass valve or an overspeed design with guide vanes to perform the same function as the Pelton flow deflectors and needle valves. Both types of units also have a Turbine Inlet Valve (TIV) that is used only for the extremely unlikely event of an emergency shutdown resulting from a catastrophic event like a fire in the powerhouse.

Since the factors that determine ramping rates are site-specific we have developed the following guideline as an example of a ramping rate protocol for unscheduled startups and shutdowns:

Startups:

Minimum ramping duration is 2 hours year-round.
Maximum ramping rate is 100% MAD per hour year-round.

Shutdowns:

Summer (May to September)

Minimum ramping duration is 2 hours.
Maximum ramping rate is 100% MAD per hour.

Winter (October to April)
Minimum ramping duration is 4 hours.
Maximum ramping rate is 25% MAD per hour for penstock flows less than 100% MAD
Maximum ramping rate is 100% MAD per hour for penstock flows greater than 100% MAD.

Scheduled shutdowns for maintenance can potentially address site specific fisheries issues by avoiding sensitive periods such as fry emergence and outmigration, or fry rearing at night during winter.

In summary the potential impacts associated with ramping can be addressed with appropriate mitigation in place. Of the potential Fisheries Act triggers that are associated with flow ramping rate, none are likely to result in a significant adverse effect that would require re-design or re-location.

Erosion and Sedimentation
Another project consideration is the potential discharge of deleterious substances into water frequented by fish per subsection 36(3) of the Fisheries Act. Plutonic expects that any potential releases of deleterious substances (e.g. sedimentation) during operation phase would be negligible and that following protocols outlined in the environmental management plan would minimize any potential effects during the construction phase.

Permitting
As the Project progresses, Plutonic will seek to obtain concurrent authorization for unavoidable HADDs under Section 35(2) of the Fisheries Act, which is expected to trigger DFO to act as an RA and require a review of the Project EA by DFO under the provisions of CEAA.

12.2 Transport Canada (TC) Involvement

Construction and improvement of facilities and infrastructure located in, on, over, across, under, or through watercourses (bridges, transmission line, dams (weirs), barge facilities, etc.) are required for completion of the Project. These works have the potential to affect navigation on the various watercourses associated with the Project. The proposed locations of these features are presented in the attached road report drawings in Appendix A, Figures 1 through 22 and Figures 27 through 29. Specific details relating to each proposed facility and location will be provided to regulators during the assessment phase.

Access Roads and Watercourse Crossings

The following summarizes information required for Section 5(1) Navigable Waters Protection Act (NWPA) approvals for watercourse crossings (bridges) located on the Homathko, Southgate and Orford mainstems. Plutonic is proposing a total of two watercourse crossings over the Homathko mainstem, three watercourse crossings over the Southgate mainstem and one watercourse crossing over the Orford Mainstem.

The locations of the three proposed watercourse crossings over the Southgate mainstem are illustrated in Figure 27. All of the proposed bridges are new crossings over the Southgate River. General descriptions of the three Southgate mainstem crossings are described below:

1. Southgate Mainstem Crossing 1 - is the lowermost crossing of the Southgate mainstem consisting approximately of a 70 m span to be constructed as a steel girder structure with a number of instream piers. The bridge is located 12.5 km upstream of the confluence with the Bute Inlet.

2. Southgate Mainstem Crossing 2 - is the next uppermost crossing of the Southgate mainstem consisting approximately of a 55 m span to be constructed as a clearspan structure. The bridge is located 42 km upstream of the confluence with the Bute Inlet.

3. Southgate Mainstem Crossing 3 - is the uppermost crossing of the Southgate consisting approximately of a 15 m span to be constructed as a steel girder structure with a number of instream piers. The bridge is located 43 km upstream of the confluence with the Bute Inlet. Based on discussion with TC it is likely that this bridge will be excluded during scoping, based on the length of the span.

The location of the proposed watercourse crossing over the Orford mainstem is illustrated in Figure 28. The proposed bridge will replace an existing bridge crossing over the Orford River. A general description of the Orford mainstem crossing is described below:

1. Orford Mainstem Crossing 1 of the Orford mainstem consisting approximately of a 30 m span to be constructed as a steel girder structure with a number of instream piers. The bridge is located 17 km upstream of the confluence with the Bute Inlet.

The locations of the two proposed watercourse crossings (upper and lower) over the Homathko mainstem are illustrated in Figure 29. All of the proposed bridges are new crossings over the Homathko River. General descriptions of the two Homathko mainstem crossings are provided below:

1. Homathko Mainstem Crossing 1 - is the upper crossing of the Homathko mainstem consisting approximately of a 125 m span to be constructed as a steel girder structure with a number of instream piers. The bridge is located 21 km upstream of the confluence with the Bute Inlet.

2. Homathko Mainstem Crossing 2
    - Option #1 for the lower crossing of the Homathko mainstem consisting approximately of a 100 m span to be constructed as a steel girder structure with a number of instream piers. The bridge is located 10.5 km upstream of the confluence with the Bute Inlet.

    - Option #2 for the lower crossing of the Homathko mainstem consisting approximately of a 145 m span to be constructed as a steel girder structure with a number of instream piers. The bridge is located 7 km upstream of the confluence with the Bute Inlet. A smaller bridge (located directly west of Bridge Crossing 3) spanning approximately 30 m over a side channel of the Homathko River will be required if this option is selected. Based on discussion with TC it is likely that this bridge will be excluded during scoping, based on the length of the span.

A conceptual drawing illustrating typical bridge design for mainstem bridge crossings greater than 40 m in length is presented in Figure 34. A conceptual drawing illustrating the typical bridge design for mainstem bridge crossings less than 40 m in length is presented in Figure 35. In order to ensure that the requirements of the Navigable Waters Protection Act are met, Plutonic anticipates that all final bridge designs will be completed with the assistance and approval of a Navigable Waters Protection Division Officer.

Table 12 provides information pertaining to all of the mainstem bridges, including:

1. Location of any proposed works.

2. Name of waterway.

3. Latitude/longitude.

4. Applicable chart and topographic map number.

5. Legal descriptions.

6. Physical characteristics of the waterway, i.e., length, width, depth, seasonal flow and fluctuations.

7. Gradient at crossing site.

Historical and Existing Navigational Uses

Based on discussions with local residents, navigational use of the Homathko, Southgate and Orford mainstems appears to include jet drive aluminum boats with shallow drafts or fiberglass fishing boats. Use of these rivers generally coincides with hunting and fishing seasons. Additionally, companies are currently offering sea kayaking adventure tours on the mainstem rivers.

Bridge Construction

The proposed method used for construction of all bridges greater than 40 m in length, spanning the Homathko, Southgate and Orford mainstems is likely to be a once-over crossing with heavy equipment consisting of the following steps:

1. Construct road grade to starting abutment

2. Construct starting side abutment and place riprap protection

3. Install a series of jump spans supported by alternating sets of temporary and permanent bridge piers

4. Splice jump spans and remove temporary piers and bracing as construction proceeds towards the end abutment

5. End dump riprap from the last bridge span

6. Construct east side abutment and place riprap protection

7. Place last bridge span, splice to previous span, and remove temporary piers and bracings.

The proposed method used for construction of all bridges less than 40 m in length, spanning the Homathko, Southgate and Orford mainstems is likely to be a once-over crossing with heavy equipment consisting of the following steps:

1. Construct road grade to abutments
2. Construct abutments and place riprap protection
3. Install clearspan bridge structure.

Equipment Used During Construction

The following pieces of equipment are likely to be used during construction of the proposed bridges over the Homathko, Southgate and Orford mainstems:

- CAT320, 330, and 345 excavator.
- D6 and D8 dozers.
- A40 Volvo rock trucks.

Abutment Construction

Permanent piles will be driven at the abutment and abutments caps and bearings will be installed. Abutment construction will consist of riprap armoring of slope area under and around bridge pile foundation. The best available material for riprap will be used to minimize silt deposition into water. Riprap will be toed in to prevent undermining. Where practical, rip rap placement will be completed in a manner that does not encroach on the natural geometry of the watercourse. It is expected that the abutments can be constructed in the dry due to low winter water levels.

In-water Permanent and Temporary Piling

All piling will be done with machines working from bank or positioned on a trestle above high water level. During piling, if churning is required, material removed from interior of piles will be bailed off to the side of road, or into a rock truck to be hauled away and dumped. All piling going into water will be free of dirt or deleterious substances prior to introducing into the stream. A number of the in-water piles are temporary structures and will be removed during the construction process.

Re-Fueling of Machinery
Efforts will be made to prevent introduction of any deleterious substance into the watercourse. All fueling of equipment will be done 15 m away from stream banks. Fueling on bridge will be required for the crawler crane since it is isolated and cannot back track after first set of temporary piers are removed. Two barrel sized spill kits will be present on work site at all times; one located in the laydown area and the other on the approach near the beginning of the bridge deck.

Airstrips
Plutonic does not anticipate 1) altering any existing lighting and/or markings, and/or 2) registering the aerodrome(s) for airstrips that will be used in association with the Project. Proposed modifications to the existing airstrips may include brushing, resurfacing, widening, lengthening and maintenance (as required).

Intakes/Weirs
Figures 6 through 22 illustrate the locations facility intakes. Based on discussions with local residents, navigational use of the Homathko, Southgate and Orford mainstems appear to be restricted to jet drive aluminum boats with shallow drafts or fiberglass fishing boats. Additionally, numerous ventures are currently offering sea kayaking adventure tours on the mainstems. Boat access from the mainstem to the lower ends of these tributaries where the facilities are located is generally unrestricted; as such, similar use of these lower sections of these tributaries is possible. No other known navigational uses of the tributaries have been identified.

Transmission Lines
Transmission line crossings include three marine crossings (Agamemnon Channel, Jervis Inlet, and Toba Inlet), two lake crossings (Sakinaw Lake and Lois Lake), and nine major river crossings (Orford (3), Southgate (3), Teaquahan (1), and Homathko (2)). Based on discussions with TC, NWPA approvals may be required for the transmission line crossings of Homathko and Southgate mainstem crossings, while other crossings would be addressed in the following manner:

- Where crossings exist (Campbell Lake and Saltery Bay) or have been approved (Toba Montrose ROW), the existing design standards should be considered the minimum design criteria (i.e., do not design anything lower than these).
- For any new crossings the CSA standard for transmission lines and the Seymour Narrows crossings should serve as guidelines.

Through this process, residual impacts, cumulative impacts and monitoring associated with navigation are not anticipated.

The location of the proposed aerial transmission line crossings over the Homathko and Southgate mainstems are illustrated in Figures 27 and 29, respectively. Based on the nature of these crossings (i.e., relatively short span length), conceptual designs have not yet been developed. Plutonic's approach to designing these aerial crossings will be to work with TC to ensure that the crossings do not impact navigational use of the waterway by meeting the CSA standard for transmission lines.

Table 13 provides information pertaining to the Southgate Mainstem and Homathko Mainstem aerial transmission line crossings, including:

- Location of any proposed works.
- Name of waterway.
- Latitude/longitude.
- Applicable chart and topographic map number.
- Legal descriptions.
- Physical characteristics of the waterway, i.e., length, width, depth, seasonal flow and fluctuations.
- Gradient at crossing site.

Historical and Existing Navigational Uses
Based on discussions with local residents, navigational use of the Homathko, Southgate and Orford mainstems appears to include jet drive aluminum boats with shallow drafts or fiberglass fishing boats. Use of these rivers generally coincides with hunting and fishing seasons. Additionally, companies are currently offering sea kayaking adventure tours on the mainstem rivers.

Permitting
Plutonic will seek to obtain concurrent approvals from the federal Navigable Waters Protection Division (NWPD) of TC under Section 5(1) of the Navigable Waters Protection Act (NWPA). Plutonic anticipates that the requirement of these approvals will trigger the NWPD of TC to act as an RA pursuant to CEAA. Relevant information including the

location of the work, upland property owners, construction methods, navigational uses and proposed infilling will be forwarded to the NWPD during the assessment phase of the Project.

12.3 Indian and Northern Affairs Canada (INAC) Involvement

Construction and improvement of facilities and infrastructure (transmission line, roads, barge facilities, etc.) is proposed at locations on or adjacent to reserve land. Road and barge landing designs occur on and pass directly through Homalco reserve land. Figure 36 illustrates the location of the proposed infrastructure relative to the existing environment at IR4 Orford Bay. The existing environment consists of the naturally occurring environment (water, trees, soils, etc.) as well as the barge facility, bear viewing platforms, fish spawning channel, road network and airstrip. Project infrastructure that is proposed in this area includes:

- An upgraded barge facility (Figure 33) located west of the reserve, in Orford Bay.
- Tree clearing, road widening, road resurfacing, and improved drainage on the existing road located on the southern portion of the reserve.
- An upgraded airstrip, with upgrades consisting of tree clearing, widening, brushing and resurfacing.
- Potential construction of a laydown area and/or a temporary construction camp approximately 625 m northeast of the reserve.

Plutonic anticipates the requirement for INAC to be involved as an RA pursuant to Section 28 of the Indian Act in granting land leases and/or timber clearing rights for First Nation lands where portions of the Project occur on Indian Reserves.

12.4 Environment Canada (EC) Involvement

Information relating to non-trigger components of the Project that likely fall under the jurisdiction of EC has been included in Sections 5.0, 6.0 and 9.0.

There are no submarine transmission lines contemplated in the Project. All marine crossings are being designed as aerial traverses. Likewise, no dredging activities that require marine disposal are contemplated for the construction and operation of the proposed barge landing sites. Although it is likely that fill placement will be required below the high water mark in order to construct the barge landing sites, this does not constitute disposal, as per the definition in the Canadian Environmental Protection Act 122(1). Therefore, it is not anticipated that a Disposal at Sea Permit will be required for the Project. While recognizing that EC aims to include non-trigger project components with potential impacts that may fall under their jurisdiction within the federal scope of the project, it is not anticipated that EC will act as an RA pursuant to CEAA.

13.0 REQUIRED PERMITS

The following are the major provincial and federal permits that are expected to be required for the proposed Project. Additional permitting requirements will be assessed as the proposed Project proceeds through consultation with government agencies. The proponent anticipates that applications will be made for these permits concurrent with the application for environmental certification:

- Environmental Assessment Decision Statement under CEAA.
- Environmental Assessment Certificate under BCEAA.
- Water licence under the Water Act – applications previously submitted.
- Licence to occupy Crown land under the Land Act – applications previously submitted.
- Authorizations under Section 35(2) of the Fisheries Act.
- Approvals under the Navigable Waters Protection Act.
- Licence to Cut under the Forest and Range Protection Act.
- Permits for the camp under the BC Health Act.
- Approvals and notifications for work in and around streams under the Water Act.

14.0 MAJOR PROJECTS MANAGEMENT OFFICE INVOLVEMENT

The provincial-federal harmonized review will be facilitated and streamlined by the Major Projects Management Office of Natural Resources Canada.

15.0 CLOSURE

If you require any clarifications or additional information, please do not hesitate to contact the undersigned.

Sincerely,

PLUTONIC POWER CORPORATION

"Original Signed"

Bill Irwin
Director, Land and Resource Management

Encl:

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