British Columbia Transmission CORPORATION™

NORTHWEST TRANSMISSION LINE (NTL) PROJECT

TERRACE to BOB QUINN LAKE

Project Description

Submitted to:

British Columbia Environmental Assessment Office
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Executive Summary

British Columbia Transmission Corporation (BCTC) is the provincial Crown corporation responsible for the planning, operation and maintenance of the publicly-owned electrical power transmission system in British Columbia and its interconnections with the North American grid. BCTC, in consultation with the Province, BC Hydro and industry, is studying the possibility of expanding the existing transmission system into the northwest region of British Columbia in order to encourage economic development, improve reliability and allow for grid power to be extended to communities in the area. A potential 335 km 287 kV transmission line from Terrace extending north to Bob Quinn Lake is under consideration to support and realize new regional social and economic benefits. The transmission line is referred to as the Northwest Transmission Line (NTL).

The BCTC is submitting the NTL project description into the Environmental Assessment Process in order to preserve the possibility of building the transmission line to meet an initial in service date of October 2009, which coincides with the expected date for power requirements in the area. Environmental studies would be required to begin as early as 2007. If BCTC determines that the project will not proceed, it will be withdrawn from the Process.

There are three alternative scenarios which have potential to supply power for load growth in the northwest:

1. Extension of the provincial power grid to serve the region (the NTL option);
2. Local, development-targeted power generation by diesel-electric or small-hydro power; and
3. Regional power generation from hydro power, or another fuel source such as natural gas, complemented by a regional distribution circuit.

BCTC and BC Hydro have completed their analysis and the extension of the provincial power grid is the favoured alternative. BCTC is therefore entering the Environmental Assessment Process for a potential new transmission line option. The potential new transmission line option would be approximately 335 km long, and would originate at Skeena Substation near Terrace, proceed north to New Aiyansh and then northeasterly to join up with the Highway 37 corridor near Cranberry Junction. Thereafter the corridor would parallel Highway 37 to Bob Quinn Lake. The northernmost 126 km is a new corridor in its entirety. South of Meziadin Junction, the existing corridor will add a parallel right-of-way to the existing 138 kV 1L387 and 1L381 circuits. The Skeena Substation will require upgrading and the Bob Quinn Substation is a new facility at the northern terminus. Most of the route is on Crown land with the exception of portions in the Nass Valley within the Nisga'a Lands.

A determination is yet to be made whether the Project would be automatically reviewable under the *Reviewable Projects Regulation* of the *British Columbia Environmental Assessment Act (BCEAA)*. If the project is not designated as reviewable, then BCTC will ask the British Columbia Environmental Assessment Office (BCEAO) to designate the Project as a reviewable project under the *BCEAA*.

The NTL project may also need to be assessed under the *Canadian Environmental Assessment Act (CEAA)* due to the requirement for approvals under the federal *Fisheries Act* and *Navigable Waters Protection Act*. As a *BCEAA* reviewable project, a harmonized provincial – federal review would be coordinated by BCEAO in accordance with *BCEAA* and *CEAA*. The Canadian Environmental Assessment Agency (CEA) would determine whether the federal government requires an environmental screening assessment.

A requirement of the BCEAO review process is the establishment of a Project Terms of Reference (ToR) and a Section 11 Order. The ToR specifies the scope of environmental and socio-economic studies to be undertaken to assess the impact of the NTL project on the environment and communities, and the requirements for design of mitigation measures. BCEAO provides First Nations and the public an opportunity to comment on the draft ToR. The Section 11 Order outlines the scope and content of a public consultation program as well as various other procedural matters pertaining to the assessment process for the NTL project. The review procedures and timelines are specified in statute.

The NTL also requires a Certificate of Public Convenience and Necessity (CPCN) from the British Columbia Utilities Commission (BCUC). Under the BCUC process, the need, alternatives, capital and operating costs, and a broad range of socio-economic and non-financial factors would be reviewed for NTL and public hearings may be held on the CPCN application.

Potential Benefits

The benefits of the NTL include:

1. A reliable regional power supply for current and expected load growth to serve regional economic development and remote populations,
2. A secure provincial grid connection to serve independent power producers and support the Province's goals of electricity self sufficiency, and
3. An opportunity to reduce the environmental impacts of locally generated power, especially greenhouse gases related to diesel-electric power generation.

Project Components

The NTL would involve:

1. A 335 km 287 kV transmission line between Skeena Substation at Terrace and Bob Quinn Lake adjacent to Highway 37; and
2. 287 kV circuit terminations and related equipment at Skeena Substation and new substation facilities at Bob Quinn Lake (site development, circuit terminations, shunt reactors and transformers).

Consultation

First Nations, public and stakeholder engagement and consultation will occur through all stages of the NTL project planning, regulatory review and construction. This will include meetings and working sessions with First Nations, meetings with stakeholder groups, and public open houses and

information sessions. Consultations will be supported by a variety of information materials and mechanisms to encourage feedback thereby providing stakeholders the opportunity to be fully informed about the project and have convenient and accessible means to provide input.

The BCEAO manages a website on which all relevant project related documents are posted for access and review by the public. BCTC manages a website on which project related news is also posted for public information.

Environmental Assessment

The scope of the environmental assessment will be fully detailed in the Project Terms of Reference and will address a wide range of values and resources including:

1. Aquatic species and habitat;
2. Terrestrial ecosystems, vegetation and wildlife;
3. Land use and socioeconomic / socio-community and cultural conditions;
4. Visual landscape and recreational resources;
5. Hydrology, soils, terrain and natural hazards;
6. First Nations' traditional knowledge, use and related aboriginal interests;
7. Heritage and archaeological resources; and
8. Public health issues.

Additional assessment topics may be added to this list during preparation of the TOR and in the course of the environmental assessment studies.

BCTC will prepare and submit a draft Terms of Reference (ToR) for regulatory review and approval that will outline the proposed scope of the technical studies, assessment methodologies, public and First Nations consultation programs, and the general format and organization to be implemented during preparation of an Application for an Environmental Assessment Certificate (EAC) under *BCEAA*. The EAC Application will also satisfy the *CEAA* screening level or comprehensive study requirements.

Project Schedule

Should the NTL proceed, BCTC would plan for an initial in-service date for power to be delivered to Bob Quinn Substation by October 2009, with full project completion by fall 2011. These dates coincide with the expected dates for power requirements in the area.

List of Abbreviations

Acronym	Definition
AOA	Archaeological Overview Assessment
AIA	Archaeological Impact Assessment
BC Hydro	British Columbia Hydro and Power Authority
BCEAA	British Columbia Environmental Assessment Act
BCEAO	British Columbia Environmental Assessment Office
BCTC	British Columbia Transmission Corporation
BCUC	British Columbia Utilities Corporation
BQL	Bob Quinn Lake Substation
CEAA	Canadian Environmental Assessment Act
CEAA Agency	Canadian Environmental Assessment Agency
CIA	Cumulative Impact Assessment
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPCN	Certificate of Public Convenience and Necessity
EAC	Environmental Assessment Certificate
ELF	Extremely Low Frequency
EMF	Electromagnetic Fields
Hwy 37	Highway 37
IPP	Independent Power Producer
kAMP	Kilo Ampere – 1,000 Ampere
kV	Kilo Volt – 1,000 Volts
LRMP	Land and Resource Management Plan
MARR	Ministry of Aboriginal Relations and Reconciliation
MEMPR	Ministry of Energy, Mines and Petroleum Resources
MoE	Ministry of Environment
MoFR	Ministry of Forests and Range
MoH	Ministry of Health
MoT	Ministry of Transportation
MW	Mega Watt – 1,000,000 Watts
MZN	Meziadin Substation
NTL	Northwest Transmission Line
PEM	Predictive Ecosystem Mapping
RDKS	Regional District of Kitimat-Stikine

ROW	Right-of-Way
SARA	Species at Risk Act
SCST	Single Circuit Steel Tower
SKA	Skeena Substation
SVC	Static VAR Compensator
TEM	Terrain Ecosystem Mapping
TOR	Terms of Reference
VEC	Valued Ecosystem Component

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1. Proponent Information

BCTC is a provincial Crown corporation that began operations on August 1, 2003.

BCTC's head office is located at Suite 1100 – 1055 Dunsmuir Street in Vancouver, British Columbia.

Under the *Transmission Corporation Act* and a number of designated agreements between BCTC and BC Hydro, BCTC has the responsibility to plan, maintain and operate BC Hydro's transmission assets. BCTC is also responsible for directing new investment in transmission infrastructure upon approval of the British Columbia Utilities Commission (BCUC). This responsibility includes planning, constructing and obtaining all regulatory approvals for enhancements, reinforcements and sustaining growth investments of BC Hydro's transmission assets, and for entering into commitments and incurring expenditures for capital investments on the transmission system. BC Hydro continues to own the core transmission assets and is required to make capital expenditures to support these investments.

1.1 Key Proponent Contacts

Proponent: B.C. Transmission Corporation (BCTC)

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2. Project Justification

This Project Description provides an overview of the Northwest Transmission Line (NTL) proposal to reinforce electric transmission service in the area from the Skeena Substation (SKA) to the Meziadin Substation (MZN) and to extend electric transmission service beyond the Meziadin Substation to a new substation terminus at Bob Quinn Lake (BQL). While this is not yet a confirmed project, BCTC continues to advance its studies on NTL.

In its capacity as planner, developer and operator of the transmission grid in the province, BCTC has reviewed and updated planning level studies for the extension of transmission service north of Meziadin Junction. The Corporation has been in discussions with BC Hydro, industry and the Provincial government in relation to potential mining projects and potential IPP's in the area. If this project is to proceed, BCTC has determined that a new 287 kV line would be the preferred solution and run independently of, but generally in parallel with, the existing 138 kV line from Skeena to Meziadin and then continue north. This is based on a number of assumptions concerning future load growth from such mining and IPP projects. A voltage of 287 kV would also provide capacity beyond the immediate needs for future load growth potential in the area, as well as a possible point of connection for generation.

Five mining projects within connection range of the NTL corridor are at various stages of the Environmental Assessment Review Process; from pre-application to recent approval. As global supply inventory concerns persist for commodities such as copper, molybdenum and zinc, investment is being directed to northwest B.C. to add to the known reserve base of known mining projects and explore for additional resources. In 2006, $128 million was spent on mineral exploration in Northwest B.C. on 171 projects; 48 per cent of the provincial total.

Discussions have considered a number of alternatives to the extension of the transmission grid to service new demands and those projected to arise:

On-site Power Generation:

On-site power generation, primarily from diesel-electric or small-scale hydropower cannot service the projected load growth. Diesel electric power generation is a significant greenhouse gas contributor and there are significant potential environmental impacts associated with the transport and storage of large volumes of diesel fuel along Highway 37 and subsidiary roads. The cumulative effect of transport impacts could make this form of power generation prohibitive. Small hydropower at the scale required to reliably service major mines would require long planning, design and permitting lead times, while always being subject to the risk of being stranded at the end of a finite individual mine life.

Regional Power Generation:

Regional power generation through conventional sources: hydro power generation, natural gas, cogeneration or coal-fired electric power generation will require long planning, design and permitting lead times and in the case of hydro power may be subject to risk of inadequate power generation during periods of low flow without the ability to shunt power into the region through a

grid connection. There are currently no regional power generation proposals. They would require extensive transmission lines to deliver power to the load.

Regional Power Generation – Unconventional:

Unconventional sources of regional power generation such as: geothermal or coal-bed gas may have potential in the future. There are currently no such proposals. They would require extensive transmission lines to deliver power to the load.

The NTL project, if approved to proceed, will require a Certificate of Public Convenience and Necessity (CPCN) from the British Columbia Utilities Commission (BCUC). The BCUC process will require a review of the need and justification for the Project, alternatives and costs. At the BCUC's discretion, public hearings may be held on the CPCN application before a decision is issued.

3. Socio-Economic Benefits

Northwestern British Columbia suffers from a lack of electricity infrastructure and BC Hydro's high voltage electricity grid along Highway 37 does not extend north of Meziadin. North of Meziadin, electricity is provided mostly by diesel generation and the lack of grid power is a barrier to economic growth.

The current forecast of the capital cost for the NTL is $290 million in 2006 dollars. The inflated cost, based on that 2006 estimate, is in the order of $340 million. While the costs at this point are preliminary and still subject to change, they identify that there will be significant economic benefit to communities and employment opportunities in the area during the three year construction period.

Transmission infrastructure in the northwest will benefit communities by providing potential access to grid service and the potential to attract industrial development. The northwest has substantial mining potential, with minerals of interest including copper, gold, silver, zinc and coal. Possible projects in the area could make capital investments that are conservatively estimated to be in excess of $2 billion. Of these projects, there are currently two with EAC's, and three more in various stages of review. Without low cost grid power, the number and scale of mines will be limited. In addition, mines have the potential to produce many jobs during operation and have one of the highest employment multipliers of all industrial activity. Projects that could become viable as a result of access to grid power have the potential have the potential to produce approximately 1,000 direct jobs, more than offsetting the expected loss of jobs in the region due to anticipated closures of the Eskay Creek and Huckleberry mines. Further, a conservative estimate of the indirect and induced jobs from just the two most advanced mine developments in the area is another 1,000 jobs.

A transmission system extended to this area would open up the opportunity for independent power producers to develop projects and deliver power through the grid. Such generators would be able to sell their output to BC Hydro, large industrial customers in British Columbia, or other wholesale suppliers or markets. Renewable or clean electricity generation projects in the northwest can contribute to meeting Provincial objectives for electricity self sufficiency and ensuring renewable and clean electricity continues to comprise 90 percent of British Columbia's electricity generation. As well, such projects also have the potential to produce long term high skilled well paying employment.

As with any project of the size and scope of the NTL, there are potential impacts and trade offs that must be fully studied. A brief discussion of the anticipated socioeconomic assessments and studies that are anticipated as part of the scope of the environmental assessment is provided in Section 7.1.3. Given that the majority of the settlements in the proposed project area are First Nations, it is anticipated that the socioeconomic assessments will focus on social, economic and cultural values that are of concern to those groups.

4. Project Components and Infrastructure

4.1 Proposed Transmission Line Route and Components

Northwestern British Columbia is presently not connected to the provincial electrical power grid beyond Meziadin Junction and the Port of Stewart. The extension of electrical transmission services north of Meziadin Junction would potentially serve resource developments, independent power producers, and northern communities.

The potential Northwest Transmission Line, as proposed, is comprised of a 287 kV transmission line initiating at the existing Skeena Substation near Terrace, BC and runs north along a new right-of-way to Bob Quinn for a length of approximately 335 km as shown on Figure 4-1. The route generally follows major river valleys and existing roads and highways, including Highway 37 from Cranberry Junction to Bob Quinn. The route would follow the existing BC Hydro circuits 1L387 for 101 km from Skeena to New Aiyansh (Plate 4-1); and 1L381 for 108 km from New Aiyansh to Meziadin. The remaining 126 km from Meziadin to Bob Quinn would be a new right-of-way (ROW) (Plate 4-2).

Plate 4-1. 1L387 Near New Aiyansh – Nass Valley.

4-1 British Columbia Transmission Corporation – Proposed Northwest Transmission Line Route

Gis no. 823-1-01

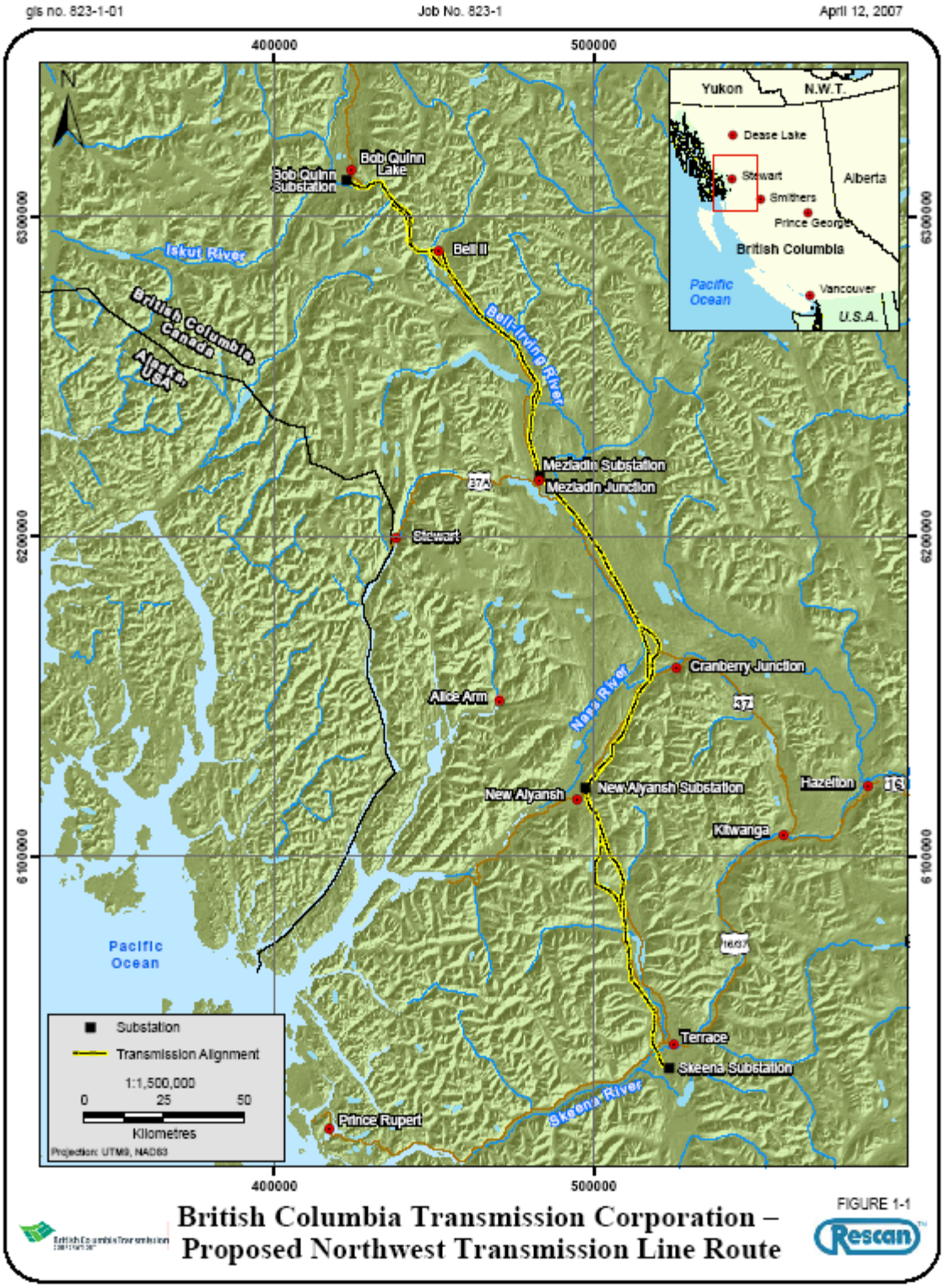

Plate 4-2. Bell Irving River Valley.

The proposal entails a new substation at Bob Quinn and a substation upgrade at the Skeena substation. The Bob Quinn substation scope also assumes connections for the interconnection of major loads (138 kV) and an independent power producer, as well as provisions for the connection for distribution level service. The Bob Quinn substation would occupy approximately 5 ha and incorporate three 287 kV line terminations, two 287 /138 / 12. kV 100 MVa transformers and one 138 kV line termination. The Skeena Substation would incorporate one new 287 kV line termination within the current substation land area. The route is referred to as the Northwest Transmission Line (NTL). An overview of ROW requirements is presented in Appendix A.

5. First Nations Consultation

5.1 BCTC/BC Hydro First Nations Consultation

BC Hydro (Aboriginal Relations and Negotiations) will lead the First Nations consultation activities in respect of the Project. BCTC will lead the broader public consultation program and ensure that First Nations are informed of the broader public engagement process and opportunities for input regarding the Project.

BC Hydro will ensure that its First Nation consultation activities meet all legal requirements relating thereto, including assisting any Crown decision-makers in carrying out their respective consultation requirements.

5.2 Consultation Plan

BC Hydro's consultation plan includes implementation of the following initiatives with the potentially affected First Nations:

1. Providing timely information and updates regarding the Project on an ongoing basis;
2. Providing timely information and updates regarding the environmental and regulatory approval processes associated with the Project on an ongoing basis;
3. Responding to First Nations' questions and/or information requests regarding the Project in a timely manner;
4. Seeking to understand First Nations' concerns or issues respecting the Project and consider such issues or concerns in the Project's final design and delivery;
5. Engaging in discussions with First Nations to further identify means, where appropriate, to mitigate, minimize or otherwise accommodate First Nations' concerns or issues relating to the Project;
6. Documenting all consultation activities with First Nations and providing a record of such documentation to all appropriate Crown decision-makers and regulators; and
7. Providing regular opportunities for First Nations to meet with BC Hydro and BCTC, and their representatives to exchange information regarding the Project.

First Nation consultation activities will be undertaken throughout the pre-application stage of the Environmental Assessment (EA) process (including the preparation of the EAC Application), and subsequently during the application review and public comment period (following submission of the Application and in conjunction with Technical Working Group review activities). The need for post-Certification consultation initiatives will be assessed on an ongoing basis leading up to EA Certification, should the project proceed.

5.3 First Nations

An examination of asserted traditional territory, Treaty Boundaries, Statement of Intent boundaries and known consultation boundaries primarily identified by the BC Treaty Commission, has resulted in the following nine First Nations being identified as having potential interests in the Project area. As such, these First Nations will be consulted individually (by First Nation) or collectively (e.g. by the Tribal Council or Alliance) as project planning proceeds in relation to the potential for project-related impacts on their aboriginal interests:

- Kitselas First Nation
- Kitsumkalum First Nation
- Lax Kw'alaams First Nation
- Metlakatla First Nation
- Gitxsan
- Skii km Lax Ha (former House of Gitxsan)
- Nisga'a Lisims Government
- Tahltan Central Council (Representing Iskut and Tahltan Bands)
- Gitanyow
    - Specific Houses
        - Wii Litsxw
        - Malii / Axwindesxw
        - Gamlakyeltxw
        - Watakhayetsxw

5.4 Activities Completed to Date

BC Hydro Aboriginal Relations and Negotiations initiated contact with First Nations by phone call, letter, and fax on February 9th, 2007. Each First Nation was provided with a letter of introduction that outlined the respective roles of BC Hydro and BCTC, identified an internal point of contact for further communication, and requested an opportunity to meet with each First Nation and their representatives to discuss the potential project. Each First Nation was also provided with a project information handout, and map showing the potential route for reference.

Initial meetings were conducted over 8 weeks and included BC Hydro Aboriginal Relations and Negotiations Coordinators, and BCTC's NTL Project Manager. Each First Nation was represented by Traditional Territory designates (Hereditary Chief's) and/or Chief and Council. During these initial meetings, BC Hydro provided each First Nation with a large poster size map that identified the existing transmission line and potential NTL to facilitate a discussion of preliminary issues, interests, and impacts within the proposed corridor.

BC Hydro and BCTC emphasized their desire to work with First Nations to design a consultation process that was participatory and reflective of their interests and expectations. First Nations also provided guidance with respect to future consultations and clarified which level of First Nations government would represent their Traditional Territory interests.

As a result of these initial meetings, capacity funding was offered to each First Nation's respective representative to compensate them for their attendance during the first round of meetings, and to provide resources for future participation during this introductory phase of discussions. Comprehensive capacity and participation agreements with First Nations are expected as the project approval and development process moves forward, and discussions are currently underway in anticipation of this next step.

6. Public Consultation

6.1 General Approach

BCTC's general approach for notifying and consulting with public stakeholders includes the following principles:

1. ***Open public process***: interested parties will be encouraged to participate throughout the planning process and regulatory review, with effective two-way communication. The consultation process is viewed as an opportunity for constructive dialogue with an informed audience;
2. ***Meaningful consultation***: interested parties can expect that consultation will be real and meaningful from their perspective. Specific expectations may vary among the people being consulted and may change over time;
3. ***Transparent and accountable***: interested parties can expect that they will be provided with access to all relevant information and that they will be informed about changes in the Project and decisions made by BCTC; and
4. ***Consultation, not consensus***: input from the public, along with information gathered through technical, environmental and social impact studies, will inform BCTC decisions.

6.2 Public Consultation Objectives

BCTC has a responsibility to communicate Project intent, respond to public issues and concerns, track commitments, and gather suggestions with regard to its construction, schedule and operations.

The objectives of the public consultation plan are:

1. Project Justification: to provide information to interested and affected residents and stakeholders about the need for the Project;
2. Public Education: to explain the rationale for the Project;
3. Issues Identification and Management: to identify and address potential issues and concerns from a community and stakeholder perspective; and
4. Public Input: to identify opportunities for individuals to have input into BCTC decisions that may affect them and, where feasible and appropriate, make adjustments to the plan based on their input.

6.3 Proposed Public Consultation Plan

As the environmental assessment process for the project proceeds, BCTC will undertake public notification and consultation activities throughout the preparation of the EAC and CPCN applications to engage the public with meaningful input and feedback. BCTC will also undertake formal public consultation activities, such as scheduled public meetings and information sessions, during the public comment period following submission of the Application for regulatory and public

review. The scope and delivery of the events will be arranged to best engage input from communities.

Consultation activities that will be undertaken through all stages of the Project include the following:

1. Public issues scoping and community profiling;
2. Website development and printed materials;
3. Meetings with media in the project area;
4. Meetings with key stakeholder groups;
5. Open houses, information sessions and meetings to raise awareness, and to identify and address issues and concerns;
6. Ongoing issues tracking and proactive response;
7. Public notification of events, meetings and the status of the project using a variety of media (predominantly advertising, and both hardcopy and electronic mailouts); and
8. Providing comprehensive reporting of the process and results of the consultation process, including consultation summaries to support the EAC and CPCN applications.

See Appendix B for an initial stakeholders list.

7. Scope of Environmental Assessment

During the pre-application stage, efforts will focus on scoping of issues for review and development of Terms of Reference (ToR) for the EAC Application. The ToR will also satisfy requirements identified by the CEA Agency for an environmental screening assessment (or comprehensive study) under *CEAA*. Input received during consultation with federal, provincial and municipal agencies, the public and First Nations will be of critical importance in the development of the ToR.

BCTC will submit the draft ToR for regulatory review and approval. The draft ToR will outline the proposed scope of the technical studies, assessment methodologies, public and First Nations consultation programs and general form and organization to be implemented during preparation of the EAC application, and concurrently, to meet the environmental assessment requirements under the *CEAA*.

It is anticipated that the scope of the Environmental Assessment will identify valued ecosystem components (VEC) and consider potential effects to the following biological, physical and cultural resources:

1. Aquatic species and habitat;
2. Terrestrial ecosystems, vegetation and wildlife;
3. Land use and socioeconomic / socio-community and cultural conditions;
4. Visual landscape and recreational resources;
5. Hydrology, soils, terrain and natural hazards;
6. First Nations' traditional knowledge and use;
7. Heritage and archaeological resources; and
8. Public health issues.

Additional assessment topics may be added to this list during preparation of the TOR and in the course of the environmental assessment studies.

Based on the findings of the assessment studies, environmental mitigation measures will be recommended that, where appropriate, will be incorporated into detailed alignment, tower placement decisions, and other aspects of the Project design to attempt to avoid adverse effects. In addition, mitigation measures will be compiled in a detailed Environmental Management Plan that will be used to minimize effects associated with specific activities and procedures during project construction and operation. This document will be finalized subsequent to the issuance of an EAC, and will be a key resource guide for the Construction Environmental Monitors.

In addition to the assessment results, the EAC Application will describe the potential for residual effects to occur after implementation of recommended mitigation measures. As required under *CEAA*, it will also contain an assessment of cumulative environmental effects, an analysis of

potential accidents and malfunctions, and an evaluation of the effects on the environment of the Project.

7.1 Key Environmental and Socioeconomic Issues

A brief overview of the key biological, socioeconomic and public health issues involved in the Project, as well as an indication of how they will be dealt with in the EAC Application, is provided below.

7.1.1 Aquatic Species and Habitat

The NTL corridor crosses through the following eight watershed groups from south to north based on the BC Watershed Classification system:

1. Lower Skeena River
2. Kalum River
3. Tseax River
4. Lower Nass River
5. Nass River
6. Kinskuch River
7. Kiteen River
8. Cranberry River
9. Lower Bell-Irving River
10. Upper Bell-Irving River
11. Iskut River

Several hundred watercourse crossings will be necessary to complete the NTL, many of which support habitat for fish, amphibians and other aquatic species. Fish known to be present in the NTL corridor region include: all five species of Pacific salmon, rainbow and steelhead trout, kokanee, dolly varden, char, bull trout, cutthroat trout, and perhaps as many as 20 other species. Several of these species, such as green sturgeon, white sturgeon, American shad, eulachon, and longfin smelt, have only been recorded within major watercourses along the corridor such as the Skeena River, Kitsumkalum River, and Nass River.

The EAC Application will document the results of a fish and fish habitat inventory and assessment, to be undertaken in 2007 to identify critical and sensitive spawning, rearing and riparian habitats within and adjacent to the corridor. The document will also evaluate potential effects to aquatic habitats associated with necessary ROW clearing, access development, and transmission line construction, and describe environmental mitigation and habitat compensation strategies to be implemented during the Project. Technical input will be sought from fish habitat biologists at Fisheries and Oceans Canada and at Ministry of Environment, along with input, where applicable, from local First Nations, organized stream stewardships and commercial or recreational fishing organizations.

7.1.2 Terrestrial Ecosystems, Vegetation and Wildlife

Terrestrial and wildlife resources that occur along the NTL corridor will be described in the EAC Application based on a review of background documents, digital resource inventories, field studies and interviews with First Nations to be undertaken in 2007. Habitat mapping will be used to delineate ecological units and describe ecological – landscape relationships. Existing and available terrestrial and predictive ecosystem mapping will be used where possible. The status of Predictive Ecosystem Mapping (PEM) and Terrain Ecosystem Mapping (TEM) will be determined and completed if required. Fieldwork will follow accepted Resource Inventory Committee standards and protocols. Vegetation studies will focus on ecosystems and rare elements. Wildlife studies will focus on the distribution of and habitat use by mammals, birds, amphibians, and herpetiles including species protected under SARA and species of special concern.

The NTL corridor may provide habitat for twelve species ranked by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and listed under SARA, including the following 5 species listed as protected under Schedule 1:

- Caribou – Northern Mountain Population (*Rangifer tarandus*);
- Grizzly Bear (*Ursus arctos*);
- Coastal Tailed Frog (*Aschaphus truei*);
- Marbled Murrelet (*Brachyramptus marmoratus*); and,
- Western Screech-Owl – Kennecotti subspecies (*Megascops kennicottii kennicottii*).

Potential effects to terrestrial ecosystems, wildlife habitat, and wildlife species may occur as a result of activities involved in ROW and access preparation and maintenance (e.g., vegetation clearing), tower or substation installation, and conductor stringing. Effects during operation may occur due to the presence of the new transmission line, an expanded footprint of the current transmission line where closely paralleled, or new access for human use such as hunting or recreation. These potential effects are expected to be most pronounced along those sections of the corridor where there is establishment of new ROW.

The results of the environmental assessment will be used to modify the alignment, tower locations and tower designs, where practicable, to avoid or to minimize any adverse effects. Special emphasis will be placed on devising means to protect habitat and species of provincial and federal concern. Where such solutions are not feasible, site-specific mitigation/compensation measures will be developed with input from specialist consultants, regulatory agencies, First Nations and interested stakeholders. These measures will be described in the EAC Application.

7.1.3 Land Use and Socio-Economic / Socio-Community and Cultural Conditions

The Project area is situated within the Regional District of Kitimat-Stikine (RDKS), and contains extensive areas of Crown land, the Nisga'a Lands, and areas subject to strategic-level Land and Resource Management Plans (LRMP). Kalum South LRMP encompasses the area from Terrace north to the lower Nass Valley; Cassiar-Iskut Stikine LRMP covers the northernmost portions of the corridor within the Iskut River drainage, and the Kispiox LRMP is east of the corridor in the vicinity

of Swan Lake Provincial Park near Cranberry Junction. The central portion of the NTL route has not been subject to strategic land use planning.

From south to north, communities and settlements in close proximity to the route include:

- City of Terrace
- Thunderbird
- New Aiyansh
- Aiyansh
- Cranberry Junction
- Meziadin Lake
- Bob Quinn Lake

A number of Parks, Protected Areas, Sensitive Areas, Natural Areas, Trails and Recreation Sites exist along the route; some may be transected by the corridor, others could be within the visibility range of the corridor:

- Lakelse Lake Wetlands Park
- Lakelse Lake Provincial Park
- Hai Lake/ Mount Herman Provincial Park
- Sleeping Beauty Mountain Provincial Park
- Pine Lake Recreation Site
- Lundmark Bog Protected Area
- Nisga'a Memorial Lava Bed Provincial Park
- Gingietl Creek Ecological Reserve
- Kitsumkalum Lake North Protected Area
- Cottonwood Island
- Nass – Cranberry Grease Trail
- Telegraph Trail
- Swan Lake – Kispiox River Provincial Park
- Meziadin River Provincial Park
- Ningunsaw River Provincial Park
- Ningunsaw River Ecological Reserve

Dominant land uses along the corridor include: Forestry, Recreation, Mineral Development, Tourism, Recreational and Guided Fishing, Traditional Harvesting, Fisheries, Conservation,

Transportation, Service Industries and Utilities. Owing to climatic conditions agricultural use is very limited and occurs only in the vicinity of Terrace and sparsely in the Nass Valley.

Potential effects on land use and socio-economic attributes associated with the corridor will be evaluated through a number of studies, based on local research and interaction with residents of the region. The extent of land uses and areas of resource development and conservation will be delineated. Potential land use conflicts will be identified and mitigation measures developed to avoid or minimize project-related effects. The assessment will also address potential effects on local traffic patterns, property values, industrial, commercial and recreational use during construction and operation of the NTL.

7.1.4 Visual Landscape and Recreational Resources

Clearing and installation of new transmission towers and conductors along the existing ROW and in proposed areas of new ROW could result in noticeable effects to the visual landscape and recreation resources.

Specialists will be retained to prepare an inventory of recreation resources, including visual landscapes, and recreation features, opportunities and viewpoints along the length of the transmission line corridor. An inventory of First Nations' special sites where visual resources may be of interest will also be undertaken in conjunction with traditional studies. Visual and recreation inventory work will be undertaken with reference to existing data and mapping maintained by the Ministry of Forests and Range Recreation Inventory and B.C. Parks staff. Technical input will be provided to the project team regarding recommended alignment and tower locations, relative to sight lines. Three-dimensional landscape renderings from different viewpoints for use during public and First Nations engagement will be developed. These will be used to assess effects to visual landscape and recreation resources/features associated with the final transmission line route and site-specific tower designs during different seasons. This information will be incorporated into the EAC Application.

7.1.5 Hydrology, Soils and Terrain

The NTL corridor crosses a number of provincially and regionally significant watercourses along its route, about which an understanding of the hydrology will be an important design component for crossing designs, infrastructure protection, access road safety and fisheries protection. These include those listed in 7.1.1 above. A gap analysis of existing hydrometric station placement has determined adequacy of the array for the purposes of analysis and undertaking the EAC assessment. Localized data would be acquired for site-specific needs if appropriate. Groundwater resources will be described and investigated in detail where substation construction is anticipated. Community watersheds and domestic wells or other points of licensed domestic water abstraction will be documented, and their quality and quantity researched.

Specialists will describe soils, initially at a reconnaissance level. Progressively more detailed descriptions will be developed for specific segments of the route, primarily to characterize soil type and susceptibility to erosion and sediment transport. Soil surveys also contribute to vegetation and ecosystem knowledge, and identification of soils suitable for salvage in reclamation and re-vegetation. The agricultural value for selected areas of higher capability soils will be noted. Soils

information may contribute to tower placement and alternate methods of clearing to minimize potential for erosion and water quality impacts.

The terrain along the route will be described in detail and depicted in formats that allow those who are reviewing the EAC to easily understand the nature of the route, which will range from traversing steep mountainous slopes to broad open valleys. Simulated fly-overs of some or all of segments of the route will be developed to aid stakeholders in visualizing the terrain. Specialists will be retained to review and report in the EAC on any terrain hazards necessary to consider in designing a secure route.

7.1.6 First Nations' Traditional Knowledge and Use

The NTL corridor crosses through the Nisga'a Lands and the asserted traditional territory, and in some cases, near reserve lands, of nine other First Nations. As a part of the First Nations consultation and engagement process, the project team will request access to existing traditional use studies or site-specific information describing traditional knowledge or use in areas to be crossed by the NTL corridor and associated access roads. Since such information may be considered confidential, and subject to any information sharing agreements between BCTC, BC Hydro and the First Nation, it may not be directly referred to in the EAC Application, but will be taken into account during route selection and design, as well as the development of any mitigation measures, as appropriate, for project construction and operation.

7.1.7 Archaeology and Heritage Resources

An Archaeological Overview Assessment (AOA) and a heritage resources inventory and assessment will be undertaken by qualified specialist consultants, with the involvement of the First Nations and the B.C. Ministry of Tourism, Sport and the Arts, Archaeology Permitting and Inspection Section. Following the AOA, a Heritage Inspection Permit under the *Heritage Conservation Act* will be secured prior to undertaking further Archaeological Impact Assessments (AIA). The AIA, which may involve subsurface investigations at selected sites along the ROW, will likely be required to confirm the presence (or absence) of archaeological resources. First Nations are likely to be involved in the field aspect of AIAs. The AIA will be informed by the concurrent engagement in traditional knowledge and use studies.

The heritage resource inventory and assessment will identify historical sites within the NTL corridor. At present five trails have been identified along the corridor: Skeena Trail, Kitsumkalum Trail, Stikine Trail, Kitwunkul "Grease" Trail, and the Work Channel Trail. Mitigation measures will be recommended to avoid or minimize impacts to any historical features intersected by the ROW or access. These measures will be described in the EAC Application.

7.1.8 Public Health Issues

Key health issues associated with construction, operation and maintenance of a new 287 kV transmission line will be identified in the EAC Application. During clearing and construction, such issues will likely include short-term localized increases in noise levels and emissions affecting air quality (dust, exhaust) associated with equipment operation. The EAC Application will include a description of pre-project ambient noise and air quality conditions at a representative number of sites along the alignment, focusing on potentially sensitive sites such as residential areas, schools,

health care facilities, and community centres. Relevant regional and municipal bylaws and guidelines will be reviewed and used to develop site-specific mitigation measures to limit public health effects during construction.

Potential effects of transmission line operation on public health, including those associated with air and water quality will also be discussed in the EAC Application. Extremely low frequency (ELF) electromagnetic field (EMF) levels, such as those generated during the transmission and use of electric power do not have a demonstrated adverse effect on human health. However EMF continues to be a concern of some stakeholders. Given the sparse population along the NTL corridor, the number of stakeholders concerned about EMF is expected to be few. The EAC Application will address existing and projected EMF levels within and adjacent to the ROW. The air and water quality assessments and the EMF assessment will involve a review of the most current literature and codes of practice, will make reference to site-specific issues and concerns, and will recommend the best management practices for mitigation of effects.

7.2 Additional Permit, License and Approval Requirements

In addition to Project approval under *BCEAA* and *CEAA*, BCTC will apply to a number of federal and/or provincial agencies for approval to carry out specific aspects of the Project. For example, works to be conducted in or adjacent to a watercourse may require provincial approval under the *Water Act* and/or federal approval under the *Fisheries Act* or *Navigable Waters Protection Act*. Acquisition of new right-of-way (ROW) on Crown land will require a statutory ROW easement and/or License of Occupation under the provincial *Land Use Act*. BCTC will apply for a Park Use Permit under the *Parks Act* for clearing of ROW and/or installation of new transmission structures in a provincial park. Removal of timber from the ROW will require a License to Cut and a timber mark from MoFR. Construction camps may be required to obtain permits for water use and waste disposal from MoH and/or MoE.

To the extent possible, applications for permits, licenses and approvals identified during the course of the environmental assessment and review process will be prepared concurrently with the EAC Application.

8. Schedule

Table 8-1 lists the key Project Milestones that are identified at the time of writing this Project Description and represent BCTC's plan to achieve the projected in-service date of the initial phase of NTL in October 2009.

Table 8-1
Key Project Milestones

Key Milestone	Date
First Nations consultation initiated	January, 2007
Complete Business Proposal	February, 2007
First Draft Conceptual Project Plan	March 15, 2007
Public Consultation initiated	March 22, 2007
Submit Project Description to BCEAO / CEA Agency	March 30, 2007
Initial BCTC meeting with BCEAO	April, 2007
Section 10 Order issued by BCEAO	May 6, 2007
Submit First Draft Terms of Reference to BCEAO / CEA Agency	May 15, 2007
Initiate Environmental field studies	May 18, 2007
Technical Working Group TOR review	August 1, 2007
Section 11 Order issued by BCEAO	August 15, 2007
Public Review Period on TOR	Sept 15, 2007
EAC Application TOR approved by BCEAO	October 10, 2007
Complete Definition Phase Project Plan	October 31, 2007
Complete Environmental studies	October 31, 2007
Complete Project Definition Phase First Nations consultation and public consultation report	November, 2007
Submit CPCN Application	November 30, 2007
Detailed routing	December 31, 2007
Submit EAC Application	February 13, 2008
Public Review Period on EAC Application	August 31, 2008
CPCN issued by BCUC	May 30, 2008
EAC issued by BCEAO	October 29, 2008
Final EMP submitted to BCEAO and Concurrent Permits Received	December 31, 2008
Commence construction and implementation	January 2, 2009
Initial power to BQL	October, 2009
Phase 1 construction completion	October, 2009
Project In-Service date	October, 2011

9. Conclusions

Government, BCTC and BC Hydro continue to advance analysis on the potential NTL, given the significant potential for regional economic growth in the northwest – including mining development and independent power production of clean energy. No decision has been made on whether this project will proceed.

If it does proceed, expansion of the existing 138 kV to 287 kV service northward from Skeena Substation at Terrace would provide safe and reliable electrical transmission system with sufficient capacity to serve current and future needs. This will enable that development over the long term.

Engineering and planning studies completed by BC Hydro and BCTC have determined that a 287 kV line is consistent with other transmission facilities already in the region, will provide adequate capacity to serve currently contemplated loads and is capable of moving currently proposed power production from the area. Extending to Bob Quinn provides service into the area with a system capable of expansion beyond that point should the demand materialize.

In order to construct a new transmission line with an initial completion date of October 2009, BCTC will require an efficient and timely review and approval schedule. It is planned that provincial and federal reviews will be harmonized under the Canada-British Columbia Agreement on Environmental Assessment Cooperation (March 2004). BCTC's comprehensive BCEAA studies and consultations will additionally inform the BCUC review and the CPCN requirements.

An extensive program of First Nations consultation and public engagement will occur throughout the detailed planning and construction, from development of the Terms of Reference, to construction of the project. All issues will be documented along with responses, commitments and any plans to mitigate residual effects.

Throughout the EAC development, BCTC will work closely with the BCEAO to ensure that technical and environmental studies and the First Nations consultation and public engagement processes meet the review agency expectations, are consistent with provincial policy, and meet stakeholders' needs. BCTC is confident that the potential northwest transmission system will be planned, evaluated, constructed, operated and maintained in the best interests of its customers and the people of British Columbia.

Appendix A – Right of Way Requirements

The proposed NTL 287 kV line route would parallel and in some instances deviate from the current 138 kV 1L387 and 1L381 circuit ROW. The ultimate ROW widths and lengths will be confirmed as environmental, geotechnical and stakeholder considerations are factored into design.

For the case where the proposed 287 kV is adjacent to 1L387 or 1L381, the widths of the ROW for the existing circuits are as follows:

- Circuit 1L387 – 30.48 m, or 15.24 m from centre-line to edge
- Circuit 1L387, Aiyansh to km 5 of 1L381 – 18.3 m from centre-line to edge
- Circuit 1L381, Aiyansh to km 5 – 8 m from centre-line to edge
- Circuit 1L381,along Forestry Rd., km 5 to 35 – 8 m from centre-line to edge
- Circuit 1L381, separate right-of-way, 16 m, or 8 m from centre-line to edge
- Circuit 1L381 along and within 61 m Hwy. 37 right-of-way

With the construction of the NTL 287 kV line, the additional width of expanded ROW for electrical clearance requirements are listed below:

Section	Existing Circuit	Minimum off-set of C/L of New Circuit from Existing C/L (m)	Additional Width of Expanded Right-of-Way (m)
SKEENA to AIYANSH	1L387	24.2	28
AIYANSH to MEZIADIN	1L381	22.2	33

Appendix B – Initial Stakeholder List

Federal Agencies:

- Canadian Environmental Assessment Agency (CEAA)
- Environment Canada
- Fisheries and Oceans Canada
- Health Canada
- Indian and Northern Affairs Canada
- Transport Canada
- Industry Canada
- Natural Resources Canada
- Committee on the Status of Endangered Wildlife in Canada (COSEWIC)

Provincial Agencies:

- Ministry of Aboriginal Relations and Reconciliation
- Ministry of Agriculture and Lands
- Ministry of Energy, Mines and Petroleum Resources
- Ministry of Environment
- Ministry of Forests and Range
- Ministry of Health
- Ministry of Public Safety and Solicitor General
- Ministry of Tourism, Sports and the Arts
- Ministry of Transportation
- Agricultural Land Commission
- BC Utilities Commission
- BC Hydro

Provincial representatives

- MLAs for the corridor area

First Nations – **NOTE: see the list of nine First nations noted earlier under section 5**

Regional Government:

- Regional District of Kitimat-Stikine
- Regional District Bulkley Nechako

Municipal Government:

- City of Terrace
- Town of Stewart
- Smithers

Stakeholder Groups:

- Property owners
- Ratepayer groups
- Economic development and business groups
- Transmission customers
- Industry user groups
- Recreational user groups
- Commercial backcountry tourism business
- Trappers and Hunters
- Guide-outfitters
- Provincial and regional non-governmental environmental groups
- Nature and conservation organizations
- Heritage trail groups
- Local opinion leaders
- Full-time and seasonal Community residents

Media:

- Local and Provincial

Internal:

- BCTC and BC Hydro staff