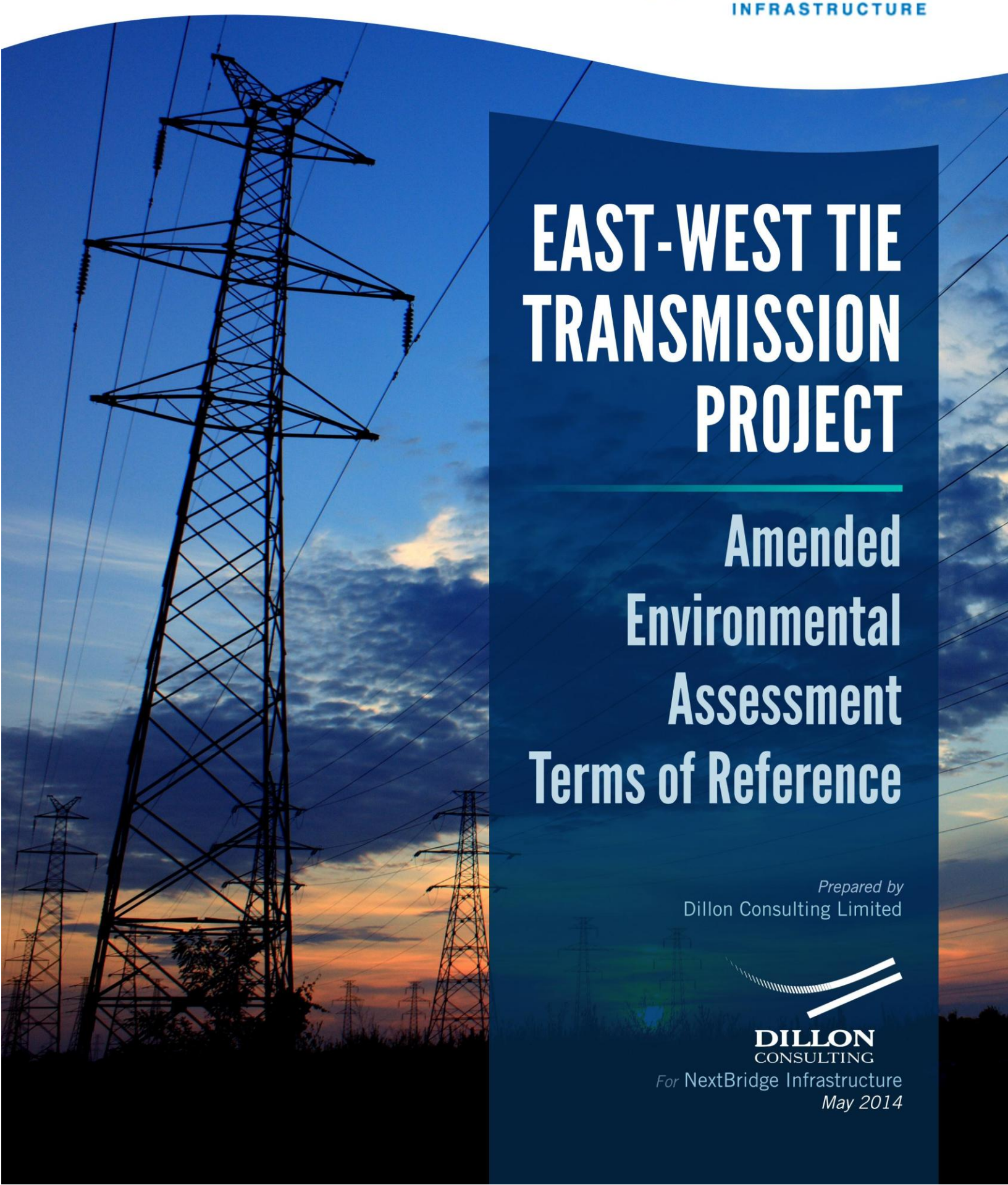
NEXTBRIDGE INFRASTRUCTURE



EAST-WEST TIE TRANSMISSION PROJECT

Amended Environmental Assessment Terms of Reference

Prepared by
Dillon Consulting Limited

DILLON CONSULTING

For NextBridge Infrastructure

May 2014

AMENDED
INDIVIDUAL ENVIRONMENTAL ASSESSMENT
TERMS OF REFERENCE

PREPARED FOR:

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ACRONYMS AND ABBREVIATIONS

AAB	Aboriginal Advisory Board
AANDC	Aboriginal Affairs and Northern Development Canada
AC	Alternating Current
ANSI	Area of Natural and Scientific Interest
CEAA	Canadian Environmental Assessment Act
CLUPA	Crown Land Use Policy Atlas
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CSA	Canadian Standards Association
Dillon	Dillon Consulting Limited
EA	Environmental Assessment
ELC	Ecological Land Classification
EMF	Electric and Magnetic Fields
FIT	Feed-in-Tariff
GIS	Geographic Information Systems
HONI	Hydro One Networks Inc.
Hz	Hertz
IESO	Independent Electricity System Operator
IPSP	Integrated Power System Plan
kV	Kilovolt
LIO	Land Information Ontario
MEDTE	Ministry of Economic Development, Trade and Employment
MNR	Ministry of Natural Resources
MOE	Ministry of the Environment
MOU	Memorandum of Understanding
MW	Megawatts-electric
MVA	Million Volt Amperes
NERC	North American Electric Reliability Corporation
NextBridge	NextBridge Infrastructure L.P.
NHIC	Natural Heritage Information Centre
NPCC	North East Power Coordinating Committee
O. Reg.	Ontario Regulation
OEB	Ontario Energy Board
OPA	Ontario Power Authority
PPS	Provincial Policy Statement
PSW	Provincially Significant Wetland
ROW	Right-of-Way
TEK	Traditional Ecological Knowledge
TLU	Traditional Land Use
ToR	Terms of Reference
TS	Transformer Station
TVMP	Transmission Vegetation Management Program

1. INTRODUCTION

The Terms of Reference (ToR) as defined by the Ontario Ministry of Environment (MOE) is a document prepared by the proponent and submitted to the Minister of the Environment for approval. The ToR establishes the framework for the planning and decision-making process to be followed by the proponent during the preparation of the Environmental Assessment (EA) Report. Supporting material filed in addition to the ToR includes the Record of Consultation and supporting documentation (submitted under separate cover). The Record of Consultation outlines agency, public, Aboriginal (First Nation and Métis) and other stakeholder consultation undertaken during the development of the ToR. Supporting documentation provides additional detail regarding the new East-West Tie Transmission Project (the Project or undertaking).

The Project is one of several projects identified by the Ontario Power Authority (OPA), the agency responsible for long-term electricity planning in the Province of Ontario, to meet Ontario's current and future electricity delivery needs. Industrial activities in northwestern Ontario, particularly in the mining sector, are expected to drive strong electricity demand growth in the coming decades. Coupled with changes in the region's supply situation, the OPA forecasts a need for new supply to meet future demand in northwestern Ontario. The identified future demand can be met with additional transmission and/or generation. The OPA analyzed both transmission and generation supply options and recommended the expansion of the existing 230 kilovolt (kV) East-West Tie to ensure the long-term reliability of the electricity supply in northwestern Ontario (OPA, 2010). This recommendation, identified in the OPA's June 2011 and October 2013 reports, was based on technical, economic and other considerations (see **Section 1.2** for further details regarding project need and justification). The OPA also specified a targeted in-service date of the first half of 2018 for the Project.

The Project is to consist of a new, approximately 400 kilometre (km) double-circuit 230 kV transmission line that generally parallels an existing double-circuit 230 kV transmission line corridor (existing East-West Tie) connecting the Wawa Transformer Station (TS) to the Lakehead TS near Thunder Bay (with a connection at the Marathon TS), which is referred to as the Reference Route. The Reference Route and Alternative Routes that are to be examined in the EA are presented in **Figure 1**. Alternative Routes have been identified around federal lands, including two First Nation reserves and Pukaskwa National Park (**Section 6.2.1**). Additional Alternative Routes will be identified and evaluated during the EA (**Section 6.2**). Further details regarding the Project, including the Reference Route, are provided in **Section 4** (Description of the Undertaking).

A competitive bidding process was held by the Ontario Energy Board (OEB) to select the "designated transmitter," which is the entity that will develop the Project. NextBridge Infrastructure L.P. (NextBridge), through its general partner Upper Canada Transmission Inc., was the successful bidder and was awarded the Project by the OEB in August 2013. NextBridge is the proponent for the Project (**Section 1.5** provides details).

The Project requires approval under the Ontario *Environmental Assessment Act, 1990 (EA Act)* including Ontario Regulation 116/01 (O. Reg. 116/01). O. Reg. 116/01 requires the preparation of an Individual EA for a project of this nature and size. The first key step of the EA is the preparation of a ToR. NextBridge has prepared a ToR (this document), for consideration and approval by the Minister of Environment.

Figure 1:
Reference Route and Alternative Routes

This ToR presents how the EA for the Project will be undertaken. This document was prepared in accordance with the "Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario (MOE, 2014)," and outlines the requirements for the completion of the EA, consistent with provincial direction and applicable legislative requirements.

1.1. Background on the Electricity Sector in Ontario

The Ontario government established the OPA through the *Electricity Restructuring Act, 2004*. This legislation made changes to the institutional arrangements of the electricity sector in Ontario and established the OPA as the province's long-term energy planner. Specifically, the OPA was given the mandate to develop integrated electricity plans that look forward several years, with the purpose of providing sustainable electricity solutions to Ontarians well into the future. The OPA prepared a 20-year energy plan in 2007 (formerly known as the Integrated Power System Plan or IPSP). The IPSP focused on creating a sustainable energy supply, targeted towards improving current natural gas and renewable assets at sustainable and realistic cost and had six main goals, including:

- ensure an adequate energy supply;
- double the amount of renewable energy supply to 15,700 megawatts (MW) by 2025;
- reduce demand by 6,300 MW by 2025;
- replace coal in the earliest practical time frame;
- strengthen the transmission system; and,
- ensure stable energy prices for Ontarians.

Initiatives from the 2007 IPSP, together with subsequent public policy initiatives (primarily the *Green Energy and Green Economy Act*, *2009*), are transforming how Ontario produces and uses electricity. Implementation happens through generation procurement and conservation measures, and by developing transmission. The OPA is directly responsible for establishing the need for new transmission facilities.

There has been, and continues to be, significant interest in connecting renewable generation to both distribution and transmission systems as a consequence of the passage of the *Green Energy and Green Economy Act, 2009*. However, the ability of existing or approved transmission facilities in Ontario to accommodate more generation is limited. Given this, the OEB issued a policy document entitled "Framework for Transmission Project Development Plans" on August 26, 2010, which sets out the policy of the OEB for a framework for new transmission investment in Ontario.

A Long-Term Energy Plan was published by the Ministry of Energy in 2010 to serve as an update to the 2007 IPSP, given the developments in technology, demographic and economic trends and growth of the renewable energy sector. The Long-Term Energy Plan (2010) also notes that the Project should be submitted to the OEB to carry out a designation process to select the most qualified and cost-effective transmission company to develop the line.

The Ministry of Energy published "Achieving Balance: Ontario's Long-Term Energy Plan, 2013" on December 2, 2013. The purpose of that document was to serve as an update and to build off the one completed in 2010. The Long-Term Energy Plan (2013) is designed to balance cost-effectiveness, reliability, clean energy, community engagement and an emphasis on conservation and demand management before building new generation. The Plan acknowledges a direct focus on northwestern Ontario with regard to the transmission enhancements, noting five key areas and transmission projects, including the Project.

The Long-Term Energy Plan (2013) stated the following in terms of the need for the Project:

> *"In 2010, Ontario began moving forward with a plan for the northwest, when the new East-West Tie transmission line was identified as a priority project. As part of an integrated plan to meet the needs of the northwest, work on that new line has begun. The new East-West Tie line will reduce transmission constraints and allow a greater two-way flow of electricity across Northern Ontario. Efforts are currently focused on detailed engineering work and seeking necessary approvals such as the Environmental Assessment and engagement with First Nation and Métis communities. The proposed project is expected to be finished in 2018 and will create hundreds of jobs in the service and construction industries for the duration of development and construction."*

Further details regarding the background of the electricity sector in Ontario are provided in **Appendix A.**

1.2. Background on the Project

The need for the Project is well established and has been well documented over the past several years by various provincial agencies. The following summarizes past provincial analysis and decisions regarding the need and justification for the Project. Further details on Project need, as well as existing supply and interconnection resources for the area are provided in **Appendix A**.

The Minister of Energy and Infrastructure requested that the OPA provide transmission planning advice in 2010 based on information that was available at the time. The advice focused on core transmission projects to enable the development of key clusters of renewable generation, associated with both the Feed-in-Tariff (FIT) Program and Korean consortium projects. This report would also form the key recommendations regarding transmission planning put forth in the Long-Term Energy Plan (2010). The OPA recommended that development work proceed immediately on five transmission projects, including the Project.

The Minister of Energy at the time, the Honourable Brad Duguid, issued a letter to Ms. Cynthia Chaplin, Chair of the OEB on March 29, 2011 to express the government's interest that the OEB undertake a designation process to select the most qualified and cost-effective transmission company to develop the Project. The OEB subsequently issued a letter to the OPA on April 25, 2011 requesting a report from the OPA regarding the preliminary assessment of the need for the Project (these letters are provided in **Appendix B**).

The OPA released its report "Long-Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion" (the June 2011 OPA Report), which was a response to the OEB's request and provided further information on the background and rationale for the Project along with recommendations on its scope and timing. Specifically, the report contains background on:

- the northwest area;
- its electricity system, conservation, historical demand and future demand scenarios;
- the northwest's internal and external supply resources;
- planning considerations for the northwest and context for the Project; and,
- specific recommendations and project scope information.

The OPA identified two basic alternatives for supplying the northwest in the June 2011 OPA Report following the conversion of the Atikokan coal-fired power plant and future conversion of the Thunder Bay coal-fired power plant. The alternatives considered included: 1) local generation within the northwest region, and 2) external generation sources transferred via an expanded East-West Tie. The OPA compared these two alternatives in terms of their cost-effectiveness, flexibility, ability to remove barriers to renewable generation development, and other benefits. The June 2011 OPA Report identifies that the expansion of the existing East-West Tie is the preferred alternative based on economic, flexibility, technical, operational and other considerations based on this comparative analysis. The OPA recommended that development work on the Project be initiated as a result.

In addition, the June 2011 OPA Report provided direction regarding the Project scope and key milestones for the Project, including the following:

> *"The OPA has assumed that the proposed expanded East-West Tie would be a new double-circuit 230 kV overhead transmission line. This is based on the knowledge that a 500 kV line or a high-voltage direct-current line would be more costly than a 230 kV line, while providing a similar benefit. A single circuit 230 kV line would likely have a similar cost to a double-circuit 230 kV line, but would have reduced operability during planned and forced outages. Therefore, the OPA believes that the double-circuit 230 kV line is preferred, but other options could be proposed to the extent that they meet the other project scope criteria outlined* [in the report]."

The Project, in conjunction with the existing East-West Tie, is anticipated to provide total eastbound and westbound capabilities in the order of 650 MW, while respecting North American Electric Reliability Corporation (NERC), North East Power Coordinating Council (NPCC) and Independent Electricity System Operator (IESO) reliability standards. Further, the Project should also include reactive facilities to be identified in an IESO study. To address these aspects, on August 18, 2011, the IESO released a technical feasibility study entitled "An Assessment of the Westward Transfer Capability of Various Options for Reinforcing the East-West Tie," which was a study to review the requirements for reinforcing the existing East-West Tie to provide a westward transfer capability of approximately 650 MW.

The August 2011 Feasibility Study summarizes the results of the analysis performed on two options for reinforcing the existing East-West Tie to achieve a transfer capability of approximately 650 MW westward, measured at Wawa TS, while respecting double-circuit contingencies at all times. The two options analyzed were:

"Option 1 *With a new 230 kV double-circuit line installed between Wawa TS and Lakehead TS, as proposed by the OPA, and,*

Option 2 *With a new 230 kV high-capacity, single-circuit line installed between the same terminal stations."*

The study concluded that reinforcing the existing East-West Tie with a new double-circuit line would offer a higher degree of security.

The OEB issued a letter on August 22, 2011 inviting "All Licensed Electricity Transmitters, All Applicants and Potential Applicants for an Electricity Transmitter License, All Interested Parties" to indicate their interest in filing a plan for development of the Project. The letter was based on the June 2011 OPA Report and the August 2011 IESO Feasibility Report.

Subsequently on December 20, 2011, the OEB issued an "Information Package on the East-West Tie Line" to Electricity Transmitters that registered for the Project (**Appendix C**). This information package provided a definition of the Project for designation purposes as well as the minimum technical requirements for the Reference Option[1] for the Project.

The OPA issued an "Updated Assessment of the Rationale for the East-West Tie Expansion" on October 8, 2013. The purpose of this report was to build off the OPA's June 2011 Report to provide an updated assessment of the rationale for the Project, as ordered by the OEB. Over the two years since the June 2011 Report, the OPA undertook a stakeholder process to update the load forecast, which has resulted in a more robust outlook for demand growth driven largely by proposals for expansion in the mining sector. The available resources to supply the northwest were also updated in this report, with the suspension of the conversion of the Thunder Bay Generating Station to natural gas-fired operation. These developments, combined with other changes in the supply and demand outlook, strengthen the case for the Project. This report also provided additional information related to the Project need, requirements and rationale for the Project as directed by the OEB. A final assessment of need and approval to construct a line will still require a hearing before the OEB under the Leave to Construct process. Representatives from the OPA attended the Open Houses held during the ToR process to provide information relating to the need for the Project to the public.

The OPA recommended the Project as the preferred alternative to maintain a reliable and cost-effective long-term electricity supply to the northwest based on the sequence of events described above. It is the expectation of the OPA that the design of the Project will provide the full 650 MW of desired transfer capability at the in-service date as opposed to staging the expansion. The double-circuit design allows greater flexibility and potential for future expandability, meaning that the capability of the line could be

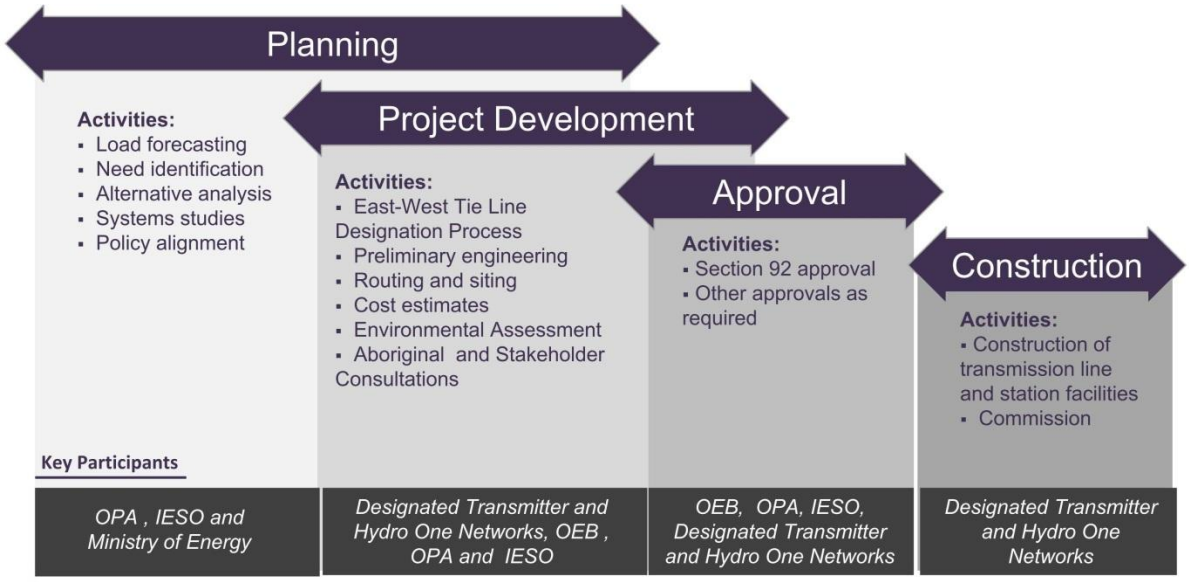
[1] For the purposes of the EA and the Project, the Reference Option and the Reference Route are considered synonymous (see **Section 4.1.1** for additional information on the Reference Route).

increased in the future through further voltage control or compensation equipment, resulting in a higher thermal rating (up to approximately 800 MW).

A recent letter in response to the draft ToR dated January 22, 2014 from the Ministry of Economic Development, Trade and Employment (MEDTE), indicated that the "*proposed undertaking would provide significant support to economic development in northwestern Ontario*" (MEDTE, 2014). The letter also stated that the MEDTE understands "*that the project, if completed, could provide a building block for a Canadian East-West electrical grid, which would secure Ontario industrial/commercial and household customers more firmly to power supplies from western Canada and Quebec, complementing existing linkages to the northeastern and Midwestern U.S.*" (MEDTE, 2014).

Figure 2 provides an overview of the Project development process and outlines roles and responsibilities for the OPA, IESO, Hydro One Networks Inc. (HONI) and the Designated Transmitter (i.e., NextBridge).

Figure 2:
Transmission Development Process



Source: OPA, 2012

1.3. Purpose of the Undertaking

The purpose of the Project is to improve reliability and maintain efficiency of the electricity transmission system in the northwest by expanding the existing East-West Tie, recognizing the need and justification for the Project as previously established by the Province through past analysis and decisions as summarized in the previous section. The development (i.e., construction) of this Project would implement the OPA recommendation to construct a new double-circuit 230 kV overhead transmission line. Specifically, the Project is expected to provide total eastbound and westbound capabilities in the order of 650 MW, while respecting NERC, NPCC, and IESO reliability standards by the first half of 2018. The Project is being designed to have a lifespan of approximately 50 years or longer.

1.4. Purpose of the Study

The purpose of the study is to undertake an EA to confirm the preferred route and concept design for the Project and to identify potential environmental and/or socio-economic effects that could result from the construction and operation of the Project. The EA study will also recommend and document appropriate and necessary mitigation measures to eliminate, or minimize, potential adverse Project-related effects. The study will be completed in accordance with the requirements of the *EA Act*.

1.5. Background on the Proponent

NextBridge is the proponent of the Project. NextBridge is a joint venture between affiliates of NextEra Energy Canada, Enbridge Inc., and Borealis Infrastructure and was established to participate in the Ontario transmission market. NextBridge is honoured to have been designated by the OEB to develop the Project and looks forward to working with applicable agencies, Aboriginal communities, the public and other stakeholders to ensure a successful project. NextBridge's objective is to establish relationships that will act as a platform for the successful execution of the Project as well as potential future transmission projects in Ontario.

1.6. Outline of the Terms of Reference

In accordance with the "Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments on Ontario (MOE, 2014)," the ToR contains information relating to the following:

- identification of the proponent;
- indication of how the EA will be prepared;
- purpose of the study or undertaking;
- description of and rationale for the undertaking;
- description of and rationale for alternatives;
- description of the existing environment and potential effects of the undertaking;
- assessment and evaluation;
- commitments and monitoring;
- consultation plan for the EA;
- flexibility to accommodate new circumstances; and,
- other approvals required.

The ToR document is organized as follows, which satisfies the requirements of Section 6(2)(c) of the *EA Act*:

- project approvals framework (**Section 2**);
- indication of how the EA will be completed (**Section 3**);
- description of the undertaking (**Section 4**);
- description of existing environmental conditions (**Section 5**);
- identification and evaluation of alternatives (**Section 6**);

- potential effects assessment and mitigation measures (**Section 7**);
- commitments and monitoring (**Section 8**); and,
- consultation (**Section 9**).

2. PROJECT APPROVALS FRAMEWORK

The EA process is a planning and decision-making process used to promote environmentally responsible decision-making. This process is defined and finds its authority in the *EA Act* in Ontario (MOE, 2014). This section provides an overview of Project approvals, including the legislative EA framework for the Project.

2.1. Provincial EA Requirements

The Project is subject to the provincial EA approval process under the *EA Act*. Under the *EA Act*, O. Reg. 116/01 (Electricity Projects Regulation) sets out the requirements for a variety of electricity projects in Ontario, including transmission lines, and classifies them based on the type of fuel to be used, the size and, in some cases, the efficiency of the planned facility. O. Reg. 116/01 categorizes transmission line projects based on voltage and length. The Project is classified as a Category C project based on this Regulation, which generally has the potential for known significant environmental effects and requires the completion of an EA. Category C projects include transmission lines which are greater than 115 kV and less than 500 kV and are greater than, or equal to, 50 km in length. Since the Project meets these criteria, NextBridge is required to submit an application under Section 5 of the *EA Act* to the Minister of the Environment which includes the preparation, submission and approval of a ToR which outlines the scope of work (this document) and an EA Report (to be completed following approval of the ToR).

2.1.1. Provincial EA Process

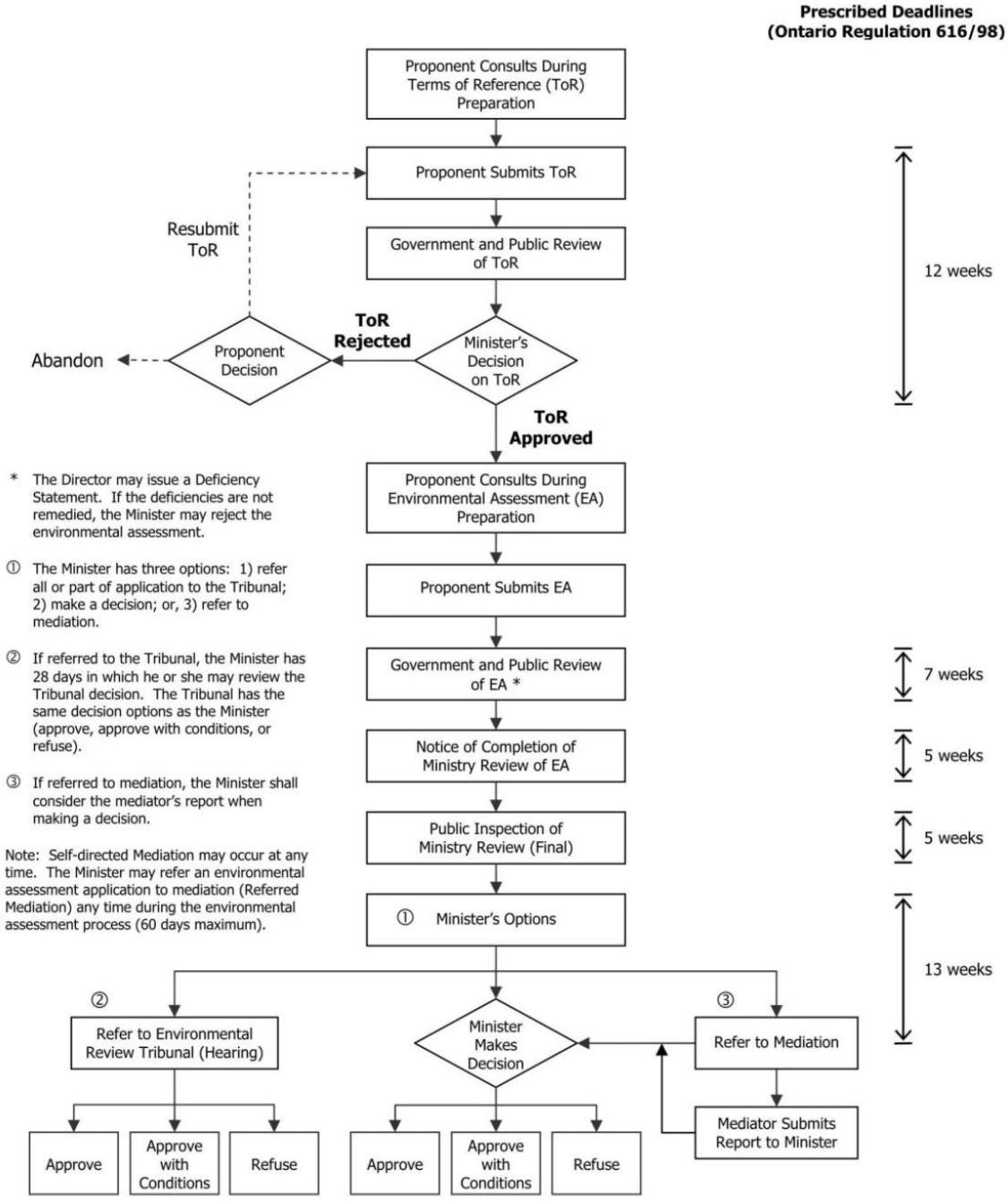
NextBridge is required to complete and submit a ToR to the Minister of the Environment for approval as displayed on **Figure 3**. The purpose of the ToR is to provide the overall study framework that will be followed during the EA. The public, First Nations and Métis communities, government agencies and other interested individuals are provided with an opportunity to comment.

Should the ToR be approved by the Minister of the Environment, it will be used by NextBridge to guide the completion of the EA to ensure that it meets the intent of the *EA Act* and any other applicable requirements. The results of the EA process will then be documented in an EA Report to be submitted to the Minister of the Environment for review and approval.

2.1.2. Other Applicable Provincial EA Processes

The Project is also subject to the Ministry of Natural Resources (MNR) EA requirements for disposition of Crown lands in sections of the route that traverse public lands, including provincial parks and conservation reserves. These requirements will be met through the Individual EA process. Discussions with the MNR have commenced and will continue during the EA phase to assist with the disposition of Crown land for the Project and joint use of the existing East-West Tie right-of-way (ROW).

Figure 3:
Provincial EA Process



Source: MOE, 2014a

2.2. Federal EA Requirements

The *Canadian Environmental Assessment Act, 2012* (*CEAA 2012*) came into force in July 2012 and regulations under the Act were recently revised on November 6, 2013. *CEAA 2012* includes a list of projects or activities (also known as Regulations Designating Physical Activities), which identify major projects with the greatest potential for significant adverse environmental impact and thus require a federal EA under *CEAA 2012*. A federal EA would be required if the Project included the following:

- *"construction, operation, decommissioning and abandonment, in a wildlife area or migratory bird sanctuary, of a new electrical transmission line; or,*
- *construction, operation, decommissioning and abandonment of a new electrical transmission line with a voltage of 345 kV or more that requires a total of 75 km or more of new right-of-way."*

The Project is not considered a "designated project" as the Project does not meet the above requirements and thus *CEAA 2012* does not apply. In the event that the Project is modified and meets the above criteria at a future date, thus becoming a "designated project" under *CEAA 2012*, NextBridge will notify the Canadian Environmental Assessment Agency.

2.2.1. Section 67 of CEAA 2012 – Federal Lands

Although not considered a "designated project" under *CEAA 2012*, the Project may require federal approvals or authorizations if the facility crosses federal lands (CEAA, 2012). Such crossing of federal land includes Pukaskwa National Park and two First Nation reserves including Pays Plat First Nation and Michipicoten First Nation.

Section 67 of *CEAA 2012* establishes the responsibilities for the assessment of environmental impacts on federal lands. Section 67 prevents a federal department or authority from allowing a project to proceed on federal lands unless it has determined that the Project will not result in significant adverse environmental effects. Specifically, Section 67 states the following:

"Projects carried out on federal lands: An authority must not carry out a project on federal lands, or exercise any power or perform any duty or function conferred on it under any Act of Parliament other than this Act that could permit a project to be carried out, in whole or in part, on federal lands, unless

a) the authority determines that the carrying out of the project is not likely to cause significant adverse environmental effects; or,

b) the authority determines that the carrying out of the project is likely to cause significant adverse environmental effects and the Governor in Council decides that those effects are justified in the circumstances under subsection 69(3) (CEAA, 2012)."

Parks Canada would be required to authorize Project-related activities that may impact the Pukaskwa National Park as per the above and in accordance with *CEAA 2012*. In the case of the potential crossing of two First Nation reserve lands, Aboriginal Affairs and Northern Development Canada (AANDC) would need to provide authorization. The use of federal lands for the purposes of the Project and potential federal

approvals is currently being discussed with the appropriate federal agencies and will be further defined during the EA process.

AANDC has indicated that a Project Description Report with respect to First Nation lands will not be required. However, AANDC noted that NextBridge may be required to obtain a Land Use Permit. Ongoing consultation with AANDC to confirm potential permitting requirements will occur throughout the EA.

A Project Description Report has been submitted to Parks Canada to assist in determining whether the Reference Route through Pukaskwa National Park may be assessed as part of the EA. Parks Canada has made a determination in a letter dated February 11, 2014. This letter states that Parks Canada is not prepared to accommodate such a proposal to construct a transmission line through Pukaskwa National Park. NextBridge has not yet had time to fully explore the rationale for this decision with Parks Canada. Should the route through Pukaskwa National Park not be allowed by Parks Canada then the Alternative Route around the Park will become the Reference Route.

2.3. OEB Leave to Construct

The Project is being planned in accordance with OEB regulations under the *OEB Act*. The OEB acts as a regulatory body to protect the public interest, determine that the Project is necessary and to ensure that NextBridge obtains the necessary approvals for health, safety and environmental standards and regulations. The OEB reviews applicable material, makes the information available to the public, and provides an opportunity for interested parties, including First Nation and Métis communities, to provide input.

NextBridge must file and receive approval from the OEB for a "Leave to Construct" the Project pursuant to Section 92 of the *OEB Act*. The OEB will review the Leave to Construct application and assess it based on a variety of parameters, including whether stakeholder concerns were considered. Outstanding stakeholder issues (if any) should be addressed prior to submission to the OEB. The OEB may order a written or oral hearing, based upon the complexity of the Project and the level of public interest.

NextBridge plans to file a Leave to Construct application with the OEB during the first quarter of 2015. If approved, construction is planned to commence in the first quarter of 2016, to meet an in-service date of the first half of 2018.

2.4. The Ontario Expropriations Act, 1990

Although the majority of land rights likely to be required for the Project are owned by the Crown, private land access and rights will also be required for environmental studies, surveying, geotechnical work, clearing, road work, construction, permanent structures, overhead lines, inspection and maintenance. NextBridge will negotiate in good faith with landowners and tenants in cases where easements are required for sections of the Project proposed to be located on private property. Easements may also be required to accommodate temporary working space, stockpile areas and additional space for laydown purposes. In the event that negotiation of easements or other private property rights acquisition is unsuccessful, NextBridge will apply for expropriation permissions under the *Expropriations Act, 1990*. Requirements for submitting a claim and landowner rights are provided in Section E.26 of the Act and must be approved under the *Expropriations Act* and the *OEB Act*.

In an attempt to avoid the need for expropriation, NextBridge has commenced contact with landowners along the Reference Route and Alternative Routes by providing initial Project notification and information packages, including information regarding the ToR process and how landowners can be involved.

2.5. Other Notifications, Permits and Approvals

The Project will require additional local, provincial and federal approvals prior to and during construction (**Table 1**)**.** It should be noted that this is a preliminary list and is subject to change as Project design is further developed and refined, and as government agency input related to permitting is received and considered by NextBridge. As more information is obtained during the EA process, NextBridge will further refine the list of anticipated notifications, permits and approvals. The EA will document permits, approvals and notifications required for the Project to proceed.

NextBridge may initiate permit and approval activities (including related consultation with interested individuals) and applications concurrently with the EA process to provide government agencies with ample review time and to meet the Project schedule. Where this is not possible due to not having enough detailed information, or due to other unforeseen events, NextBridge will undertake these activities following completion of the EA but prior to Project construction.

Table 1:
Potential Notifications, Permits and Approvals

Agency	Potential Notification, Permit, or Approval
Federal	
Aboriginal Affairs and Northern Development Canada	▪ Land use permit or equivalent authorization to use federal lands (i.e., to allow for the crossing of First Nation reserves
Parks Canada	▪ Authorization to permit the crossing of Pukaskwa National Park
Environment Canada	▪ Permit to affect species at risk or their habitat per the *Species at Risk Act, 2002*
Transport Canada	▪ Notification of work as per the *Railway Safety Act, 1985*, for the crossing of federally-regulated rail lines ▪ Adherence to Canadian Aviation Regulations lighting and marking requirements should the Project affect air navigation (Aeronautical Obstruction Clearance for Height Hazards) ▪ Approval for crossing navigable waters as per the *Navigable Waters Protection Act, 1985*
Fisheries & Oceans Canada (DFO)	▪ The permitting framework is in transition as DFO is implementing changes to the *Fisheries Act*; however, if commercial, recreational, or Aboriginal fisheries are impacted authorization under the *Fisheries Act, 2013* may be required
Provincial	
Ontario Energy Board	▪ Leave to Construct – The Project requires a "Leave to Construct" approval under Section 92 of the *Ontario Energy Board Act*, *1998.* This application provides the OEB with an opportunity to review the Projects' technical and other components

Agency	Potential Notification, Permit, or Approval
	▪ Early Access to Land – This approval is required to permit NextBridge to access private property potentially affected by the Project to undertake specific field studies to establish baseline data while the Section 92 application is considered by the OEB. Early access is often requested to meet seasonal data collection requirements
Ministry of Environment	▪ Approval of the EA as per the *Ontario EA Act, 1990* and associated regulations (i.e., O. Reg. 116/01) ▪ Permit to Take Water as per the *Ontario Water Resources Act, 1990*, if greater than 50,000 litres per day is moved for construction purposes (if water is taken from a natural source) ▪ Environmental Compliance Approvals per the *Environmental Protection Act, 1990*, for the following: ▪ transportation of waste from the site ▪ stormwater management ▪ temporary on-site sewage and water treatment facilities ▪ electrical transformers (noise) ▪ Generator Registration per O. Reg. 347 of the *Environmental Protection At, 1990*, for hazardous wastes that could potentially be generated during construction ▪ Permit to allow for the application of pesticides under the *Pesticides Act, 1990*, for vegetation maintenance during operation
Ministry of Natural Resources	▪ Consolidated Work Permit as per the *Lakes and Rivers Improvement Act, 1990*, for work planned on shore land and within water bodies including work and burn authorization for clearing and burning of cleared vegetation ▪ Fish Scientific Collectors Permit and Wildlife Scientific Collection Permit under the *Fish and Wildlife Conservation Act, 1997*, to allow for the taking and transferring of fish or wildlife ▪ *Endangered Species Act, 2007*, Section 17 permit if the Project affects an endangered species or associated habitat ▪ Research Authorization for provincial parks and conservation reserves (for work to be completed in provincial parks) ▪ *Fish and Wildlife Conservation Act, 1997*, authorization should the Project impact any nesting areas, beavers or black bears ▪ Forest Resource License to harvest timber on Crown lands as per the *Crown Forest Sustainability Act, 1994* ▪ Crown Lease or Land Use Permit for rights to Crown land in order to locate towers and access facilities under the *Public Lands Act, 1990* ▪ Permit under the *Aggregate Resources Act, 1990*, for the extraction of aggregate on Crown land ▪ Approval to cross provincial parks as per the *Provincial Parks and Conservation Reserves Act, 2006* ▪ Amendment to management direction for applicable provincial parks and nature reserves
Ministry of Transportation	▪ Land Use and Building Permit for construction within, or adjacent to, provincial highways as per the *Public Transportation and Highway Improvement Act, 1990*

Agency	Potential Notification, Permit, or Approval
	▪ Entrance Permit for proposed entrances onto provincial highways as per the *Public Transportation and Highway Improvement Act, 1990* ▪ An Encroachment Permit is required to place, alter or erect any power line, pole line, or other transmission line within 400 m of any limit of a controlled access highway (e.g., Highway 17) as per the *Public Transportation and Highway Improvement Act, 1990*
Ministry of Tourism, Culture and Sport	▪ Archaeological clearance under the *Ontario Heritage Act, 1990*
Ministry of Labour	▪ Compliance with safety regulation as per the *Occupational Health and Safety At, 1990,* including the filing of a notice of Project prior to construction
Ministry of Health	▪ Adhere to health regulations as per the *Health Protection and Promotion Act, 1990*
Ministry of Northern Development and Mines	▪ Withdrawal of lands from prospecting, etc. under the *Mining Act, 1990* ▪ Permanent withdrawal of staking rights under the *Mining Act, 1990*
Other	
Local Municipalities	▪ Building Permit as per the *Ontario Building Code Act, 1992* ▪ Permit to Injure or Remove Trees (woodlands/woodlots), as applicable ▪ Noise By-Law exemptions (if work is to be completed outside of permitted hours specified in Noise By-Law) ▪ Conformance with local land use policy and zoning (e.g., road use agreements)
Rail Companies including Canadian National Railway and Canadian Pacific Railway	▪ Permit to cross rail lines
Hydro One Networks Inc. (HONI)	▪ Permit to cross existing transmission lines
Lakehead Region Conservation Authority	▪ Permit to cross watercourses and work within regulated areas (Development, Interference with Wetlands and Alterations to Shorelines and Watercourses Regulation) ▪ Letter of Advice related to avoidance of impacts to fish and fish habitat
Other Utilities	▪ Permit to cross other utilities (i.e., existing pipelines, fiber optics, etc.)
Mining Claim Holders	▪ Consent from existing claim holders

3. INDICATION OF HOW THE EA WILL BE COMPLETED

This section provides a rationale for conducting a "focused" EA in accordance with subsections 6(2)(c) and 6.1(3) of the *EA Act,* as well as an overview of other EA requirements related to the Project.

3.1. EA Approach

According to subsection 6(2) of the *EA Act*, the ToR must state how the EA will be prepared and either:

a) *"Indicate that the EA will be prepared in accordance with the general requirements in subsection 6.1(2);*
b) *Indicate that the EA will be prepared in accordance with such requirements as may be prescribed for the type of undertaking the proponents wishes to proceed with; or,*
c) *Set out in detail the requirements for the preparation of the EA (MOE, 2014)."*

Generally, a proponent uses subsections 6(2)(a) and 6.1(2) if it is early in the planning process and is not sure of the details of its proposal, such as the undertaking, alternatives or potential environmental effects[2]. EAs that are completed in accordance with Section 6.1(2) typically establish the need and rationale for a project and include an assessment of both "alternatives to" and "alternative methods" for carrying out the undertaking. Submission under subsection 6(2)(b) is not possible as no requirements for any types of undertakings have been prescribed in the *EA Act* (MOE, 2014). Proponents use subsection 6(2)(c) and 6.1(3) if there is a more defined planning process and more details of the project are already known, i.e., the potential alternatives (MOE, 2014)[3].

Projects completed in accordance with subsections 6(2)(c) and 6.1(3) of the *EA Act* are referred to as "focused" EAs. This EA is proposed to be completed in accordance with subsections 6(2)(c) and 6.1(3) of the *EA Act*, as it will meet the requirements of subsection 6.1(2), and will not include an assessment of "alternatives to" with the exception of the "do nothing" alternative. In accordance with the *EA Act*, "alternative methods" (i.e., Alternative Routes and local route refinements around sensitive features) will be explored through the EA process. Further, the EA will not reexamine the "purpose of the undertaking" (need for the Project) as this has been established by provincial agencies over the past several years, and will be addressed as part of the Leave to Construct application. The identification of the Reference Route, which formed the basis for NextBridge's bid submission and has been acknowledged by provincial agencies, supports a focused approach to conducting the EA (see **Section 4** for further details related to the Reference Route).

The rationale for proceeding in this manner is that a previous planning process has already been undertaken by the OPA which led to the identification and justification for the Project. In accordance with the *EA Act*,

[2] Subsection 6.1(2) outlines the generic requirements of what an EA should include, such as the identification and evaluation of alternatives.
[3] Subsection 6.1(3) is an exception and indicates that the ToR may provide that the EA consist of information other than what is required by subsection (2).

this EA will include the identification and evaluation of alternative methods (see **Section 6**). The EA will also include an assessment and evaluation of the advantages and disadvantages of proceeding with undertaking (the Project) against the "do nothing" or null alternative.

3.1.1. Subsection 6.1(2) of the EA Act

NextBridge will conduct the EA in accordance with the general requirements of subsection 6.1(2) of the *EA Act,* with the exception of the "purpose of the undertaking" and "alternatives to" the undertaking. The "do nothing" alternative will however be addressed. As such, the EA will consider the following:

- a description of and statement of the rationale for the undertaking (and Reference Route) and alternative methods of carrying out the undertaking (including Alternative Routes, local refinements to the Reference Route and alternative designs as described in **Section 6** of this ToR);
- a description of:
  - the environment that will be affected or that might reasonably be expected to be affected, directly or indirectly, by the undertaking and the alternative methods of carrying out the undertaking;
  - the effects that will be caused or that might reasonably be expected to be caused to the environment, by the undertaking and the alternative methods of carrying out the undertaking;
  - the actions necessary or that may reasonably be expected to be necessary to prevent, change, mitigate or remedy the effects upon or the effects that might reasonably be expected upon the environment, by the undertaking and the alternative methods of carrying out the undertaking;
- an evaluation of the advantages and disadvantages to the environment of the undertaking and the alternative methods of carrying out the undertaking; and,
- a description of any consultation about the Project undertaken by the proponent and the results of the consultation.

3.2. EA Report Preparation and Submission

The EA Report will be prepared in accordance with the approved ToR and the requirements of the *EA Act*. Upon completion of the EA and consultation program, NextBridge will submit the EA Report for review and approval to the Minister of the Environment. As per the MOE's "Code of Practice: Preparing and Reviewing EAs in Ontario (2014a)," the EA will generally include the following elements:

- *"executive summary;*
- *list of studies and report;*
- *ToR requirements;*
- *identification of proponent;*
- *commitments and monitoring;*
- *other approvals;*
- *consultation summary; and,*
- *appendices."*

The EA Report will also include information on the following:

- purpose and need for the Project based on planning process completed by the OPA (**Appendix A**);
- rationale for undertaking the Project based on planning process completed by the OPA (**Appendix A**);
- alternative methods of completing the Project (Alternative Routes, local refinements to the Reference Route and design considerations);
- advantages and disadvantages of the Project;
- description of the environmental baseline setting that could potentially be affected by the Project;
- identification and assessment of potential positive and negative environmental Project effects (including net effects) on baseline conditions and the development of mitigation measures to eliminate or minimize adverse effects;
- documentation of the results from the consultation program;
- future commitments;
- monitoring and follow-up programs; and,
- an appendix and/or supporting document that includes technical reports completed to support the Project.

A draft EA Report will be prepared and made available for government agency, public, First Nation and Métis review. Copies of the EA Report will be placed in local municipal offices and other public venues as well as being posted on NextBridge's website. Following the review, the EA Report will be formally submitted to the MOE for approval. The final EA Report will also be available for public review.

3.3. EA and Project Management Principles

The EA will be conducted in a manner consistent with the MOE's (2014a) EA principles, including:

- consult with potentially affected and other interested persons;
- consider a reasonable range of alternatives (including alternative methods and the "do nothing" alternative);
- consider aspects of the environment;
- systematically evaluate net environmental effects; and,
- provide clear, complete documentation.

In addition, the EA will be guided by the MOE's (2014a) project management principles to assist in navigating the EA process successfully including:

- timeliness;
- clarity and consistency;
- openness and transparency;
- coordination of approvals;
- best available information;
- appropriate level of detail; and,
- minimize potential harm and enhance benefits to the environment.

3.4. Providing Flexibility in the ToR to Accommodate New Circumstances

This ToR provides flexibility in the event that unforeseen circumstances arise that could prevent the commitments in the ToR from being met and to allow for minor adjustments to the EA process that may differ slightly from the ToR, without having to re-start the ToR/EA process. Due to the complexity and physical expanse of this Project, flexibility is primarily required to account for changes resulting from updated Project design or other aspects of the Project including receiving new information, and to allow for the consideration of input received from the consultation program. These will be determined in the EA as the details of the Project are confirmed and finalized.

A good example of this is the recent letter received from Parks Canada dated February 11, 2014. Parks Canada states that they have made a determination that they (Parks Canada) is not prepared to accommodate such a proposal to construct a transmission line through Pukaskwa National Park. NextBridge has not yet had time to fully explore the rationale for this decision with Parks Canada. Should the route through Pukaskwa National Park not be allowed by Parks Canada then the Alternative Route around the Park will become the Reference Route.

Although the Project as described in this ToR is accurate and realistic at the time of its preparation, the ToR has generally been developed based on preliminary design and baseline data, as well as early consultation input. Additional consultation with Aboriginal communities, agencies, the public and interest groups will be undertaken during the EA, specifically with respect to route identification, as well as the criteria and indicators used in evaluating the route. Significant changes to the Project from the description in this document will first be discussed with the MOE prior to implementation.

4. DESCRIPTION OF THE UNDERTAKING

This section provides a description of the undertaking (the Project), and anticipated Project activities associated with all phases of the Project.

4.1. Overview of the Undertaking

As previously stated in **Section 1.3**, the purpose of the undertaking is to implement the OPA's recommendation to construct a new double-circuit 230 kV overhead transmission line with a continuous capacity of approximately 465 million volt amperes (MVA) (per circuit), with an in-service date of the first half of 2018. The need for the undertaking has been previously established by the OPA as outlined in **Section 1.2**. **Appendices A** and **C** provide further details.

NextBridge is proposing to construct a new 400 km 230 kV double-circuit AC electrical transmission line. The line will generally parallel the existing East-West Tie ROW (owned and operated by HONI). Alternative Routes, which do not parallel the existing East-West Tie ROW, have been identified to avoid two First Nation reserves and Pukaskwa National Park. Additional Alternative Routes will be identified and evaluated during the EA. The proposed ROW for the Project is expected to be approximately 52 m to 56 m in width however additional space may be required where there are angles in the route, for crossings of the existing East-West Tie ROW (or other high voltage lines in the area), for general construction access, for temporary working space and laydown areas, access roads, and where the landscape requires additional lands for access (i.e., in areas with steep slopes or other challenging terrain). Approximately 1,000 towers are expected, with a typical height of 43 m and a typical span length of 400 m. The Project extends from the existing HONI Lakehead TS, in Shuniah near Thunder Bay, to the existing HONI Wawa TS with a connection at the Marathon TS. The tie-in to the three existing TSs will be the responsibility of HONI.

Discussions are underway with the MNR and HONI to develop joint use of the existing on-ROW access road and part of the cleared ROW. This is the preference of the MNR in order to reduce the overall potential environmental effects of the Project.

4.1.1. Reference Route Justification

The proposed route for the Project generally parallels the existing East-West Tie ROW. This route is referred to as the Reference Route.

The OEB issued an information package on December 20, 2011 relating to the Project, including a specific Project definition for designation purposes and the minimum technical requirements for the "Reference Option" for the Project to Electricity Transmitters that registered to develop the Project (including NextBridge). This information identified the Reference Option (or Reference Route as described in this ToR), which was generally defined as the following:

> "*The OPA Report* [June 2011] *identifies a specific solution as its preferred option but acknowledges that other options could be proposed provided they meet the other project scope criteria. The IESO has*

studied the feasibility of the OPA's preferred option, which it called the reference case. The Board considers the OPA's preferred solution together with the IESO's reference case as the "Reference Option." The Reference Option is one possible, specific solution for the East-West Tie Line.

The Reference Option can be summarized as follows:

- *the East-West Tie Line will be a new double-circuit 230 kV overhead transmission line with a continuous capacity of approximately 465 MVA and an emergency capacity of approximately 600 MVA (per circuit); and,*
- *the East-West Tie Line will be switched at Marathon TS."*

The use of the existing East-West Tie ROW is consistent with the Provincial Policy Statement, 2005 (PPS) which recommends making the best use of existing infrastructure and corridors, and that infrastructure be provided in a coordinated, efficient and cost effective manner before proposing new greenfield developments. This was one of the OPA's considerations in selecting the Reference Option and is consistent with the direction to other electricity transmitters in the past from provincial agencies and ministries to make use of existing ROWs and corridors before seeking approvals for "greenfield" routes.

Further background on the Reference Route is provided in **Appendix C**, and is summarized below.

- the OPA, IESO, OEB have identified and acknowledged the Reference Route;
- the bidding process to select a designated transmitter was focused on the Reference Route;
- NextBridge examined the Reference Route during the bidding process and as part of the ToR stage and is presently of the opinion that the Reference Route, which generally parallels the existing East-West Tie ROW, can be developed in a technically feasible and environmentally responsible manner;
- the Reference Route is the shortest distance to connect the Thunder Bay TS and Wawa TS (following existing transmission facilities); and,
- the use of the Reference Route is consistent with provincial policy as it focuses on the previously disturbed existing East-West Tie ROW.

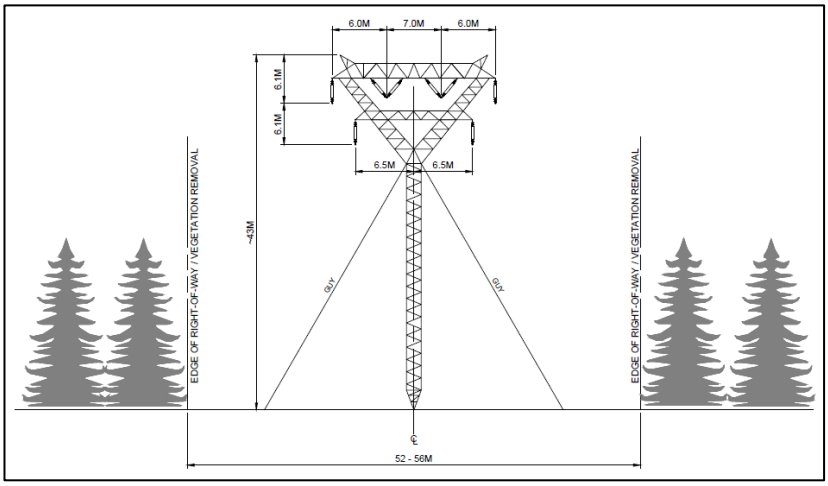
The Reference Route generally follows the existing East-West Tie ROW. Alternative Routes will be identified and evaluated during the EA. Local refinements to the Reference Route will also be considered to avoid identified sensitive features (as discussed in **Section 6**).

Final siting will be determined during the EA and will be based primarily on environmental (location of sensitive natural features such as wetlands, lakes and other features), socio-economic (proximity to local communities, property requirements, stakeholder input) and technical considerations and constraints.

NextBridge will also be required to negotiate easements and acquire interest in private property to construct the Project and will consider local refinements to the Reference Route in specific locations to minimize potential adverse effects. The need for local refinements to the Reference Route to mitigate potential environmental and socio-economic effects of the Project will be determined during the EA and will be based on field study, consultation with applicable agencies, Aboriginal communities and other stakeholders, and selected evaluation criteria and indicators discussed in **Section 6** and **Appendix D**.

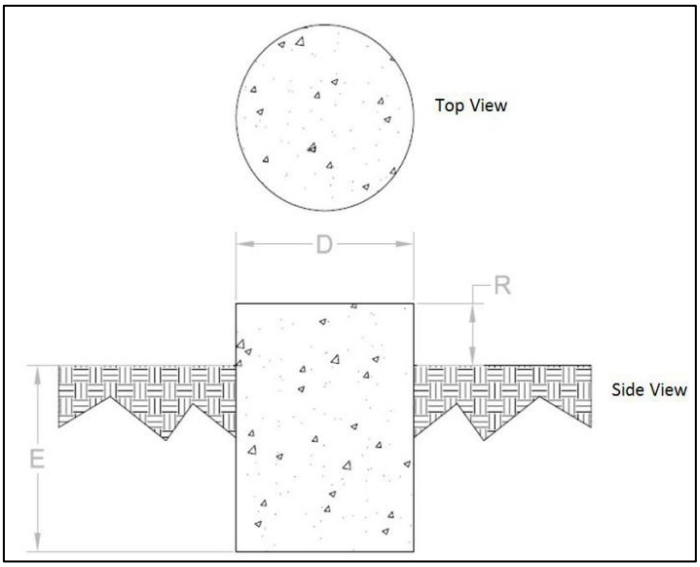
4.1.2. Preliminary Facility Design

The preliminary tower design proposes to utilize double-circuit guyed-Y tangent structures for approximately 90 percent of the line length. The remainder of the towers will likely be constructed of self-supporting steel lattice and will be used at turns in the line (turning structures), or where the passable area of ROW may be too narrow for the guyed-Y structure. Dead-end structures will be located near the transformer stations and are points at which HONI will connect and tie-in the transmission line to the stations. The typical structure will be approximately 43 m (about the same height as the existing East-West Tie). The typical tangent foundation will likely be 1 m in diameter and embedded 1 m below grade depending on the depth of rock with approximately 0.33 m of foundation visible above ground. The guyed-Y structure and pin connection allow the foundations to remain shallow. The cleared ROW width will be between approximately 52 m and 56 m.



Typical Double-Circuit Guyed-Y Structure (not to scale)
Source: NextBridge, 2013

The Canadian Standards Association (CSA) sets minimum vertical clearances for transmission lines. In addition to the minimum vertical clearance required by the CSA, NextBridge will add construction and survey tolerances to ensure that the line is constructed above the code-required minimum. The minimum vertical clearance to the ground is measured at the lowest point of conductor sag between towers. NextBridge will adhere to or exceed the CSA construction and operation standards.



Typical Tangent Structure Foundation Design
Source: NextBridge, 2013

Access roads and construction laydown areas will be required. Where possible, the existing East-West Tie ROW and existing access roads to the ROW will be utilized during construction. Where necessary, new roads would be extended from the existing East-West Tie ROW (which would need to be cleared) to each tower base. Upgrades may be required to existing access roads. Watercourse crossing (i.e., culverts, bridges, matting) methods will be determined on a case by case basis. The majority of existing watercourse crossings will be utilized (where possible). Tangent structures will be

assembled in laydown areas and equipment/components will be stored prior to delivery (by helicopter) to the appropriate locations along the ROW.

4.2. Construction, Operation and Abandonment

Construction

The construction phase will generally include the following activities:

- surveying and assessing (legal and engineering surveys, soil testing, environmental work);
- clearing and grading;
- foundation installation;
- structure assembly and erection;
- conductor stringing; and,
- reclamation.

Operation

The operation phase of the Project generally includes the operation of the transmission line as well as ongoing maintenance. A Transmission Vegetation Management Program (TVMP) is required by NERC Standard FAC 003 for transmission lines operating at 200 kV and higher. The purpose of the plan is to improve the reliability of electric transmission systems by preventing outages from vegetation located on the transmission ROWs, minimizing outages from vegetation located adjacent to the ROW, and maintaining clearances between transmission lines and vegetation on, and along, the transmission ROW (NERC, 2006). Typical maintenance activities include:

- detailed structure climbing inspections;
- line hardware and insulator thermography;
- comprehensive vegetation management (NERC -FAC-003);
- ROW inspections; and,
- visual ground patrol.

Facility Abandonment/Retirement

Should a decision be made to abandon, or retire the Project at a future point in time, a detailed review of the potential effects and mitigation measures existing at that time will be provided. Activities that would typically be completed to facilitate the abandonment or retirement of a project of this type would include removing towers and transmission line cables and ground reclamation. If a decision is made to abandon or retire the Project, applicable municipal, provincial and federal regulations and standards in place at that time will be adhered to.

5. DESCRIPTION OF EXISTING ENVIRONMENTAL CONDITIONS

The Project is located on both Crown and private land and crosses several municipalities including: the City of Thunder Bay; the Municipalities of Shuniah and Wawa; the Town of Marathon; the Townships of Dorion, Nipigon, Red Rock, Schreiber, Terrace Bay, and White River. The Project generally parallels the Lake Superior coastline and the Trans-Canada Highway. The area is generally characterized by rugged northern topography with rock outcrops and Great Lakes – St. Lawrence forest, transitioning into a more typical boreal forest. East of Marathon, the Project is located further away from the coastline.

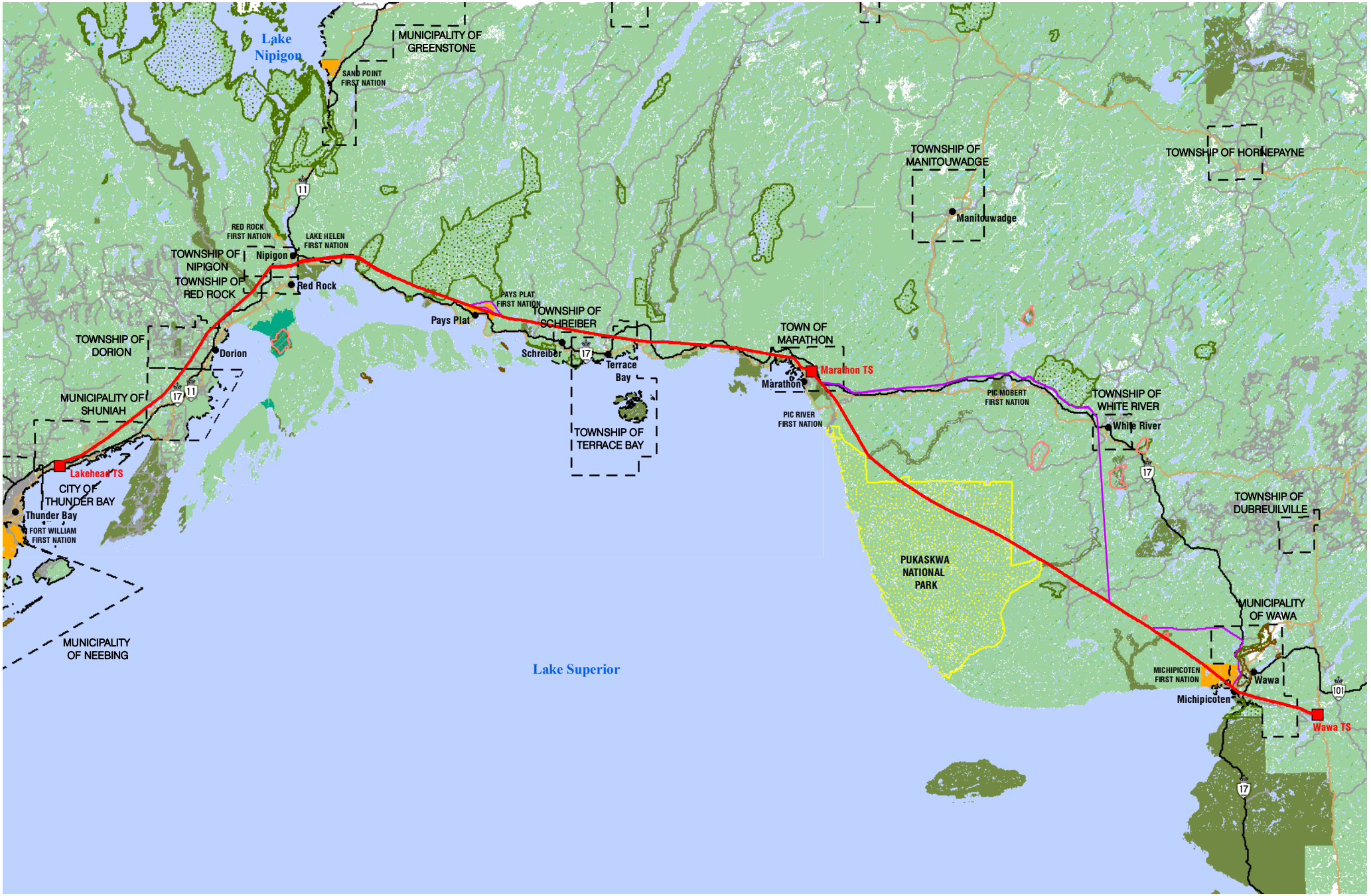
This section provides an overview of the proposed EA stage data collection methodology, the preliminary study area definition and baseline information for the natural and socio-economic environments. **Figure 4** provides some of the preliminary features identified along the Reference Route thus far. The EA will contain more detailed and comprehensive mapping based on primary and secondary data that is to be collected.

5.1. Data Collection Methodology

A preliminary environmental inventory was developed based on available data to define baseline environmental conditions. The inventory was generated based on a review of records published through secondary sources and provided by government agencies. Features were mapped based primarily on secondary data sources including existing literature, and information received from the consultation program undertaken during the development of the ToR (**Figure 4**).

The purpose of collecting data to compile features mapping was to assist the project team and stakeholders in understanding the existing conditions of the area and how the environment may be affected by the Project. The features maps will be further developed as part of the EA and will serve as the baseline for route evaluation and for assessing the potential Project effects resulting from the phases of the Project. Baseline conditions are required for the EA to form a benchmark for monitoring programs.

While this ToR provides some baseline information, additional data is required and will be provided in the EA Report, along with the effects assessment and mitigation measures, and will be supplemented with field studies (to commence in early 2014), and input received from government agencies, First Nation and Métis communities and other stakeholders. Collected data will be input into a GIS mapping system. The EA will consider available secondary information sources (i.e., published data sources, electronic databases, aerial photographs, published literature and journals, and map interpretation), primary sources (i.e., field reconnaissance, field surveys), as well as agency, Aboriginal, and other stakeholder input.



NEXTBRIDGE INFRASTRUCTURE

East-West Tie Transmission Line Project

Figure 4: Preliminary Environmental and Socio-Economic Features

NEXTBRIDGE INFRASTRUCTURE

Towns/Communities	Local Road	Provincial Parks	Candidate Area of Natural and/or Scientific Interest, Life Science
Transformer Stations (TS)	Railway	Conservation Reserve	Area of Natural and/or Scientific Interest, Earth Science
Reference Route	Upper and Lower Tier Municipalities	Provincially Significant Wetland	Candidate Area of Natural and/or Scientific Interest, Earth Science
Alternative Routes	First Nation Reserve	Unevaluated Wetland	Woodland
Highway	National Park	Area of Natural and/or Scientific Interest, Life Science	Waterbody

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR/ NEXTERA

MAP CREATED BY: SFG
MAP CHECKED BY: MB/MM/JC/JF
MAP PROJECTION: NAD 1983 UTM Zone 16N

0 7.5 15 30 km

SCALE 1:1,300,000

File Location: I:\GIS\138567 - Nextbridge\GIS\MXDs\Working\Terms of Reference\Figure 4 Socio-Economic and Natural Features.mxd

PROJECT: 138567 STATUS: DRAFT DATE: 2/21/2014

Field work will focus primarily on the Reference Route and Alternative Routes, as well as areas where local route refinements may be required. The type and timing of field studies is currently being discussed with the MNR and other applicable regulatory agencies and thus those mentioned in this ToR are subject to change. Field work completed post-EA (if any) will be used to support permit applications and other environmental specifications. NextBridge intends to collect new field data over four seasons. This has begun with a caribou survey by helicopter during the winter of 2014 and a stick nest survey completed in early May. The caribou survey included incidental sightings of ungulates and other mammals. Field studies will generally consist of spring, summer and fall floral and faunal investigations. These studies will be finalized in consultation with the MNR.

5.1.1. Records Reviewed as Part of the Terms of Reference

The following table outlines some of the key secondary source information used in preparation of this ToR (References are also included in **Section 10**). Additional secondary source information will be included in the EA Report, as appropriate.

Table 2:
Key Records Reviewed

Information Source	Records Reviewed
Ontario Ministry of Natural Resources	Natural Heritage Reference Manual (2010)
	Significant Wildlife Habitat Technical Guide (2000)
	Significant Wildlife Habitat Ecoregion Criteria Schedules (2012)
Ontario Ministry of Environment	Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario (2009) Code of Practice: Preparing and Reviewing Environmental Assessments in Ontario (2009a) Code of Practice: Consultation in Ontario's Environmental Assessment Process (2007)
Parks Canada	Guide to the Vegetation Inventory for Pukaskwa National Park, prepared by ESG International Inc., Timmins, Ontario, 2001
Species at Risk in Ontario List (Accessed December 2013)	Status of species listed under the *Endangered Species Act*
Land Information Ontario (LIO) (Accessed December 2013)	Online mapping tool used to determine thermal regime of waterbodies and presence of natural features
Phair, et. al. (2005)	Great Lakes Conservation Blueprint for Aquatic Biodiversity: Tertiary Watershed Summaries
Henson and Brodribb (2005)	Great Lakes Conservation Blueprint for Terrestrial Biodiversity: Ecodistrict Summaries
Other	Provincial Policy Statement, 2005 Places to Grow Act, 2006 Growth Plan for Northern Ontario, 2011 Northern Ontario Engineering Terrain Studies (historical)

5.2. Environmental and Socio-Economic Features

As per the MOE's "Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario (2014)," the baseline conditions provided in the ToR are intended to be at an overview level and address the features of the environment as defined in the *EA Act*. Environment is defined in the *EA Act* as:

a) "air, land or water;
b) plant and animal life, including human life;
c) the social, economic and cultural conditions that influence the life of humans or a community;
d) any building, structure, machine or other device or thing made by humans;
e) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities; or,
f) any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario."

Sections 5.4 and **5.5** provides a general description of baseline conditions, which is structured around the following environmental and socio-economic features:

Natural Environment

- physiography, geology, surficial geology and soils
- surface and groundwater conditions
- national parks
- provincial parks, conservation reserves, and Areas of Natural and Scientific Interest
- vegetation
- fish and fish habitat
- wetlands
- wildlife and wildlife habitat
- species at risk
- air quality
- acoustic environment

Socio-Economic

- provincial and municipal policy
- population and demographics
- cultural heritage resources
- traditional land and resource use
- human health and aesthetics
- infrastructure and services
- employment and economy

Potential environmental and socio-economic effects that could be caused by the Project are provided in **Sections 5.4.12** and **5.5.8**. It should be noted that these identified potential effects, along with the features mentioned above, are preliminary and may change during the EA as additional data becomes available and/or as a result of Project design development.

Project activities identified as potentially affecting the natural and socio-economic environment include:

- ROW and temporary workspace preparation;
- vegetation clearing;
- equipment and material delivery, staging and stockpiling;
- construction of access roads and bridges for watercourse crossings;
- excavating and pouring transmission tower foundations;
- erection of transmission towers and back filling;
- conductor stringing; and,
- clean up and land reclamation.

5.3. Preliminary Study Area

A preliminary study area has been established for the Project which includes approximately 500 m on either side of the Reference Route and Alternative Routes for the purposes of the ToR. The study area generally allows for the documentation of existing baseline conditions, prediction of potential environmental effects, and development of appropriate mitigation measures with a reasonable degree of accuracy. This is consistent with similar types of EAs undertaken by Hydro One and its predecessor Ontario Hydro. The study area may be expanded in some areas where local route refinements may be required due to environmental or technical constraints (i.e., topography). Detailed field work will, however, be more focused and confined to directly affected areas including proposed tower locations. These areas will be identified through consultation with relevant agencies as appropriate.

Study area boundaries will be refined as part of the EA based on input from Project stakeholders (i.e., through comments received from agencies, Aboriginal communities and the public related to the draft and proposed ToR), and predicted Project-related environmental and socio-economic effects. Study area boundaries are anticipated to be finalized shortly after the commencement of the EA and will be used primarily for the purposes of collecting baseline information and assessing potential Project effects. It should also be noted that in some cases larger, or separate study areas, will be developed to address some of the potential environmental and socio-economic features including, but not limited to, Woodland Caribou, archaeology, air/noise, socio-economics and Alternative Routes, to allow for greater accuracy in the prediction of Project effects and development of mitigation measures.

5.4. Natural Environment

This section provides an overview of the natural environment within the study area. A work plan is being developed with input from the MNR with respect to documenting and evaluating the natural environment.

5.4.1. Physiography, Geology, Surficial Geology and Soils

The study area is located within the Ontario Shield Ecozone (Crins, et. al., 2009), which comprises Ontario's portion of the national Boreal Shield Ecozone. The Ontario Shield Ecozone, which occupies more than half of the province, includes both the boreal forest and the Great Lakes – St. Lawrence forest regions. With a few exceptions, this Ecozone contains the Precambrian bedrock in the province. These rocks are primarily comprised of granite and gneiss, but basalt, greenstone, and many other mineral types also occur (Crins, et. al., 2009). The surficial geology is diverse and includes morainal, organic and glaciolacustrine deposits, as well as several eskers and drumlins. Substrates are diverse across the Ecozone; however, a significant portion of the Ecozone is comprised of exposed bedrock. Topography varies depending on both local bedrock and surficial deposits (Crins, et. al., 2009).

The study area is located primarily within four Ecodistricts including Kakabeka (4W-2), Black Sturgeon (3W-3), Schreiber (3W-5) and Tip Top Mountain (3E-4) (Henson and Brodribb, 2005). The Kakabeka Ecodistrict is largely underlain by undifferentiated igneous rock and rounded ridges of granitic bedrock. Flat-topped ridges with valley flats and broader plains contain till deposits in the Thunder Bay area. Glaciofluvial deposits are present throughout the study area along the eastern arm of the Ecodistrict (Henson and Brodribb, 2005).

The Black Sturgeon Ecodistrict is largely composed of bedrock with expansive areas of glaciolacustrine sand and gravel deposits surrounding Lake Nipigon. Glaciolacustrine silt and clay-based deposits occur along the Nipigon River, north of Black Bay and at the mouth of the Sturgeon River. Glaciofluvial and till deposits are intermixed throughout the area (Henson and Brodribb, 2005).

The predominant landform in the Schreiber Ecodistrict is undifferentiated igneous and metamorphic rock, which is exposed at the surface or covered by a discontinuous layer of drift. There are considerable glaciofluvial deposits along the Aquasabon, Steel and Gravel Rivers. There are also large fluvial deposits along the Pic River, and in segments of the Steel and Gravel Rivers (Henson and Brodribb, 2005).

The Tip Top Mountain Ecodistrict is predominantly underlain by undifferentiated igneous and metamorphic rock, which is exposed at the surface or covered by a discontinuous layer of drift. Glaciofluvial deposits are scattered throughout, particularly along the Pukaskwa and White Rivers. Fluvial deposits coincide with the rivers of Pukaskwa National Park whose turbulent waters cut through deep valleys (Henson and Brodribb, 2005).

The EA will document existing conditions for the physical environment including physiography, geology, soils and surficial geology using desktop studies with published data sources. Ontario Geological Survey mapping as well as other existing databases such as the Northern Ontario Engineering Terrain Studies will be consulted in conducting the EA. The project team will identify and categorize areas of potential soil contamination (where data is available) and should they be identified in an area where construction of tower bases is to occur, soil sampling will be completed as necessary.

5.4.2. Surface and Groundwater Conditions

Surface Water

The study area lies within the Great Lakes primary watershed and mainly within seven tertiary watersheds which are described below (Phair, et. al., 2005). Over 500 watercourses flow into Lake Superior, many of

which occur within the study area. Some of the larger surface water features in the study area include Black Sturgeon River, Nipigon River, and Pukaskwa River.

Black Sturgeon Tertiary Watershed (2AC)
This watershed flows into northwestern Lake Superior, and includes the Black Sturgeon River (Phair, et. al., 2005). Stream systems occupy over 80 percent of the watershed.

Nipigon Tertiary Watershed (2AD)
Approximately 25 percent of this watershed is comprised of Lake Nipigon and its many islands, although the Nipigon, Kopka and Ombabika rivers are also located within this watershed. Stream systems occupy 70 percent of the watershed (Phair, et. al., 2005).

Jackpine Tertiary Watershed (2AE)
This watershed has a large amount of coastline and drains into north-central Lake Superior (Phair, et. al., 2005). Significant areas in this watershed include part of the Lake Superior archipelago, Nipigon Bay, and Vert Island. Stream systems occupy 85 percent of the watershed.

Little Pic Tertiary Watershed (2BA)
The Little Pic watershed drains into north-central Lake Superior and includes the Aguasabon, Steel and Little Pic Rivers. Stream systems occupy over 85 percent of the watershed (Phair, et. al., 2005).

Pic Tertiary Watershed (2BB)
This watershed flows into northern Lake Superior (Phair, et. al., 2005). The Pic and Black Rivers are the major drainage features within the watershed, and stream systems occupy over 90 percent of the watershed.

White Tertiary Watershed (2BC)
This watershed flows into northeastern Lake Superior, and includes the White and Pukaskwa Rivers (Phair, et. al., 2005). A significant stretch of the Lake Superior coastline is found in this watershed. Stream systems occupy 85 percent of the watershed.

Michipicoten – Magpie Tertiary Watershed (2BD)
This watershed flows into eastern Lake Superior (Phair, et. al., 2005). The Magpie River is the primary river in the watershed. Stream systems occupy 85 percent of the watershed.

It is estimated that the Reference Route crosses approximately 300 watercourses of varying sizes and an additional 100 waterbodies (primarily lakes) (MNR Land Information Ontario, 2012).

Groundwater

The study area consists of a bedrock aquifer made up of granite and gneiss rock. This bedrock is continuous over the entire region and is thought to be a moderate to poor aquifer. The surficial aquifer system, consisting of sediments deposited by glaciers or glacial melt water, extends discontinuously across the area. Generally, the glacial deposits are thin, having been lost to erosion. Where a bedrock aquifer is present below the surficial aquifer system, the two are usually connected hydraulically. Bedrock aquifers may be exposed at the surface in rock outcrops or road cuts but also extend below the surface to varying extents and depths, where wells can tap their water supplies (Grannemann, et. al., 2000).

Baseline conditions for surface and groundwater conditions will be documented as part of the EA using published data including Environment Canada's Water Survey of Canada, GIS mapping and field study (as applicable). Wells within the study area that could potentially be impacted by the Project will also be identified and provided in the EA Report using the MOE water wells records and input received from landowners. The potential for surface and groundwater effects will also be reviewed using historical data.

5.4.3. National Parks

Pukaskwa National Park is located within the study area. This park is the most significant protected area along the Reference Route. Approximately 96 percent of the park is forested; the remaining non-forested areas include fens, bogs, cleared land, exposed bedrock, non-forested upland areas and beaches. The park provides habitat for many species, including Species at Risk. Although the majority of diverse and sensitive habitats are located along the shoreline of the park, the inland portion of the park represents a vast area of pristine wilderness.

Parks Canada has indicated that they are not prepared to accommodate such a proposal to construct a transmission line through Pukaskwa National Park in a letter dated February 11, 2014. NextBridge has not had an opportunity to determine if this decision can be further discussed with Parks Canada. NextBridge would like to explore the rationale for the decision. Should the decision be changed to allow a route through the Park, then the EA will identify and provide baseline conditions for the portion of Pukaskwa National Park that may potentially be affected by the Project. Potential Project effects and mitigation will also be developed and provided in the EA Report. Should Parks Canada's decision be final, the Reference Route through Pukaskwa National Park will be removed from consideration as a possible route in the EA.

5.4.4. Provincial Parks, Conservation Reserves and Areas of Natural and Scientific Interest

There are provincial parks, conservation reserves, and Areas of Natural and Scientific Interest (ANSIs) located in, or in proximity to, the study area based on a preliminary review of available secondary source information. A preliminary list of these areas is provided in **Table 3**.

Table 3:
Provincial Parks, Conservation Reserves, and ANSIs

Category	Natural Heritage Feature
Provincial Parks	Gravel River Provincial Nature Reserve Ruby Lake Provincial Park White Lake Provincial Park Red Sucker Point Provincial Nature Reserve Neys Provincial Park Kama Hills Provincial Nature Reserve Black Sturgeon River Provincial Park Nimoosh Provincial Park Pukaskwa River Provincial Park Prairie River Mouth Provincial Park Craig's Pit Provincial Park (Addition)

Category	Natural Heritage Feature
Conservation Reserves	Magpie River Terraces Conservation Reserve Kama Cliffs Conservation Reserve Kwinkwaga Ground Moraine Uplands Conservation Reserve Gravel River Conservation Reserve
Area of Natural and Scientific Interest (ANSI)	Magpie/Terraces Candidate Earth Science ANSI Loon Lake Earth Science ANSI Makwa River Candidate Life Science ANSI Bremner River Wetland Candidate Life Science ANSI

The EA will identify and provide baseline conditions through desktop and field work for those sections of provincial parks, conservation reserves, ANSIs, and other environmentally sensitive areas (such as National Marine Conservation Areas) that may potentially be affected by the Project. Potential Project effects and mitigation will also be developed and provided in the EA Report. Local route refinements to avoid protected areas will also be evaluated during the EA.

5.4.5. Vegetation

The majority of the natural cover within the Great Lakes Ecoregion is forest. Based on a review of available background information, an overview of vegetation and natural cover within each of the four Ecodistricts identified in **Section 5.4.1** is provided below.

Kakabeka Ecodistrict (4W-2)
Approximately 89 percent of this Ecodistrict remains as natural cover, of which nearly one-third is comprised of intolerant hardwoods. Upland hardwood, mixed conifers and Aspen (*Populus sp.*) stands are also scattered throughout. Globally and provincially rare vegetation communities also occur in this Ecodistrict and include Bur Oak-Saskatoon Berry Dry Deciduous Woodland, Basic Open Cliff, Boreal Open Seepage Fen, Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline, Dry Fescue Mixedgrass Prairie, and Moist-Fresh Sugar Maple-Yellow Birch Deciduous Forest (Henson and Brodribb, 2005).

Black Sturgeon Ecodistrict (3W-3)
This Ecodistrict remains predominately as forest natural cover, with nearly 20 percent comprised of mixed conifers and upland hardwoods. These forest features are intermixed with upland Black Spruce (*Picea mariana*) and intolerant hardwoods. White Birch (*Betula papyrifera*) is generally located south of Lake Nipigon and adjacent to the Nipigon River. Mixed forests and sparse lichen-heath vegetation are also found in cobble areas, and lowland Spruce is dominant at the mouth of the Nipigon River. Globally and provincially rare vegetation communities also occur in this Ecodistrict and include Basic Open Glacier Talus, Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline, American Dune Grass-Beach Pea-Sand Cherry Dune Grassland, and Boreal Acidic Sandstone Open Cliff (Henson and Brodribb, 2005).

Schreiber Ecodistrict (3W-5)
This Ecodistrict remains predominately as forest natural cover. Approximately one-third of the Ecodistrict is comprised of mixed conifers and upland hardwood specifically in proximity to the Little Pic River, Steel River,

and the Pays Plat River. Upland Black Spruce is scattered throughout the Ecodistrict and represents approximately 20 percent of the natural cover. White Birch and intolerant hardwoods are also present throughout the Ecodistrict. Globally and provincially rare vegetation communities also occur in this Ecodistrict and include Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline, and American Dune Grass-Beach Pea-Sand Cherry Dune Grassland and (Henson and Brodribb, 2005).

Tip Top Mountain Ecodistrict (3E-4)
This Ecodistrict remains predominately as forest natural cover, with approximately 20 percent of it dominated by White Birch. Mixed conifers and upland hardwoods represent approximately 12 percent of the Ecodistrict while about 10 percent of the natural cover includes Pine (*Pinus sp.*) scattered throughout and mixed Spruce. Globally and provincially rare vegetation communities also occur in this Ecodistrict and include Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline and American Dune Grass-Beach Pea-Sand Cherry Dune Grassland and (Henson and Brodribb, 2005).

Several provincially rare and/or protected flora have been identified as having the potential to occur in the study area in addition to the vegetation communities outlined above. These species include, but are not limited to, Pitcher's Thistle (*Cirsium pitcheri*), American Beachgrass (*Ammophila breviligulata*), Western Moonwort (*Botrychium hesperium*), Auricled Twayblade (*Listera auriculata*), Ross's Sedge (*Carex rossii*), Pussy-toes (*Antennaria rosea*), Drummond's Thistle (*Cirsium drummondii*), Wild Heliotrope (*Phacelia franklinii*), Northern Woodsia (*Woodsia alpina*), Mountain Bilberry (*Vaccinium membranaceum*), Heartleaf Arnica (*Arnica cordifolia*), Yellow Dryas (*Dryas drummondii*), and Devil's Club (*Oplopanax horridus*) (Henson and Brodribb, 2005).

The EA will contain a description of vegetation located in the study area using desktop and field studies. Anticipated field studies to be completed during the EA include ecological land classification (ELC) and botanical surveys, and are subject to consultation with regulatory agencies. ELC and botanical surveys will be completed to establish vegetation communities and vegetation present in the study area. Information obtained from these surveys will be used to verify secondary source data.

5.4.6. Fish and Fish Habitat

The study area contains several aquatic features including streams, rivers, wetlands, bogs, marshes and lakes. Based on Land Inventory Ontario (LIO) mapping, the majority of watercourses in the study area are classified as coldwater. Aquatic features provide suitable habitat for a number of different fish species including, but not limited to, Walleye (*Sander vitreus*), Brook Trout (*Salvelinus fontinalis*) and Northern Pike (*Esox lucius*). Several federally and provincially protected species also occur in the study area including Northern Brook Lamprey *(Ichthyomyzon fossor)*, Lake Sturgeon (*Acipenser fulvescens*), Upper Great Lakes Kiyi (*Coregonus kiyi kiyi*), and Shortjaw Cisco *(Coregonus zenithicus)*.

The larger waterbodies in the study area provide fish habitat year-round, while the smaller lakes and wetlands often do not, as oxygen levels drop to hypoxic conditions. However, smaller waterbodies are suitable habitat for rearing and feeding for portions of the year.

The EA Report will document existing baseline conditions for fish and fish habitat that could potentially be affected by the Project within the study area. Features to be documented include watercourses and waterbodies using desktop (including GIS mapping) and field studies. Fish species known to inhabit watercourses and other aquatic features in the study area will also be identified using MNR records and other published data, as appropriate.

5.4.7. Wetlands

Through a review of available background information, several wetlands have been identified within, or in proximity to, the study area. The majority of these wetlands are unevaluated; however, two provincially significant wetlands (PSWs) have been identified, including Hurkett Cove PSW and Nipigon River PSW. Wetlands in this area include swamps, bogs, and fens (Henson and Brodribb, 2005; Phair, et. al., 2005).

The EA Report will identify, document and map the locations of wetlands within the study area using desktop studies (including GIS mapping) and will supplement field studies, as necessary. For the purpose of this Project, wetlands will be assumed to be significant (i.e., possessing significant ecological, botanical or hydrological features), if unevaluated, to avoid the need to undertake a full evaluation using provincial procedures.

5.4.8. Wildlife and Wildlife Habitat

The Lake Superior coastline and the encompassing study area are home to a wide variety of birds, mammals, and herpetological fauna. A preliminary review of secondary source information was undertaken, and the potential for a variety of wildlife and wildlife habitat was identified. Wildlife potentially occurring in the study area includes large and small mammals, reptiles, birds, and insects that are typically found in the Boreal Forest and the Great Lakes Coastline.

Baseline conditions for wildlife and wildlife habitat will be provided in the EA Report using desktop analysis and field study. Wildlife and wildlife habitat that could be impacted as a result of the Project will be identified. Field studies to be completed for the EA may include breeding bird surveys, incidental wildlife surveys, and other seasonal surveys, subject to consultation with regulatory agencies.

5.4.9. Species at Risk

Through a review of existing background information and the MNR's Species at Risk website (2013), several Species at Risk were identified as having the potential to occur in the study area.

Provincially and federally listed terrestrial Species at Risk with the potential to occur include, but are not limited to, American White Pelican (*Pelecanus erythrorhynchos*), Bald Eagle (*Haliaeetus leucocephalus*), Barn Swallow (*Hirundo rustica*), Eastern Whip-poor-will (*Caprimulgus vociferous*), Peregrine Falcon (*Falco peregrinus*), American Badger (*Taxidea taxus*), Wolverine (*Gulo gulo*), Woodland Caribou (*Rangifer tarandus caribou*), Pitcher's Thistle (*Cirsium pitcheri*), and Snapping Turtle (*Chelydra serpentina*) (MNR Species at Risk Website, 2013).

Provincial and federal Species at Risk that have the potential to be affected by the Project will be identified and documented in the EA Report. Consultation with the MNR is being undertaken to determine the need for field studies to be completed during the EA specific to Species at Risk.

5.4.10. Air Quality

Air quality in the study area is generally influenced by local sources from the region as well as long-range transport of contaminants from other regions. Potential air emission sources include mining and other industrial operations as well as vehicular traffic. Characterization of current air quality conditions in the study area will be based on data collected at the MOE's air monitoring stations. Air quality criteria, standards and objectives in Ontario have been established by the MOE and Environment Canada. The purpose of air quality objectives and standards is to limit impacts from permitted sources on the local airshed.

The EA will document baseline conditions for air quality in the study area using the closest air quality monitoring stations to the Project. The EA will also include the identification of potential receptors and evaluation of air quality against regulatory standards.

5.4.11. Acoustic Environment

The Reference Route falls primarily within an area dominated by forest and vegetation. The existing acoustic environment within the study area and the surrounding lands is characterized by sounds of nature, vehicular traffic, and noise from industrial activities (e.g., mining, quarrying, forestry). The Reference Route also crosses communities, recreational areas (such as provincial and federal parks) and other potentially sensitive receptors.

The EA will provide baseline conditions for existing noise levels using previously published reports (if any). Noise receptors will also be identified within the study area as part of the EA and potential noise emissions will be evaluated against regulatory guidelines. Mitigation measures will be developed as necessary.

5.4.12. Preliminary Potential Effects to the Natural Environment

The following table provides an overview of the preliminary potential effects to the natural environment associated with the Project during construction and operation that will be assessed as part of the EA. The potential effects described below are preliminary and will be further defined during the EA.

Table 4:
Preliminary Potential Effects – Natural Environment

Environmental Feature	Potential Effect
Physiography, Geology, Surficial Geology and Soils	▪ Loss of bedrock ▪ Soil compaction, mixing and rutting
Surface and Groundwater Conditions	▪ Short-term disruption or alterations to natural groundwater levels and flow patterns ▪ Reduced shade, increased thermal loading of watercourses and increased algae growth

Environmental Feature	Potential Effect
	▪ Increased downstream erosion and sedimentation ▪ Collapse of stream banks and downstream sedimentation ▪ Interference with water wells and septic tanks ▪ Alteration of surface water drainage systems ▪ Potential for contamination due to accidental release of deleterious substances
National and Provincial Parks, Conservation Reserves and Areas of Natural and Scientific Interest	▪ Alteration and fragmentation of natural heritage features including Provincial and National Parks, Conservation Reserves, ANSIs and PSWs as well as the features within them
Vegetation	▪ Changes to native vegetation composition ▪ Potential loss of rare vegetation species or rare vegetation communities ▪ Creation of new woodland edge ▪ Invasive species and/or weed introduction and spread
Fish and Fish Habitat	▪ Riparian habitat alteration ▪ In-stream habitat alteration ▪ Fish injury or mortality ▪ Blockage of fish movement
Wetlands	▪ Alteration of wetland habitat function ▪ Alteration of wetland hydrologic function ▪ Introduction and/or spread of wetland associated invasive species ▪ Fragmentation of wetland habitat
Wildlife, Wildlife Habitat and Species at Risk	▪ Loss and alteration of wildlife populations and/or habitat ▪ Habitat fragmentation ▪ Wildlife movement blockage or increased wildlife movement due to expanded ROW and access roads ▪ Loss and/or alteration of habitat ▪ Changes to habitat availability or use ▪ Increase in mortality risk ▪ Displacement of wildlife
Air Quality	▪ Increase of localized fugitive dust emissions during construction ▪ Increase in air contaminant emissions from construction equipment
Acoustic Environment	▪ Temporary and transitory increase in noise emissions during construction

5.5. Socio-Economic Environment

This section provides an overview of the socio-economic environment within the study area. A Socio-Economic Impact Assessment will be conducted as part of the EA to further investigate details of population and demographics, existing and designated land uses, settlements, economic development interests, as well as cultural heritage values and traditional land and resource uses.

5.5.1. Provincial and Municipal Policy

The Provincial Policy Statement, 2005 (PPS) provides overall policy direction on matters of provincial interest related to land use planning and development in Ontario. The PPS sets forth a vision for Ontario's land use planning system by managing and directing land use to achieve efficient development and land use patterns, wise use and management of resources, and protecting public health and safety. This Plan identifies the need for planning authorities to plan for, and protect, corridors and ROWs for infrastructure facilities to meet current and projected needs. In accordance with the PPS, the Project is planned to be located in an existing ROW to the extent possible to minimize potential effects to the natural and socio-economic environment.

The municipalities in the study area are also subject to *Growth Plan for Northern Ontario (2011)*, which will guide decision-making and investment planning in northern Ontario over the next 25 years. The Plan is structured around six themes including the economy, people, communities, infrastructure, environment and Aboriginal communities. Within each theme, the Plan identifies a series of policies to achieve its vision. The Plan also recognizes that investment in regional energy generation and transmission infrastructure supports the growth and development of the energy sector, while providing reliable energy supply for the sectors of the northern economic base.

The majority of the study area is located on Crown land. The Crown Land Use Policy Atlas (CLUPA) is a government maintained source of area-specific land use policy for Crown lands for the majority of central and northern Ontario. This Atlas contains land use policies consolidated from a variety of planning documents such as District Land Use Guidelines (1983 as revised); local land use area plans; Ontario's Living Legacy Land Use Strategy (1999) and the Guide to Crown Land Use Planning (2011) (MNR, 2013a). CLUPA will be used to understand the applicable land use designations for portions of the Reference Route and Alternative Routes located on Crown land. Additional consideration of activities on Crown land will include forest management plans and other Crown land users such as mining claims and trap lines.

The study area is also comprised of privately owned and other public lands (i.e., municipal) that contain existing, approved and planned land uses. Existing land uses identified in the area include residential, commercial, industrial, natural areas, recreation, small-scale agricultural, and resource extraction. The area between Lakehead TS and Nipigon is the most developed within the study area and consists of a variety of land uses and contains the majority of the potentially affected private lands, while the land between Nipigon and Marathon is less developed and is primarily Crown land.

Official Plans and other strategic policy direction regarding land use and economic development will be reviewed as part of the EA. The EA will provide additional data relating to sensitive land uses and requirements of provincial land use policy. Consultation with government agencies and other stakeholders will be undertaken as part of the EA to identify and confirm secondary data and potential effects.

5.5.2. Population and Demographics

Over the last several years, the population in municipalities within the study area has been in flux due to a changing economic environment. Some of the larger resource-based employers in the region have closed or relocated their operations, which has resulted in a lack of employment opportunities and contributed to the

departure of many residents from these communities. While the population of these communities has been declining, growth is anticipated over the next several years as municipalities evolve and refocus their economic objectives. For example, Shuniah has evolved from a largely recreational and rural resource-based municipality to one where permanent residential development is now the predominant land use, much of it being related to retirement living.

The population within the study area is also increasingly aging. In the City of Thunder Bay, the most populous municipality in northwestern Ontario, the percentage of the population over age 65 was 16.5 percent of total population in 2006, or 2.9 percent above provincial average. The implication of a relatively older population is that the demand for health care services and other services required by an aging population will be relatively more acute in these areas in comparison to the rest of the Province.

The EA Report will document additional detail relating to population and demographics and a skills assessment and will include a characterization of existing municipalities and communities in the area using primary and secondary sources including local official plans, mapping and input received from stakeholder consultation.

5.5.3. Cultural Heritage Resources

A Stage 1 archaeological assessment will be completed for the Project as part of the EA to identify areas of high archaeological potential. The Stage 1 assessment will provide information about the geography and history of the area, previous archaeological fieldwork and an overview of current land conditions along the Reference Route and Alternative Routes. The Stage 1 assessment will also provide recommendations for additional surveys for all, or parts, of the route that display high archaeological potential.

Additional study (i.e., Stage 2, 3 and 4 assessments) may also be required but will depend on the conclusions made in the Stage 1 archaeological assessment. Built heritage and cultural heritage landscapes potentially affected by the Project will also be identified, as necessary. Results will be documented in the EA Report and used for planning and design purposes. Further, historical information available from municipal officials and/or other interested stakeholders (i.e., municipal heritage committees) will also be sought and taken into account as part of the EA.

5.5.4. Traditional Land and Resource Use

First Nations and Métis may have an interest in the Project, including potential Project effects to traditional land and/or resource use such as treaty rights, land claims, traditional lands. The Reference Route crosses the Michipicoten First Nation and the Pays Plat First Nation reserves and as such both communities have an interest in the Project. Recent information from the Open House meetings held during the ToR stage also identified the Red Rock Indian Band as having a land interest in the area of the existing East-West Tie in the vicinity of Nipigon. Engagement is currently underway with First Nation and Métis communities, as well as the Ministry of Aboriginal Affairs, and AANDC, to further identify these, and any other, interests and potential effects to traditional land and resource use.

A Memorandum of Understanding (MOU) has been signed between the Minister of Energy (on behalf of the Crown) and NextBridge to clarify the roles and responsibilities of the Crown and NextBridge with respect to consultation with Aboriginal communities on the Project. The MOU is provided as supporting documentation to the ToR. NextBridge will consider First Nation and Métis interests during Project planning and design and will provide the results of the consultation program in the EA Report. NextBridge will also share data (i.e. vegetation species communities in a particular area) with First Nation and Métis communities and consider information they provide such as, but not limited to, traditional ecological knowledge, that will allow NextBridge to better characterize potential effects on traditional land and resource use, where possible. NextBridge will also consider First Nation and Métis-specific criteria and indicators in the evaluation of alternative methods for carrying out the undertaking.

5.5.5. Human Health and Aesthetics

The EA Report will provide a summary of baseline conditions and potential effects associated with noise (**Section 5.4.11**), air quality (**Section 5.4.10**) and water conditions (**Section 5.4.2**), all of which have the potential to affect human health. The EA Report will also document an appropriate monitoring program, as necessary. Specific factors related to human health and aesthetics, which will be further studied during the EA, are discussed below.

5.5.5.1. Electromagnetic Fields

Transmission lines typically produce Alternating Current (AC) electromagnetic fields (EMF) that oscillate at approximately 60 hertz (Hz). EMF are physical fields that are created by electrically charged objects which decrease in strength as the distance from the EMF decreases. People are exposed to EMFs every day as they are emitted from everything from household sources (lighting, electrical appliances) to workplace equipment such as monitors and photocopiers.

There has been public concern over potential effects caused by EMF exposure related to similar projects in the past. The Province of Ontario does not have a maximum EMF level standard however the public concern regarding potential health effects as a result of EMF exposure is recognized by NextBridge. To address and alleviate concerns related to EMF, NextBridge will continue to monitor scientific studies and results as they relate to EMF exposure and provide this information to Project stakeholders. Information relating to EMF exposure will also be provided in the EA Report and will rely primarily on Health Canada's scientific expertise.

5.5.5.2. Visual Assessment

The EA will include a characterization of the existing landscape in which the Project will be located. In areas where the Project parallels the existing East-West Tie, effects to existing viewpoints or lines-of-sight are not anticipated to be as significant when compared to sections of the Project that will be located away from the existing line.

Visual illustrations (where possible) will be developed to illustrate the anticipated location, height and design of the Project. The focus of the exercise will be existing viewpoints that are valued by the public and those identified through consultation activities as playing a main role in the aesthetic appeal and character of a specific area (i.e., potential visual effects within Pukaskwa National Park). Data used as part of this exercise

may include aerial images and digital data (frames) obtained through remote sensing technology (i.e., Lidar data). A description of the existing environment, the results of the visual impact assessment, as well as mitigation measures will be developed and provided in the EA Report.

5.5.6. Infrastructure and Services

The study area contains a variety of existing infrastructure including the existing East-West Tie which is owned and managed by HONI, roads, highways, rail lines and pipelines. There are also several community services provided in the area including police and fire, recreational facilities and other public services such as waste management facilities. Several provincial parks and conservation areas/reserves (as identified in **Section 5.4.3** and **5.4.4** of this ToR) are also located in the study area and are sources of recreation and tourism in the area.

Preliminary consultation with the Ministry of Transportation (MTO) has identified the need for an encroachment permit in the event that the Project is within 400 m of the ROW of a controlled access highway (e.g. Highway 17). The required setback for transmission lines is 14 m from Class I and II highways and 0.3 m from other highway classifications. Further consultation with MTO will be conducted through the EA.

The EA Report will document existing infrastructure and local community services in the area that could potentially be affected by the Project along with mitigation measures. Existing infrastructure will include transmission lines, roads, highways, pipelines, rail lines and other features identified. Community services may include schools, medical and emergency services facilities, residential settlement areas, public institutions, places of worship, and community gathering areas as well as municipal, provincial and national parks. Hotels, restaurants and other amenities that can support construction staff will also be identified. NextBridge is currently consulting with stakeholders to better understand existing facilities and potential Project effects.

5.5.7. Economy and Resource Use

The main commercial and industrial activities in northwestern Ontario are forestry, mining (mineral and aggregate), and tourism, all of which are vital to Ontario's economy.

The EA will document the predominant economic activities that occur within, and in proximity to, the study area as well as positive and negative Project-related effects and associated mitigation measures. Project effects are anticipated to be both positive (i.e., potential to generate new employment opportunities and other economic "spin-offs," stable source of electricity for resource-based businesses), as well as negative.

There are a number of forest management units (under MNR jurisdiction) in the study area, including:

- Lakehead Forest;
- Lake Nipigon Forest;
- Kenogami Forest;
- Pic River (Ojibway) Forest;
- Big Pic Forest;
- White River Forest; and,

- Algoma Forest.

Sustainable Forest License holders (for sections of the route located within identified forest management units on Crown lands), as well as mining claim holders and other Crown land users, will also be identified and provided with Project notification, to the extent possible. Further consultation with affected stakeholders will be conducted through the EA.

There are also tourism-based outfitters in the area that focus on hunting and fishing, relying on remoteness and wilderness experiences in many cases; in addition to tourism and local business associated with parks (provincial and national) and conservation areas (as identified in **Section 5.4.3** and **5.4.4**). The EA will document and assess potential effects to existing recreational areas in the study area.

Renewable energy development plays a significant role in northwestern Ontario. Examples include existing and planned wind power developments in the Shuniah area, potential solar power developments in the Nipigon area, and waterpower developments on rivers between Nipigon and Wawa. The EA will document and assess the potential effects to existing and planned renewable energy developments in the study area.

5.5.7.1. Property Values

NextBridge is committed to continued open and fair consultation with potentially affected landowners. NextBridge has provided early Project notification to individuals with private lands located along the Reference Route and Alternative Routes. Consultation will continue with these individuals and will evolve to include potentially affected landowners located along local route refinements that may be identified during the EA process. A market valuation will be completed that will assess and determine the basis of compensation along the route. Compensation will include consideration for land value, damages to the lands (if any) within the proposed taking or easement, and where applicable, damages to the remaining lands otherwise referred to as injurious affection.

5.5.8. Preliminary Potential Effects to the Socio-Economic Environment

Table 5 provides an overview of the preliminary potential effects to the socio-economic environment associated with the Project during construction and operation that will be assessed as part of the EA. While potential effects described below are preliminary, they are being provided to facilitate review of this ToR and will be further refined during the EA.

Table 5:
Preliminary Potential Effects – Socio-Economic Environment

Socio-Economic Feature	Potential Effect
Provincial and Municipal Policy	▪ Potential for Project to be inconsistent with existing and proposed land use
Population and Demographics	▪ Displacement of businesses and residents ▪ Sensory effects to nearby residents ▪ Encroachment on residences and other structures ▪ Increased employment opportunities and economic growth ▪ Secure new source of electricity

Socio-Economic Feature	Potential Effect
Cultural Heritage Resources	▪ Damage to, or the loss of, significant archaeological or other heritage sites
Traditional Land and Resource Use	▪ Interruption to First Nations and Métis traditional land and resource use including fishing, trapping, and gathering
Human Health and Aesthetics	▪ Unsafe conditions if construction areas are not secured appropriately ▪ Potential effects to human health in the event of a spill or other unforeseen incident ▪ Interaction with contaminated sites ▪ Alteration of existing landscape and visual character of the area (i.e. scenic values and viewpoints)
Infrastructure and Services	▪ Increased traffic at road crossings with the delivery of equipment and other materials ▪ Increased demand for parking in staging and construction areas ▪ Disrupt or interfere with existing utility infrastructure ▪ Overload existing infrastructure and services
Economy and Resource Use	▪ Creation of economic benefits including generation of employment opportunities and economic "spin-offs" such as contracting and tendering ▪ Disruption to, or displacement of, local businesses (including mining and aggregate, forestry and tourism), agricultural uses and operations and private property ▪ Disruption to, or displacement of, existing parks, conservation areas and other recreational activities ▪ Disruption to trapping, fishing and hunting activities ▪ Permanent loss of productive forest land associated with cleared ROW ▪ Loss of potential mining lands as a result of removal of surface rights

6. IDENTIFICATION AND EVALUATION OF ALTERNATIVES

The *EA Act* requires proponents to assess two types of alternatives including "alternatives to" the undertaking and "alternative methods" of carrying out the undertaking (Project). As previously mentioned, the EA will be "focused" and thus completed in accordance with subsections 6(2)(c) and 6.1(3) of the *EA Act.* With the exception of the "do nothing alternative," the EA will not include an evaluation of "alternatives to." The "do nothing" alternative will be compared against the Project to confirm the recommended undertaking. "Alternative methods" of carrying out the Project (Alternative Routes, local route refinements and designs) will be considered, assessed and evaluated in the EA.

The following sections provide further description regarding the approach to be taken in the evaluation of alternatives in the EA.

6.1. Alternatives to the Undertaking

The Province (Ministry of Energy, OPA, OEB) established the need and justification for the Project which included the consideration of alternatives to the East-West Tie as previously described in **Section 1.2**. The EA will not reexamine these past processes and decisions. The EA will include an assessment and evaluation of the "do nothing" alternative compared against the recommended undertaking of the Project. This comparative evaluation of the Project against the "do nothing" alternative provides for a final confirmation that on balance the advantages/disadvantages of proceeding with the undertaking exceed those of not proceeding with it. This evaluation will confirm the rationale for the undertaking. This evaluation will be undertaken through discussions with the OPA to re-confirm their recommendation of transmission as the preferred option for supplying the northwest with power.

6.2. Alternative Methods for Carrying Out the Undertaking

The OEB set the locational criteria for the Project in their competitive bid process. The preferred route must connect Lakehead TS, near Thunder Bay, with Wawa TS, near Wawa. A further stipulation was that the Project must connect with Marathon TS, near Marathon. A further requirement is derived from the Provincial Policy Statement. That is, new linear corridors are preferred to be located adjacent to existing linear corridors rather than new greenfield routes. There are a number of linear corridors that are located between Thunder Bay and Wawa. The EA will identify these corridors, evaluate them in terms of their environmental, social, economic, and technical attributes and select a preferred route.

The alternative methods to be identified, assessed and evaluated in the EA include the following:

- An assessment of Alternative Routes between Lakehead TS and Wawa TS;

- Alternative Routes around federal lands;
- Alternative Routes around provincial parks, conservation reserves and protected areas;
- local refinements of the Reference Route; and,
- alternative designs.

Additional information on each alternative method is provided below and will be further expanded upon and refined during the EA process. When developing these alternatives, NextBridge will consider the following (MOE, 2014):

- do they provide a viable solution to the problem or opportunity to be addressed?
- are they proven technologies?
- are they technically feasible?
- are they consistent with other relevant planning objectives, policies, decisions and provincial government priority initiatives?
- could they affect any sensitive environmental or socio-economic features?
- are they practical, financially realistic and economically viable?
- are they within the ability of the proponent to implement?
- can they be implemented within the study area?
- are they appropriate to the proponent doing the study?
- are they able to meet the purpose of the EA Act?

NextBridge has and will continue to consult Aboriginal communities, the general public, interest groups, and agencies during the EA process. Feedback received during the ToR phase has been incorporated into the route selection process and criteria and indicators. Meetings are currently being held with interested parties relating to routing and evaluation criteria and indicators. A second round of Open House meetings, following the commencement of the EA, will also be held to further consult on the route selection and evaluation criteria and indicators. Feedback received during this time will be incorporated (where applicable) into the evaluation. A third set of Open House meetings will be used to display the results of route selection and evaluation, an effects assessment on the preferred route, mitigation measures to be employed during construction, as well as commitments and monitoring.

6.2.1. Alternative Routes around Federal Lands

Federal lands that have been identified along the Reference Route include two First Nation reserves (Michipicoten First Nation and Pays Plat First Nation) and the Pukaskwa National Park. The federal government (AANDC and Parks Canada) is currently being consulted to determine if routing through federal lands will be permissible. As previously mentioned, NextBridge will be exploring the recent decision by Parks Canada to not allow the Project through Pukaskwa National Park. If the federal government does not permit these lands to be included and assessed as part of the EA, then the route through these federal lands will no longer be considered and the Alternative Route around these federal lands will be assessed. Alternatively, if the federal government informs NextBridge that these lands may be assessed as part of the EA, then NextBridge will continue to consider these routes in the evaluation.

The Alternative Route identified around Pukaskwa National Park follows existing transmission infrastructure in an east-west direction. West of White River, the Alternative Route travels in a southerly direction to

connect with the Reference Route. The Alternative Route around Pukaskwa National Park was refined to minimize environmental, physical, technical and socio-economic effects. Alternative Routes will continue to be refined as necessary as part of the EA.

6.2.2. Alternative Routes around Provincial Parks, Conservation Reserves and Protected Areas

The existing East-West Tie was built prior to the designation of numerous provincial parks, conservation reserves and protected areas between Thunder Bay and Wawa. The Reference Route generally parallels the existing East-West Tie. Based on discussions with the MNR, it was determined that rather than automatically paralleling sections of the existing East-West Tie through provincial parks, conservation reserves and protected areas, an assessment will be completed of alternatives that avoid them. This assessment will be completed during the EA and its purpose will be to determine if it is more environmentally, socially, economically and technically feasible for the Reference Route to detour around these areas. This process will include consultation with Aboriginal communities, the general public, interest groups and agencies during the EA.

6.2.3. Local Refinements to the Reference Route

A number of local refinements to the Reference Route were identified between Thunder Bay and Nipigon. These refinements followed other existing transmission infrastructure. In addition to consulting with agencies, Aboriginal communities and other stakeholders regarding the ToR, NextBridge used public Open Houses to gather information related to these local refinements. It is possible that further route refinements may be proposed and considered in this area during the EA. For example, as a result of a public meeting held in Dorion during the ToR public review period, NextBridge committed to working with the community to identify and evaluate local refinements to the Reference Route in the area of this community.

Additional local refinements to the Reference Route in other areas as well as for the Alternative Routes may also be identified during the EA process to avoid sensitive environmental and/or socio-economic features, for technical reasons (i.e., to avoid existing infrastructure or reduce the number of transmission line crossovers) or to address specific landowner concerns. Local refinements requested by landowners or other stakeholders to avoid their property will be reviewed on a case by case basis as switching from one side of the existing East-West Tie to the other is not necessarily feasible. Crossovers reduce system security in the area of the crossover, require a larger amount of land and will increase overall costs. For this reason, a comparative route analysis of both sides of the Reference Route and the Alternative Route around Pukaskwa National Park was undertaken in order to select the preferred side of the existing transmission facilities on which to locate. This analysis is provided in **Appendix E**. The analysis identifies that locating the Reference Route on the north side of the existing East-West Tie is generally preferred. The analysis also identified that locating the Alternative Route around Pukaskwa National Park on the south side of the existing transmission facilities is generally preferred.

6.2.4. Alternative Designs

Alternative methods to be examined in the EA will also include alternative designs to the Project. Alternative designs may need to be considered to accommodate specific landowner, First Nation, Métis, individual,

community, or other stakeholder concerns, or to minimize Project effects on an environmental or socio-economic feature (i.e., as a mitigation tool). Should the need for the alternative design originate from these concerns, NextBridge will resolve it with the affected individual or group. Should alternative designs result in the need for regulatory permits, they will be discussed with appropriate agencies. Typical alternative designs which may be explored further in the EA, if warranted, include:

- type of transmission line towers;
- specific siting of transmission line towers including:
  - establishing height requirements to minimize potential adverse effects to aesthetics in the area;
  - determining tower span lengths to avoid, or minimize, adverse effects to sensitive natural or socio-economic features; and,
- location, alignment, and potential future use of access roads.

6.3. Evaluation of Alternative Methods

The identified Alternative Routes and designs will be assessed and evaluated to select on balance, the alternative that has more advantages than disadvantages. The evaluation will take into account potential effects and mitigation that could be implemented to minimize or avoid the effects. The evaluation of alternative methods will be based on a set of evaluation criteria. **Table 6** provides the general principles that would be followed in making decisions regarding route evaluation and selection. A list of detailed criteria and indicators to be used to evaluate alternative methods is provided in **Appendix D**. The evaluation criteria will be confirmed during the course of the EA and may include additions or deletions based on new information that is obtained by the project team in relation to the areas of the route being evaluated. Data used for the evaluation will consider both primary and secondary sources as necessary. The final methodology and results of the evaluation will be provided in the EA.

Table 6:
General Routing Considerations

Factor	Rule
Natural	Avoid significant natural features (i.e., ANSIs, Species at Risk, environmentally sensitive areas, wetlands and waterbodies) and adhere to appropriate setback requirements
	Minimize watercourse crossings and reduce impacts to woodlands, wetlands, fish and wildlife habitats, and natural areas. Avoid areas with unsafe or hazardous slopes
Socio-Economic	Maximize distance from cultural heritage resources (archaeological, built heritage and cultural heritage landscapes)
	Minimize incompatibility with existing sensitive land uses (i.e., First Nation reserves, residences, agricultural lands, forest management areas, trap lines, mining claims)
	Minimize use of private properties (i.e., use of existing ROW is favoured to minimize disruption to property owners)
	Minimize potential disturbance to adjacent residences (and traditional lands if applicable) which may be affected by construction activities
	Minimize potential disturbance to adjacent commercial and industrial properties which may be affected by construction activities

Factor	Rule
	Minimize potential disturbance to adjacent institutional and recreational properties which may be affected by construction activities
	Maximize conformity with local land use policy
	Minimize disruption to local traffic
	Avoid impact to water wells, aquifer recharge areas and active mining/aggregate operations
Technical	Find the shortest and most direct routes
	Minimize rail and road crossings
	Avoid areas with insufficient amount of construction work space or uneven terrain
	Minimize the number of overhead electric transmission line crossings
	Select best topographical/terrain areas for the route (i.e., dry, flat and stable ground)

7. POTENTIAL EFFECTS ASSESSMENT AND MITIGATION MEASURES

7.1. Potential Effects Assessment

Once an evaluation of the Alternative Routes and local route refinements and alternative designs has been undertaken, an effects assessment of the preferred route and transmission line design will be undertaken. The effects assessment will identify both potential positive and negative environmental and socio-economic effects potentially caused by the Project and will identify mitigation measures to eliminate, or minimize, the negative effects. The assessment of effects will be clear, logical and traceable. **Table 7** presents a list of the environmental and socio-economic features that will be assessed in the EA. The final list of environmental and socio-economic features to be assessed will be confirmed in the EA. NextBridge is receptive to adding additional environmental and socio-economic features should they be identified through field work or consultation. NextBridge will work with Aboriginal communities, the general public, interest groups and agencies during the EA to refine the preliminary list of criteria and indicators to accommodate particular interests. **Section 4.2** identifies activities associated with construction and operation of the Project. Potential effects to the natural and socio-economic environment resulting from the Project are identified in **Section 5.4.12** and **5.5.8** respectively. A preliminary list of evaluation criteria and indicators is provided in **Appendix D**.

Table 7:
List of Key Environmental and Socio-Economic Features

Factor	Feature
Natural Environment	Physiography, geology, soils and surficial geology Surface and groundwater conditions National Parks Provincial Parks, Conservation Reserves, and Areas of Natural and Scientific Interest Vegetation Fish and fish habitat Wetlands Wildlife and wildlife habitat Species at Risk (provincial and federal) Air quality Acoustic environment
Socio-Economic Environment	Provincial and municipal policy (land use compatibility) Population and demographics Cultural heritage resources (archaeology, built heritage, cultural heritage landscapes) Traditional land and resource use Human health and aesthetics Infrastructure and services Employment and economy

The assessment of potential Project-related effects will generally follow the process outlined below:

- review the Project's characteristics including construction, operations and maintenance activities;
- consider the baseline environmental conditions that would be affected by Project activities;
- identify the potential interactions between the Project and the environment and describe potential environmental and socio-economic effects considering the extent, duration, interrelationships and magnitude (considerations to be finalized during the EA) of the potential direct and indirect effects (adverse and positive). This step will include using prediction techniques including for example component specific evaluations, field study, and the reviewing input received from the consultation program;
- identify, develop and describe environmental and socio-economic mitigation measures to eliminate, or minimize, potential effects. This work would be undertaken using utility best management practices including environmental policies of NextBridge, as well as Hydro One and operational statements of provincial and federal regulators;
- determine the net effects that are likely to remain once prescribed mitigation measures are implemented; and,
- identify the overall advantages and disadvantages.

The assessment will also consider potential cumulative effects of the project in combination with past, present and reasonably foreseeable future activities, where possible.

7.2. Mitigation Measures

Standard and customized (site specific) mitigation measures will be developed for the Project to minimize potential adverse Project-related effects and described in the EA Report. As an example, prior to disturbances taking place, appropriate surface water controls will be installed, maintained and monitored in accordance with proven best management practices. Mitigation measures will be developed in consultation with Aboriginal communities, the general public, interest groups and agencies, as necessary, and will be provided in contract specifications to be adhered to by NextBridge staff and contractors. An example of typical mitigation measures for transmission projects is provided in the Project Description submitted to Parks Canada which is included as supporting documentation to this ToR.

8. COMMITMENTS AND MONITORING

NextBridge is committed to environmental integrity and sustainability. The Project will be undertaken in accordance with corporate environmental policies and procedures, applicable legislation and industry best management practices and will be designed to have the least impact on the natural and socio-economic environments to the extent possible.

8.1. Environmental Commitments

The EA will include a list of environmental commitments to be made by NextBridge with respect to:

- development and implementation of mitigation measures;
- completion of additional field studies (if required), and receipt of regulatory approvals, prior to construction (if any);
- development and implementation of an environmental monitoring program that considers the phases of the Project; and,
- continued stakeholder, First Nation and Métis consultation.

8.2. Environmental Monitoring

A detailed construction and post-construction monitoring plan will be developed during the EA phase of the Project and included in the EA Report to ensure environmental commitments are met. The primary objective of the environmental monitoring program will include identifying actual Project effects and the effectiveness of mitigation measures; and, determining compliance with applicable environmental legislation, regulations, industry standards, Project permits and commitments made by NextBridge in the ToR and EA Report.

NextBridge will employ the services of an Environmental Inspector(s) during construction of the Project to assist with monitoring. The Environmental Inspector(s) will be familiar with transmission line construction techniques, best management practices, and applicable legislation. The inspector(s) will also be familiar with the commitments made in this ToR and the EA Report and will identify actual Project-related environmental effects, and the effectiveness of mitigation and reclamation measures. NextBridge will aim to:

- integrate agency, Aboriginal, and stakeholder feedback and concerns received during the ToR and EA phases into the monitoring program and identify and manage potential environmental effects resulting from the Project;
- implement a worker training program to ensure the construction team and contractor are aware of applicable NextBridge corporate environmental policies and programs, practices; and,
- establish and aim to achieve Project environmental objectives and targets and ensure corrective action is taken when required.

NextBridge has several corporate environmental initiatives that employees, including contractors, follow including the "Neutral Footprint Initiative," which involves:

- planting a tree for every tree that is removed to build new facilities;
- conserving an acre of land for every acre of wilderness that is permanently impacted; and,
- generating a kilowatt of renewable energy for every kilowatt that is consumed during operations.

The purpose of these initiatives is to ensure that protecting the environment is one of the main goals of NextBridge for the Project. The monitoring plan will be implemented throughout the phases of the Project.

9. CONSULTATION

The consultation plan for the EA is provided in this section. All records of consultation undertaken during the ToR development are provided in the Record of Consultation which is an accompanying document to this ToR.

9.1. Purpose of the Consultation Plan for the EA

NextBridge is committed to consulting with interested community members, First Nation and Métis communities, elected officials and municipal staff, government agencies, landowners and the general public in a clear and mutually respectful manner throughout the life of the Project. This consultation plan provides a framework for the consultation activities that will take place during the EA.

Consultation is a required element of an Individual EA under the *EA Act*. The MOE's "Code of Practice: Consultation in Ontario's Environmental Assessment Process (MOE, 2014b)," states the purpose of consultation is:

- *"to provide information to the public;*
- *to identify persons and Aboriginal peoples who may be affected by or have an interest in the undertaking;*
- *to ensure that government agencies and ministries are notified and consulted early in the EA process;*
- *to identify concerns that might arise from the undertaking;*
- *to create an opportunity to develop proponent commitments in response to local input;*
- *to focus on and address real public concerns rather than regulatory procedures and administration;*
- *to provide appropriate information to the ministry to enable a fair and balanced decision; and,*
- *to expedite decision-making."*

NextBridge will engage interested individuals/groups, governments, First Nation and Métis communities, regulators, and landowners through honest, regular and open communication, seeking and respecting each party's input. NextBridge is committed to timely and meaningful dialogue, and believes that input received will be critical to a successful project that seeks to address the needs of those involved.

NextBridge's consultation principles are to be:

- open and honest;
- proactive;
- accessible (i.e., provide information that is easy to understand and access); and,
- respectful.

The proposed consultation plan involves a Stakeholder Consultation Plan (**Section 9.3**) and an Aboriginal Engagement and Consultation Plan (**Section 9.4**). This consultation plan may be updated to reflect community concerns and issues as they emerge.

9.2. Consultation on the Terms of Reference

During the development of the ToR, stakeholders and First Nation and Métis communities were engaged to obtain input on the ToR and the Project.

The MOE's "Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario (MOE, 2014b)" states that a consultation plan should outline the following:

- *"the general consultation methods proposed;*
- *how input from interested persons will be obtained;*
- *a description of key decision-making milestones during the preparation of the EA when consultation will occur; and,*
- *an issue resolution strategy."*

An accompanying document to this ToR is the Record of Consultation. The Record of Consultation documents the consultation activities undertaken during the ToR and includes a summary of the issues and concerns received, the Project proponent's response to the issues, and how concerns were addressed in the development of the ToR. The Record of Consultation will be updated following the public review of the ToR document to reflect additional input received. Should the ToR be approved by the MOE and the Project progress to the EA, a separate Record of Consultation will document consultation activities and input received during the EA.

9.3. EA Stakeholder Consultation Plan

NextBridge will use a proactive, plain language, public communication and consultation plan to support two-way communication with potentially affected parties. NextBridge's philosophy is to be as transparent as possible with individuals, communities, and groups.

NextBridge knows that its neighbours during construction will also be its neighbours for the many years that the Project will be in operation. Therefore, NextBridge welcomes the opportunity to invest in long-term collaborative consultation relationships.

The Stakeholder Consultation Plan is a core component of consultation strategies and activities to engage landowners, municipalities, communities, and agencies. The objectives of the Consultation Plan are to:

- build public awareness and understanding;
- gather interested individual and group input;
- answer questions;
- learn about community interests and perspectives; and,
- implement changes to Project design or scope to minimize adverse impacts where feasible.

This Consultation Plan is designed to integrate with the steps of the EA process as shown in **Figure 5**. It is expected that the plan will be updated and refined based on feedback obtained as the EA process evolves.

Should significant unforeseen changes to the Project occur (i.e., changes to the study area, overall design), NextBridge will notify stakeholders using the appropriate method identified in **Sections 9.3.1** through **9.3.10**.

Figure 5:
Consultation Program

	Regulatory Process	Ongoing Consultation Activities	Specific Consultation Activities
ENVIRONMENTAL ASSESSMENT	Environmental Assessment Initiated	Meetings – Newsletters – Land Agents – Website – Hot Line	• Notice of Commencement of Environmental Assessment published, mailed, and posted
	Environmental Assessment Prepared		• Municipal, key stakeholder, agency, and landowner meetings continue • Open House Round 2 – present route selection process, the results of background studies, preferred alternative routes, local route refinement decisions, and criteria and indicators • Open House Round 3 – route selection and evaluation, preferred route, effects assessment and mitigation measures for the preferred route, construction activities and commitments and monitoring
	Draft Environmental Assessment Review (Revisions if Necessary)		• Notice of Review published, mailed, and posted • Draft document distributed to review agencies and identified Aboriginal communities and posted on website • Discussions with review agencies, municipalities, landowners, and stakeholders to resolve issues if necessary
	Environmental Assessment Submission and Review		• Notice of Intent to Submit to the Ministry of the Environment • Notice of Submission of Environmental Assessment • Documents distributed to review agencies, municipalities, public viewing locations and posted on website • Notice of Submission published and posted as required • Minimum seven-week public comment period
	MOE Review		• MOE review taking into account public comments received during public comment period
	Notice of Completion and Inspection of Ministry Review		• Notice of Completion published, mailed, and posted • Five-Week MOE inspection and public comment and hearing request period
	Final MOE Evaluation and Minister's Decision and Lieutenant Governor in Council Approval and Decision Notification		• Notice of Approval issued and posted on the Ministry of Environment's EA webpage.

NextBridge will consult the Aboriginal communities, general public, interest groups and agencies during the EA process. In addition to meetings, newsletters and activities that have taken place during the ToR phase, a second round of Open House meetings will be held to consult on the route selection process, the results of background studies, preferred Alternative Routes, local route refinement decisions and criteria and indicators. A third set of Open House meetings, in addition to further individual discussions, will be used to display the route selection and evaluation, preferred route, effects assessment and mitigation measures for the preferred route, construction activities and commitments and monitoring.

9.3.1. Stakeholder Identification

NextBridge has identified stakeholders who may be affected by, or may be interested in the Project. NextBridge will consult with potentially affected stakeholders in a manner that is respectful of their needs and expected levels of interest. The following stakeholders will be consulted during the EA:

- the general public that may have an interest in the study area and/or the Project;
- landowners and residents that could be affected along the Reference Route, Alternative Routes and local route refinements to be considered in the EA;
- townships, towns and municipalities that the Reference Route, Alternatives Routes and local route refinements pass through;
- government agencies with an interest in the Project; and,
- other stakeholders and interest groups with a potential interest in the Project.

A stakeholder contact list for the Project has been developed as part of the ToR stage consultation activities. This stakeholder list will be updated throughout the course of the EA. **Table 8** shows the interaction between these stakeholders and the consultation and engagement activities included in **Section 9.3.2**.

Table 8:
Stakeholder and Consultation Activity Interaction

	Project Notices	Project Website	Newsletters	Project Hotline	Project Email	Land Agents	Meetings and Presentations	Open Houses	Review of EA Report
Landowners	√	√	√	√	√	√	√	√	√
Municipalities	√	√	√	√	√		√	√	√
Agencies	√	√	√	√	√		√	√	√
Other stakeholders	√	√	√	√	√		√	√	√

Activities and interaction with First Nation and Métis communities is described in **Section 9.4**.

9.3.2. Consultation and Engagement Activities

The following suite of activities is proposed to facilitate a two-way exchange of information throughout the EA. These activities provide information to stakeholders as well as opportunities for stakeholders to become involved and provide input to project development.

9.3.3. Project Notices

Public notices will be published in local newspapers throughout the regional study area. Notices will meet the requirements established by the MOE in their Code of Practice (MOE, 2014b).

Four notices are anticipated during the EA: Notice of Commencement of the EA and Open Houses (Round 2); Notice of Open Houses (Round 3); Notice of Draft EA Review; and Notice of Submission of the EA.

Newspapers identified for publication include:

- Algoma News;
- Marathon Mercury;
- Nipigon Red Rock Gazette;
- Ontario News North;
- Thunder Bay Chronicle Journal;
- Thunder Bay's Source;
- Terrace Bay Schreiber News; and,
- Wawa-News.com.

Other local print and/or electronic media in northwestern Ontario identified during the EA may also be used. Notices will also be distributed via Canada Post and e-mailed to the stakeholder contact list. French language notices will also be available.

9.3.4. Project Website

A dedicated website, www.nextbridge.ca, has been established for the Project. Project information, notices, newsletters, updates, and other documents will be posted on the website to provide a means for stakeholders to access project information at their convenience. Project proponent contact information is provided on the website to facilitate an exchange of information and question/responses.

9.3.5. Newsletters

Newsletters will be developed and distributed to the stakeholder mailing list, be available at public events, and posted on the Project website release of newsletters are proposed to correspond with the Project commencement and key milestone events to provide additional information and invitation to events. The following summarizes the anticipated Newsletters. Additional newsletters may be prepared if necessary.

- Newsletter 1 – Introduce the Project, provide background information, describe the EA process, and let recipients know how they can participate in the EA. (Newsletter 1 was issued during the development of the ToR and will continue to be available during the EA).
- Newsletter 2 – Invite participation in the second round of Open Houses and provide information on the background study results (anticipated time frame – spring/summer 2014).
- Newsletter 3 – Invite participation in the third round of Open Houses and provide information on the preferred route, potential effects and proposed mitigation (anticipated time frame – fall 2014).

9.3.6. Project Hotline

A dedicated toll free telephone number, 1-888-767-3006, has been established for the Project. Messages left on the hotline will be reviewed regularly and forwarded to relevant proponent/study team members for appropriate action. Project related comments and inquiries made through the hotline will be documented. French language service is also available through the hotline.

9.3.7. Project Email

A dedicated email address, info@nextbridge.ca, has been established for the Project. Messages and comments sent to the email address will be reviewed regularly and forwarded to relevant Project team members for appropriate action. Project related comments and inquiries made via email will be documented. French language service is also available.

9.3.8. Land Agents

A team of land agents will be available to provide personal, one-window contact with potentially affected landowners and tenants to be as responsive as possible to landowner and tenant needs. It is expected that land agents will help landowners understand the Project approval process and address property-specific questions. This relationship will continue through post-EA, Leave to Construct, construction, and reclamation Project phases. A dedicated French language land agent will respond to inquiries and work with French speaking landowners and tenants.

9.3.9. Meetings and Presentations

Meetings with municipal staff and elected officials, as well as federal and provincial agencies and authorities will be held throughout the EA as required for Project planning purposes. Requests for meetings and presentations from other stakeholders will also be entertained.

9.3.10. Open Houses

Open House meetings will be held in communities along the Project route to provide community members a forum to understand more about the Project, speak directly with NextBridge subject-matter experts, and for NextBridge representatives to gather community input on the Project. Display panels and maps will describe and illustrate Project elements and the planning process. Information presented at the Open Houses will be made available on the Project website.

One round of public Open Houses was held during the ToR stage (in early December 2013). A summary of this round of Open Houses is provided in the Record of Consultation. Two additional rounds of public Open Houses are planned for the EA stage of the Project. Anticipated timeframe and discussion topics are as follows:

- Open House Round 2 – Present the results of background studies, preferred alternative routes, and local route refinement decisions (spring/summer 2014); and,
- Open House Round 3 – Preferred route, effects and mitigation, and construction activities (fall 2014).

The first round of Open Houses during the ToR phase was held in six locations: Thunder Bay, Nipigon, Marathon, Wawa, White River, and Terrace Bay. The number and location of venues for the rounds of Open Houses to be held during the EA may be revisited based on the level of participation and feedback received during the study.

Attendees at the Open Houses will have the opportunity to submit comment forms at the event and comments can also be made directly to NextBridge via email, mail, fax, and telephone hotline. Attempts will be made to document comments provided verbally to Project staff during one-on-one conversations at Open Houses; however, given the nature of these conversations, it is not possible to guarantee comments provided in this manner will be comprehensively captured. As such, parties are always advised to submit written feedback wherever possible.

9.3.11. Review of the Draft EA Report

Interested stakeholders will have the opportunity to review the draft EA Report. Notice that the draft EA Report is available for review will be advertised and distributed to those on the stakeholder contact list at the commencement of the review period. Copies of the draft document will be made available for review on the Project website. Agencies and identified Aboriginal communities will be provided with required copies of the draft document for circulation and review. Comments will be accepted via email, letter, fax, and phone call to the Project hotline.

Following incorporation of comments received, a final EA will be prepared. Notice of Submission will be advertised and distributed to those on the stakeholder contact list when the final EA is submitted to the MOE. A formal review period of the EA Report will commence at that time providing stakeholders with an opportunity to submit comments on the EA Report to MOE. Copies of the EA will be available for review locally, sent to key stakeholders and posted on the Project website as with the draft.

9.4. Aboriginal Engagement and Consultation Plan

On behalf of the province, the Ontario Ministry of Energy has provided NextBridge a list of fourteen First Nations and four Métis communities to be consulted for the purposes of the Crown's constitutional duty to consult and accommodate (see the Aboriginal Consultation Plan included as supporting documentation to the ToR). The Crown has delegated certain procedural aspects of the consultation and accommodation through a Memorandum of Understanding (MOU) between the Crown (represented by the Ministry of Energy) and NextBridge dated November 4th, 2013. This includes discussions regarding the transmission development process with the communities from the MOU and any expected or potential impact on Aboriginal or treaty rights. NextBridge and the Crown have committed to carry out their respective consultation obligations under the MOU. NextBridge has also engaged external Aboriginal relations consultants to provide advice and recommendations concerning consultation and potential accommodation strategies for the Project. NextBridge's approach for engaging these communities and entering into consultations is based on the following guiding principles:

- Understanding the Communities
  - NextBridge will collaborate with First Nation and Métis communities to better understand their rights and asserted rights as well as their concerns for the people affected by our work in the areas where we will operate. We will show respect for traditional ways and land, cultural heritage resources, the environment, and traditional knowledge.
- Commitment to Effective Policies and Procedures
  - We have strong, established and effective policies and procedures;

- NextEra's First Nation and Métis Relationship Policy; and
- Enbridge's Aboriginal and Native American Policy.

- Communication and Transparency
  - We form good working relationships through:
    - Open dialogue;
    - Communicating key project information and updates; and,
    - Being attentive to the communities' concerns about Project impacts or questions about Project benefits.

NextBridge recognizes that First Nations and Métis communities have specific rights that are constitutionally protected, and that the Project development may adversely affect these rights. The duty to consult and, if necessary, accommodate First Nations in Canada flows from the acknowledgement of Aboriginal and Treaty rights under Section 35 of the *Constitution Act*, 1982[4] and has been further defined by various Supreme Court of Canada decisions. While the duty to consult and accommodate rests with the Crown, in some cases procedural aspects of the duty to consult have been delegated to proponents. This is the case with this Project.

This Aboriginal Consultation Plan sets out a process that will be continually enhanced, with the benefit of community input. NextBridge proposes to carry out a dual stream consultation/participation process, where one of the streams will focus on consulting with the communities as to whether there are any expected or potential impacts on their rights, and what strategies may be undertaken to mitigate and/or avoid these impacts. This work stream is being named the "consultation" stream, and will be carried out by NextBridge staff and external consultants with input from the communities through a series of individual meetings with the eighteen identified communities. A second commercial 'participation' stream is being developed in parallel to the 'consultation' stream and is described below.

NextBridge will give full and fair consideration to the views and concerns expressed by the communities, about the perceived potential impacts of the Project on Aboriginal and treaty rights and will seek workable ways to substantially address the concerns raised by the communities. NextBridge will also give consideration to any information otherwise available to NextBridge about the rights and interests of the communities that may be impacted by the Project.

Should significant unforeseen changes to the Project arise (i.e., changes to the study area, overall design), NextBridge will notify Aboriginal communities using the appropriate method identified in **Section 9.4.5**, as applicable.

The Relationship of "Participation" to "Consultation"

NextBridge proposes to carry out two parallel streams of consultation and participation discussions with the identified First Nation and Métis communities, in accordance with its Consultation Plan and Participation Plan, both of which are filed with the OEB. Due to the broad definition of "participation" NextBridge expects there

[4] Aboriginal Consultation Guide for preparing a Renewable Energy Act Application, Ministry of the Environment Fall 2013 PIBS 9909e © Queen's Printer for Ontario, 2011

to be some overlap between the two streams given that participation opportunities are frequently provided to Aboriginal communities as the consultation process unfolds. Participation may arise as a result of various consultation activities including securing host community support, taking mutual advantage of local labour, good corporate citizenship, assisting with EA work, compensating for project impacts, where appropriate, and ensuring responsible stewardship (e.g. hiring environmental monitors, training archeological assessors, etc.) because all of these activities fall within the definition of "participation" articulated by the OEB. In other words, these participation opportunities are also community benefits. However, it is not necessarily the case that each community with whom NextBridge is required to consult will also economically participate in the Project.

Like the consultation process, NextBridge anticipates that the participation process will be a fluid and collaborative process requiring both parties to engage in honesty and in good faith with a view to achieving an optimal outcome for both sides while conforming to the OEB's requirements and preserving the interests of Ontario's electricity ratepayers.

9.4.1. Community Identification

In a May 31, 2011 letter to the OPA, the Ministry of Energy identified eighteen Aboriginal communities to be consulted by the OPA in early consultation on the Project. These same communities have been identified in the consultation MOU between NextBridge and the Crown of November 2013. The eighteen communities identified are provided in **Table 9**.

Table 9:
Aboriginal Communities

First Nation/Métis	Name	Treaty Area
First Nation	Michipicoten First Nation	Robinson Superior Treaty
First Nation	Pic Mobert First Nation	Robinson Superior Treaty
First Nation	Ojibways of Pic River	Robinson Superior Treaty
First Nation	Pays Plat First Nation	Robinson Superior Treaty
First Nation	Red Rock Indian Band	Robinson Superior Treaty
First Nation	Fort William First Nation	Robinson Superior Treaty
First Nation	Ojibways of Garden River	Robinson Huron Treaty
First Nation	Ojibways of Batchewana	Robinson Huron Treaty
First Nation	Missanabie Cree First Nation	Treaty 9
First Nation	Animbiigoo Zaagi'igan Anishinaabek (Lake Nipigon First Nation)	Robinson Superior Treaty
First Nation	Biinjitiwaabik Zaaging Anishinaabek (Rocky Bay First Nation	Robinson Superior Treaty
First Nation	Bingwi Neyaashi Anishinaabek (Sand Point First Nation	Robinson Superior Treaty
First Nation	Ginoogaming First Nation	Treaty 9
First Nation	Long Lake #58 First Nation	Treaty 9
Métis	Red Sky Métis Independent Nation	-
Métis	Superior North Shore Métis Council	-
Métis	Greenstone Métis Council	-
Métis	Thunder Bay Métis Council	-

All eighteen communities will be consulted, in accordance with the "Proposed Approach to Consultation" outlined in the following section. All eighteen will be provided with information, and will be engaged in a direct dialogue, in order to allow both NextBridge and each Aboriginal community to understand the potential impacts (if any) of the Project on any Aboriginal or treaty rights or interests. This will become part of the Record of Consultation.

As consultation unfolds, NextBridge expects that some Aboriginal communities will take greater interest in the Project than others, and seek deeper consultation or potentially accommodation. Often, the extent of consultation sought by a community will depend upon a number of factors, including:

- Proximity to the Project: This can be especially true of long linear projects which are expected to have minimal, if any, impacts to air, water or migratory species beyond the very narrow Project footprint. NextBridge notes that Pays Plat and Michipicoten First Nations may have the Project run through their respective Reserves.
- Rights Claims of Aboriginal Community: NextBridge would expect those communities with outstanding claims related to the Project area to seek deeper consultation.
- Stated Interests of the Aboriginal community: This may be expressed in meetings or in writing by an Aboriginal community during the consultation process, or it may be a factor taken into account in a community's Consultation Protocol or similar type of document.
- Environmental Assessment Work: During the work on the environmental assessment and participation by Aboriginal communities in that work (e.g., traditional knowledge), further information will be gained about both the Aboriginal rights, interests and traditional uses in the Project area, as well as the potential impacts of the Project.

The above list of factors is not exhaustive. Moreover, it is NextBridge's intention to engage in good faith consultation with Aboriginal communities seeking to understand the Project, convey their views and concerns about the Project, and discuss appropriate mitigation or accommodation. At law (and as per the Consultation MOU between NextBridge and the Crown), it is ultimately the Crown's responsibility to assess the adequacy of consultation on rights-based impacts as well as any necessary accommodation. Insofar as NextBridge consults on an interests basis during the EA process, it is for the MOE to determine the adequacy of consultation in accordance with the *EA Act*.

First Nation Organizations

Many of the fourteen First Nations are represented by tribal councils and/or Provincial Territorial Organizations (PTOs), which provide services to their affiliated First Nations, but do not themselves possess any Aboriginal or treaty rights. NextBridge will carry out consultation directly with the First Nation leadership (Chief and Council or their delegated representatives), but will keep a number of regional tribal councils and PTOs copied on notification letters to their member First Nations.

Métis Nation of Ontario (MNO)

Three of the four identified Métis community representatives are members of the MNO. The MNO will be copied on notification letters to its members.

9.4.2. Proposed Approach to Aboriginal Consultation and Participation

A transmission line is a long-term asset that can continue to operate upwards of fifty years or more. NextBridge is approaching consultation on the same long-term basis, and wants to build a long term, mutually beneficial relationship with impacted Aboriginal communities that is built on trust. NextBridge recognizes that trust takes time to build, and consultation and continuing dialogue with the communities will be ongoing throughout the Project development process and into the operations and maintenance phase, not just during the environmental assessment and permitting processes during Project development.

NextBridge plans to engage with the identified First Nation and Métis communities based on the foundations of respect, open communication and cooperation. NextBridge will meet with the eighteen identified communities to jointly discuss the potential impacts that the Project may have on the communities, and their Aboriginal and treaty rights and interests.

This will include dialogue about the traditional practices and traditional land and resource uses in which the communities currently engage and any traditional knowledge that has been mapped or collected by the community that may contribute to both the environmental assessment process, and a greater understanding of the potential EWT Project impacts. The EA will also include various field studies to identify and possibly mitigate/avoid identified potential impacts, which will feed into planning the Project and determining the optimal routing for the transmission line.

Many Aboriginal communities have established internal consultation protocols or procedures to ensure that the elders, youth and other holders of traditional knowledge each have an opportunity to hear and consider potential impacts of new project development. NextBridge will work with the communities to follow their individual internal protocols and procedures to the extent reasonably possible, provide capacity funding if appropriate and will respect the confidentiality aspects of any information provided to NextBridge in a manner consistent with the MOU.

The consultation work will focus on communicating the issues and options for route selection that are under consideration by the Project development team to the community members and receiving any feedback.

Consultation by NextBridge will be guided by the MOU and the Consultation Principles set out in the Aboriginal Consultation Plan provided as a supporting document to this ToR.

Section 28(2) Permits

A separate series of meetings will be required with the Pays Plat and Michipicoten First Nations, as the proposed route for the Project passes through each of their Reserve lands. Meetings to discuss the proposed routing, as well as negotiations regarding compensation to the two communities for the land taken out of use by the communities, will be necessary. Some communities require a community referendum to approve Section 28(2) permits.

9.4.3. Information Exchange

NextBridge recognizes that each of the eighteen identified communities has its own unique history, set of protocols, and traditional ways of getting things done. In addition to what meets each community's needs, NextBridge is also willing to provide support, where appropriate, in the form of:

- disseminating project information to Chiefs and Councils, and Métis leadership;
- arranging for project information sessions for Chiefs and Councils, Métis leadership, youth, elders and/or Aboriginal communities at large, by hosting forums; and,
- facilitating Aboriginal engagement in archeological assessments.

NextBridge will work with each of the communities to develop an appropriate process to make sure that each Aboriginal community and its members will have access to all of the information concerning the Project in a form that is understandable to them.

9.4.4. Use of Traditional Ecological Knowledge and Traditional Land Use Information

NextBridge believes that the development of the Project will not be successful without the active engagement of those Aboriginal communities that hold traditional ecological knowledge (TEK) and traditional land use information (TLU) about the Project area. This information will be essential to completing the environmental assessment process for the Project in a timely, appropriate, and cost effective manner. NextBridge will work with the communities to identify TEK/TLU information and to mitigate and/or avoid potential impacts that arise from routing, construction and operations.

TEK is based upon the experience of many generations of community members, is geographically specific, and is usually transmitted orally. It is defined by an Aboriginal community's traditional land base, environment, region, culture and language. All members of a community hold TEK collectively, although some members may have been given the responsibility for its communication. TLU is based on who is using the land today, and for what purpose. It is the intent of the NextBridge to actively involve relevant Aboriginal staff and TEK/TLU holders in developing the content of the required regulatory reports and submissions, as well the plan on how to collect this information.

NextBridge will work with First Nation and Métis communities to help define the process to identify, collect and evaluate existing TEK/TLU information and potentially develop additional TEK/TLU information relating to the Project area.

Other information to be considered includes but is not limited to:

- historical land use in the area;
- treaties signed by the Crown (in this case the Robinson Superior Treaty and Treaty #9);
- unresolved claims;
- published maps of traditional territories; and,
- cultural heritage resources, including archaeological resources, built heritage resources and cultural heritage landscapes.

9.4.5. Aboriginal Engagement Tools

The following tools will be used to engage with Aboriginal communities during the EA for the Project.

Staff and Community Meetings

The Aboriginal consultation process for the Project will involve timely, honest and open dialogue between NextBridge representatives and community members, leadership and staff. It is critical that all parties participate in the consultations in good faith. The objective of the consultation work stream is to provide easily understandable information about the Project to the communities so that they can participate in determining what, if any impacts the Project will have on their community. At the same time, NextBridge representatives will be listening to and collecting input from the communities that will assist in Project planning.

A series of meetings with the identified Aboriginal communities will be held to discuss the issues of concern, and to facilitate discussion and understanding of whether, and if so, to what extent, the Project may potentially cause impacts to rights and interests, including traditional land uses, harvesting patterns, customs, practices and traditions (e.g., food harvesting, trapping, medicinal plant gathering, cultural activities) of the community members.

The information shared by the communities will be collected and incorporated where appropriate in the planning for the Project, and any required regulatory processes. The materials and data that are gathered will also be used to establish the extent of potential impacts of the Project on the community (if any). NextBridge will provide a written summary of meetings to the community leadership, and will provide copies of relevant documents requested. The communities will be provided with a reasonable opportunity to review and provide input into written summaries of meetings and other relevant documents. These materials will be included in the consultation record, subject to any information identified by the communities as sensitive TEK/TLU-related information.

Project Announcements and Notifications to Interested Parties

The following routine Project announcements/notifications will be provided to the Aboriginal communities through the Stakeholder Consultation Plan as noted in **Section 9.3**., and will include the following information:

- project title;
- name of the proponent;
- brief description of the Project;
- map showing proposed Project location;
- statement that the Project is subject to the requirements of the *EA Act;*
- an invitation to participate in the Project;
- contact information for the person to whom requests for additional information can be addressed, as well as comments;
- an indication that there will be additional opportunities to be informed and involved in the Project; and,
- notices about public Open Houses, with their dates, times and locations noted.

The Project has a website, located at www.nextbridge.ca, and Project information will be routinely posted to the website for distribution. The Project website, email and hotline will be available to provide access to information and opportunity to provide comment throughout the EA. First Nations and Métis organizations will also receive notification of the opportunity to review and provide comment on the Draft and Final EA, see **Section 9.3** for details.

NextBridge will also publish a series of newsletters about the Project, which will be distributed to the communities. Specific information materials and communication processes and activities will be designed to reach out to Aboriginal communities over and above the Project announcements and notifications to all interested parties.

Open Houses for all Interested Parties

The initial Open House notices were published in local newspapers in an attempt to reach as many people as possible within the local area, and are also posted on the Project website, located at www.nextbridge.ca. First Nations and Métis community members and leadership have been invited to attend any or all the public Open Houses and meetings geared toward the general public. The Open Houses allow anyone to seek any information needed about the Project, to ask questions, and express their concerns. First Nation and Métis community members have been invited to attend these sessions as we work with these communities to develop individual engagement plans. NextBridge understands that in order to appropriately consult with communities and assess potential impacts, there needs to be a forum tailored to each individual community's needs.

At the Open Houses, the following information will be provided on large poster boards in easily understandable language:

- introduction to NextBridge and its consultants;
- overview of the Project including detailed maps of the proposed Project routing;
- outline of the EA process;
- next steps for the EA process;
- outline of the transmission development process including Leave to Construct; and,
- how to provide information such as a question or a comment.

9.4.6. Consultation and Capacity Funding Agreements for Aboriginal Communities

Consultation Agreements

NextBridge respects the relationship that First Nations and Métis have with the land, and also recognizes that First Nations and Métis communities have unique perspectives on a variety of environmental issues and the use of land and resources. The ongoing resource and capacity constraints that currently face many First Nations and Métis communities will require NextBridge to take steps to ensure that the communities are able to fully participate in consultation, including providing meaningful and timely input that can be integrated into the Project planning and EA process. NextBridge is willing to provide a reasonable amount of funding to provide for these needs.

After an introductory meeting with each community to introduce the Project, the next step in the consultation process is negotiating and signing Consultation or Capacity Funding Agreements with each of the

communities, which may set out such matters as work plans, information sharing protocols, and potential capacity funding that will allow the communities to more meaningfully participate in the consultation process.

A Consultation Agreement lays out the framework within which consultation with a community will be conducted on the basis of community preferences and protocols. Normally such an agreement would be of limited duration and could include identifiable objectives such as funding for community communication efforts, education for the community on the Project, and training for community members to assist in Project development (i.e., to become archeological and environmental monitors). The nature of these activities would be based on the specific needs of the community.

Funding is provided on a fair and equitable basis, according to the size of the community and the proposed use of funds.

The initial engagement phase of consultation started in November 2013, and consultation will proceed throughout the Project planning and development process, and through the construction phase. As Project development proceeds, the focus of discussions will change from introductions to the Project to input into the EA and Leave to Construct processes, to monitoring of construction.

NextBridge will utilize Consultation Agreements to formulate a work-plan that ensures the engagement of Aboriginal communities during the Project. Work-plans will be designed to support both internal and external community discussions with a goal to creating awareness and developing an understanding of the Project. As the Project moves into construction, NextBridge will continue to build upon its relationship with the communities, meeting formally on a regular basis.

Capacity Funding Agreements

If a Consultation Agreement cannot be completed with a community, NextBridge will seek to consult with the community on the basis of the guiding Principles of Consultation noted in the Aboriginal Consultation Plan provided as a supporting document to this ToR, as appropriate. In this circumstance, NextBridge may also seek to enter into a Capacity Funding Agreement, which would normally cover the capacity funding aspects found in a Consultation Agreement.

Consultation Record Keeping and Data Management

Data from community meetings, Open Houses and correspondence will be logged into the PRAXIS data management system. The requirements of the MOU with the Ministry of Energy will be fulfilled, including submission of a monthly report to the Ontario government reporting on the ongoing consultation. A monthly Project report will be submitted to the OEB that will be available to the public on the OEB website.

Benefits Agreements

The Crown bears responsibility for assessing the adequacy of consultation and accommodation. If accommodation (beyond mitigation) is required, NextBridge may enter into Benefits Agreements with adversely impacted aboriginal communities. Benefits provided may take a variety of forms (e.g., training, employment, business opportunities, etc.).

9.4.7. Aboriginal Advisory Board

NextBridge has formed an Aboriginal Advisory Board (AAB) to advise the company on its proposed approach to First Nation and Métis engagement. This Board meets four times per year, and includes former Senator Gerry Bedford, Judith Moses from Six Nations and John Beaucage, the former Grand Council Chief of the Union of Ontario Indians (Robinson Superior and Robinson Huron Treaty members). Each of the AAB members has an excellent understanding of the issues faced by First Nations and Métis communities, and is able to provide strong guidance to the NextBridge Aboriginal Engagement team. Representatives from provincial government ministries may be invited to Aboriginal Advisory Board meetings to support discussions, where appropriate.

The role of the AAB is to act as a sounding board, however it does not purport to offer specific local knowledge of the Project or the Project area; this knowledge can only be gained by direct consultation with the relevant communities.

Consideration is being given to forming an Elders/Traditional Knowledge Holder advisory committee comprised of holders of Traditional Knowledge in the directly impacted communities.

9.5. Documentation and Issues Resolution Strategy

There can be a number of issues which must be carefully addressed as with any consultation process. The previous experience of NextBridge with such consultations has allowed NextBridge to define various issues and effective mitigation strategies which could apply to the Project. Issue identification will continue through consultation with interested community members, First Nation and Métis communities, elected officials and municipal staff, government agencies, landowners and other stakeholders throughout the EA process as outlined in this plan.

A stakeholder tracking database will be employed to record stakeholder contact information create mailing lists for notification activities. Input obtained from stakeholder consultation and Aboriginal community engagement activities and submitted through the Project hotline and email will also be documented and tracked through this database.

Comments and input received throughout the EA will be documented in a summary table and included in the Record of Consultation for the EA. Issues will be considered by NextBridge and responses developed. Where appropriate, prevention and mitigation strategies will also be developed. Issues, responses, and required prevention and mitigation strategies will be documented as part of the EA and will be available for public and agency review through the EA process. If issues persist after these efforts, the next step in the issues resolution strategy will be to initiate or continue discussions, including face-to-face meetings, to further explore potential solutions. If resolution cannot be reached, mediation by a neutral, mutually acceptable third party will be considered. Issues that could not been resolved will be noted along with documentation of attempts to resolve the issues.

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GLOSSARY

The following provides a glossary which has been adapted from the MOE's *Glossary: Terms Commonly Used in Ontario Environmental Assessments (2010)* and the MOE's *Code of Practice: Preparing and Reviewing Terms of Reference for Environmental Assessments in Ontario (2014)* and customized for the purposes of the Project.

Term	Description
Alternative methods	Alternative methods of carrying out the proposed undertaking are different ways of doing the same activity. Alternative methods could include consideration of one or more of the following: alternative technologies; alternative methods of applying specific technologies; alternative sites for a proposed undertaking; alternative design methods; and, alternative methods of operating any facilities associated with the proposed undertaking.
Alternatives	The "alternative methods" and "alternatives to" a proposed undertaking.
Alternative Routes	Alternative route sections to the Reference Route.
Alternatives to	Alternatives to the proposed undertaking are functionally different ways of approaching and dealing with a problem or opportunity.
Application	An application for approval to proceed with an undertaking under subsection 5(1) of the *Environmental Assessment Act, 1990*.
Archaeology (Archaeological Resources)	Includes artifacts, archaeological sites, marine archaeological sites, as defined under the *Ontario Heritage Act*. The identification and evaluation of such resources are based upon archaeological fieldwork undertaken in accordance with the *Ontario Heritage Act*.
Archaeological Potential	Areas with the likelihood to contain archaeological resources. Methods to identify archaeological potential are established by the Province, but municipal approaches which achieve the same objectives may also be used. The *Ontario Heritage Act* requires archaeological potential to be confirmed through archaeological work.
Built Heritage	One or more significant buildings, structures, monuments, installations or remains associated with architectural, cultural, social, political, economic or military history and identified as being important to a community. These resources may be identified through designation or heritage conservation easement under the Ontario Heritage Act, or listed by local, provincial or federal jurisdictions (PPS, 2005).
Commitment	Represents a guarantee from a proponent about a certain course of action. Proponents acknowledge these guarantees by documenting obligations and responsibilities, which they agree to follow, in EA documentation (ToR or the EA Report). Once the Minister approves the documents, the commitments within the document are often made legally binding as a condition of approval.
Consultation	A two-way communication process to involve interested persons in the planning, implementation, and monitoring of a proposed undertaking.
Cultural Heritage	Includes archaeological resources, built heritage resources, and cultural heritage landscapes.

Term	Description
Cultural Heritage Landscapes	A defined geographical area of heritage significance which has been modified by human activities and is valued by a community. It involves a grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form a significant type of heritage form, distinctive from that of its constituent elements or parts. Examples may include, but are not limited to, heritage conservation districts designated under the Ontario Heritage Act; and villages, parks, gardens, battlefields, mainstreets and neighbourhoods, cemeteries, trailways and industrial complexes of cultural heritage value (PPS, 2005).
"Do Nothing" alternative	An alternative that is typically included in the evaluation of alternatives that identifies the implications of doing nothing to address the problem or opportunity that has been identified.
East-West Tie	The existing 230 kV transmission line.
Easement	The right to use a property without owning it.
Environment	As defined in the *EA Act* as: (a) air, land or water, (b) plant and animal life, including human life, (c) the social, economic and cultural conditions that influence the life of humans or a community, (d) any building, structure, machine or other device or thing made by humans, (e) any solid, liquid, gas, odour, heat, sound, vibration or radiation resulting directly or indirectly from human activities, or (f) any part or combination of the foregoing and the interrelationships between any two or more of them, in or of Ontario.
Environmental Assessment Act	The *EA Act* (as amended) is a provincial statute that sets out a planning and decision-making process to evaluate the potential environmental effects of a proposed undertaking. Proponents wishing to proceed with an undertaking must document their planning and decision-making process and submit the results from their EA to the Minister of Environment for approval.
Environmental Assessment or EA	EA is a study, which assesses the potential environmental effects (positive or negative) of a proposed Project. Key components of an EA include consultation; consideration and evaluation of alternatives; and, the management of potential environmental effects. Conducting EAs promotes good environmental planning before decisions are made about proceeding with a proposal.
Environmental Effect	The effect that a proposed undertaking or its alternative has or could potentially have on the environment, either positive or negative, direct or indirect, short or long-term.
Environmental Assessment Report (EA Report)	Any report or documentation prepared that describes how the EA was planned to meet the requirements of the *EA Act*.

Term	Description
Federal Authority	A federal authority is defined under CEAA to mean: (a) a Minister of the Crown in right of Canada; (b) an agency of other body of the federal government ultimately accountable to Parliament through a federal Minister of the Crown; (c) Any department or departmental corporation set out in Schedule I or II of the Financial Administration Act; and, (d) Any other body that is prescribed pursuant to regulation under CEAA.
First Nations and Métis Communities	Those communities identified in the *Constitution Act, 1982*, including Indian, Inuit and Métis Groups of Canada.
Guide	The *Guide to Environmental Assessment Requirements for Electricity Projects* (MOE, 2011).
Interested Persons	Individuals or organizations with an interest in a particular undertaking and may include neighbors and individuals, environmental groups or clubs, naturalist organizations, agricultural organizations, sports or recreational groups, organizations from the local community, municipal heritage committees, ratepayers association, cottage associations, First Nation or Métis communities.
Leave to Construct	An application to be filed with the Ontario Energy Board by NextBridge to permit the construction of the Project.
Minister	The Minister of the Environment.
Ministry (Ministry of Environment) Review	The Ministry review is a document which is prepared by the Ministry during the review and approval process for the EA. The Ministry review outlines whether the proponent of a project or EA process is in compliance with its approved ToR; how the proponent has met the requirements under the *EA Act*, including public consultation; and, the Ministry's analysis of public, Aboriginal, and government agency comments received by the Ministry on the EA. Once the Ministry review is published and a notice of completion is issued, all interested parties have a final opportunity to submit their comments to the Ministry. Requests to the Minister to consider sending the application for a hearing on significant outstanding environmental issues can also be submitted at this time.
Mitigation Measures	Measures which can lessen potential negative environmental effects or enhance positive environmental effects. These measures could include construction techniques, compensation or community enhancement.
Monitoring	The activities carried out by the applicant after approval of an undertaking to determine the environmental effects of the undertaking ("effects monitoring"). Monitoring can also refer to those activities carried out by the MOE to ensure that an applicant complies with any conditions of approval.
Native Species	A species presence in a particular ecosystem due to the result of natural processes, with no human intervention.

Term	Description
Negative Environmental Effects	The negative effects that a project has, or could potentially have, directly or indirectly on the environment at any stage in the project life cycle. Negative environmental effects may include, but are not limited to, the harmful alteration, disruption, destruction, or loss of natural features, flora or fauna and this habitat, ecological function, natural resources, air or water quality, and cultural or heritage resources. Negative environmental effects may also include the displacement, impairment, conflict or interference with existing land uses, businesses or economic enterprises, recreational uses or activities, cultural pursuits, social conditions or the local economy.
Net Effects	Negative environmental effects of a project and related activities that will remain after mitigation measures have been applied.
Proponent	A person, agency, group or organization who carries out or proposes to carry out an undertaking or is the owner or person having charge, management or control of an undertaking, i.e., NextBridge.
Preliminary Study Area	Developed for the purposes of the ToR and includes approximately 500 m on either side of the Reference Route and Alternative Routes.
Provincially Significant Wetland	Those areas identified by the province as being the most valuable. They are determined by a science-based ranking system known as the Ontario Wetland Evaluation System. This MNR framework provides a standardized method of assessing wetland functions and societal values, which enables the province to rank wetlands relative to one another (MNR, 2013b).
Record of Consultation	A supporting document submitted with the ToR that describes the consultation carried out during the preparation of the ToR and results.
Reference Route	The Reference Route identified for the Project which generally parallels the existing East-West Tie (i.e., an existing 230 kV transmission line ROW).
Right-of-Way	A type of easement granted or reserved over the land for the purposes of maintenance or expansion of existing services.
Species at Risk	Plant or animal species identified as being of special concern, threatened, or engendered in Ontario.
Supporting Documentation	The purpose of supporting documentation is to provide more detailed information that will assist the Minister and other persons in understanding the planning process that the proponent underwent in order to arrive at the proposal.
Terms of Reference	A document prepared by the proponent and submitted to the Minister of the Environment for approval. The ToR establishes the framework for the planning and decision-making process to be followed by the proponent during the preparation of the EA Report. In other words, it is the proponent's work plan for what is going to be studied and includes a consultation plan. If approved, the EA must be prepared according to the ToR.
the Project	Refers to the East-West Tie Transmission Project (i.e., the proposed 230 kV transmission line, one of several projects identified by the Ontario Power Authority to meet Ontario's current and future electricity delivery needs. Also referred to as the "undertaking" for the purposes of the ToR.
Undertaking	An enterprise, activity or a proposal, plan or program that a proponent initiates or proposes to initiate, i.e., the Project.

Appendix A:
Need for the East-West Tie Transmission Project

NEXTBRIDGE INFRASTRUCTURE

EAST-WEST TIE TRANSMISSION PROJECT

Need for the East-West Tie Transmission Project

Prepared by
Dillon Consulting Limited

DILLON CONSULTING

For NextBridge Infrastructure

February 2014

Need for the East-West Tie Transmission Project

Prepared for:

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February 2014

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1. INTRODUCTION

The purpose of this report is to provide a summary of the need for the East-West Tie Transmission Project (the Project) as identified by the Ontario Power Authority (OPA) and other agencies. This is being undertaken to demonstrate that this aspect of the Individual Environmental Assessment (EA) has been satisfied by a defined planning process undertaken by the OPA and other agencies. A final assessment of need and approval to construct the line will require approval from the Ontario Energy Board (OEB) through a Leave to Construct process.

Section 2 of this report documents the analysis and reporting to-date that has been undertaken regarding the need for the Project to service northwestern Ontario. The section provides a chronological history of the documented need as follows:

- **Background on the Electricity Sector in Ontario** – Provides a brief overview on the history of electricity planning in Ontario starting in 1999 with the restructuring of Ontario Hydro; the establishment of the OPA in 2004 as the province's long-term energy planner; preparation of the 2007 Integrated Power System Plan (IPSP) for the Province; the passage of the *Green Energy and Green Economy Act, 2009*; and, the OEB policy document entitled "Framework for Transmission Project Development Plans" issued in 2010, which sets out the OEB policy framework for new transmission investment in Ontario.
- **Provincial Need for Electricity Transmission** – Provides a summary of four key documents that have established the need for electricity transmission across the Province and specifically for Northern Ontario, including:
    - ***Response to the Minister's Request for an Updated Transmission Expansion Plan, November 8, 2010, OPA*** – The Response recommends the expansion of the existing East-West Tie as one of five transmission options that should proceed to development work across the province;
    - ***Ontario's Long-Term Energy Plan, 2010, Ministry of Energy*** – The Long-Term Energy Plan 2010 (2010 LTEP) serves as an update to the 2007 IPSP and recommends the expansion of the existing East-West Tie as a new transmission line needed to maintain system reliability, to allow more renewables and to accommodate electricity requirements of new mineral processing projects as one of five transmission priority projects;
    - ***Places to Grow Growth Plan for Northern Ontario, 2011, Ontario Ministry of Infrastructure, Ontario Ministry of Northern Development, Mines and Forestry*** – This document does not speak specifically to the need for the Project, however, there are some polices that speak to the importance of modern infrastructure and energy for the north; and,
    - ***Ontario's Long-Term Energy Plan, 2013, Ministry of Energy*** – The Long-Term Energy Plan 2013 (2013 LTEP) serves as an update to the 2010 LTEP.
- **Need for the Project –** Provides a summary on the specific documentation and reporting regarding the need for the Project, including:

- ***Letter to the OEB, March 29, 2011, Minster of Energy*** – The letter is an expression of the government's interest that the OEB undertake a designation process to select the most qualified and cost-effective transmission company to develop the Project;
- ***Letter to the OPA, April 25, 2011, OEB*** – Based on the March 29, 2011 letter from the Minister of Energy, the OEB subsequently issued a letter to the OPA on April 25, 2011, requesting a report from the OPA regarding the preliminary assessment of the need for the Project;
- ***Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion, June 30, 2011, OPA*** – The report is a response to the OEB's request and a key document which provides further information on the background and rationale for the Project, along with recommendations on scope and timing;
- ***Feasibility Study, August 18, 2011, Independent Electricity System Operator*** – The Independent Electricity System Operator (IESO) prepared a technical Feasibility Study entitled "An Assessment of the Westward Transfer Capability of Various Options for Reinforcing the East-West Tie," which was a study to review the requirements for reinforcing the existing East-West Tie to provide a westward transfer capability of approximately 650 megawatts (MW);
- ***Letter to Electricty Transmitters, August 22, 2011, OEB*** – A letter from the OEB inviting interested parties to indicate their interest in filing a plan for development of the Project. Subsequently on December 20, 2011, the OEB issued an "Information Package on the East-West Tie Line" to all Electricity Transmitters that registered to develop the Project;
- ***Designated Transmitter Decision and Order, August 7, 2013, OEB*** – The OEB issued its "Phase 2 Decision and Order", selecting Upper Canada Transmission, Inc. (o/a NextBridge Infrastructure or NextBridge) as the transmitter to complete development work for the Project;
- ***Northwest Integrated Regional Resource Plan, 2013, OPA*** – The Project is identified as Area 1 in the Northwest Integrated Regional Resource Plan; and,
- ***Updated Assessment of the Rationale for the East-West Tie Expansion, October 8, 2013, OPA*** – A report that builds on the OPA's June 2011 report to provide an updated assessment of the rationale for the Project, as ordered by the OEB.

2. PROJECT NEED

2.1. Background on the Electricity Sector in Ontario

On April 1, 1999, in accordance with the *Energy Competition Act*, *1998*, Ontario Hydro was restructured into three principal entities:

- **Ontario Power Generation Inc.** (OPG) – responsible for the generation and sale of electricity in Ontario.
- **Ontario Hydro Services Company Inc.** – later renamed Hydro One Inc. Hydro One Networks Inc. (HONI) is its largest subsidiary and responsible for the planning, construction, operation and maintenance of HONI's transmission and distribution systems.
- **Independent Electricity Market Operator** – later renamed the IESO. The IESO is responsible for managing Ontario's electricity system and operating the wholesale electricity market.

The Ontario government established the OPA through the *Electricity Restructuring Act, 2004* subsequent to this restructuring, in 2004. This legislation made changes in the institutional arrangements of the electricity sector in Ontario and established the OPA as the province's long-term energy planner.

Specifically, the OPA was given the mandate to develop integrated electricity plans that look forward several years, with the purpose of providing sustainable electricity solutions to Ontarians well into the future. The OPA prepared a 20-year energy plan (formerly known as the Integrated Power System Plan or IPSP) in 2007. The IPSP focused on creating a sustainable energy supply, targeted to improving current natural gas and renewable assets at a sustainable and realistic cost and had six main goals/targets:

- *ensure an adequate energy supply;*
- *double the amount of renewable energy supply to 15,700 MW by 2025;*
- *reduce demand by 6,300 MW by 2025;*
- *replace coal in the earliest practical time frame;*
- *strengthen the transmission system; and,*
- *ensure stable energy prices for Ontarians.*

Initiatives from the 2007 energy plan, together with subsequent public policy initiatives (primarily the *Green Energy and Green Economy Act, 2009*) are transforming how Ontario produces and uses electricity. Implementation happens through generation procurement and conservation measures, and by developing transmission. The OPA is directly responsible for establishing the need for new transmission facilities.

There has been and continues to be significant interest in connecting renewable generation to both distribution and transmission systems as a consequence of the passage of the *Green Energy and Green Economy Act, 2009*. However, the ability of existing or approved transmission facilities in Ontario to accommodate more generation is limited. Given this, on August 26, 2010, the OEB issued a policy document entitled "Framework for Transmission Project Development Plans," which sets out the policy of the OEB for a

framework for new transmission investment in Ontario, in particular with regard to transmission project development planning. The policy reads as follows:

- *to help transmitters to move ahead on development work in a timely manner;*
- *to encourage new entrants to transmission in Ontario bringing additional resources for project development; and,*
- *to support competition in transmission in Ontario to drive economic efficiency for the benefit of ratepayers.*

2.2. Provincial Need for Electricity Transmission

This section provides a summary of four key documents that have established the need for electricity transmission across the Province, and specifically for Northern Ontario.

2.2.1. Response to the Minister's Request for an Updated Transmission Expansion Plan, November 8, 2010, OPA

The Minister of Energy and Infrastructure asked the OPA to provide transmission planning advice in 2010 based on new information that was available at the time, in order to update the September 2009 instruction to HONI. The advice focused on core transmission projects to enable key clusters of renewable generation, associated with both the Feed-in Tariff (FIT) Program and the Korean Consortium projects. This report would also form the key recommendations regarding transmission planning put forth in the 2010 LTEP, which was published on November 23, 2010.

The OPA recommended that development work proceed immediately for five options with the final decision about committing an option to go forward to be made by the OEB through the Leave to Construct process. Specifically, the five transmission options recommended to proceed to development work were:

- Southwestern Ontario Series Compensation for Renewables by 2014;
- Reconductoring Sarnia to London for Renewables by 2014;
- West of London New Line for Renewables by 2017;
- **East-West Tie for Renewables, Reliability by 2016-2017**; and,
- Supply to Pickle Lake for Load Supply.

With regard to the existing East-West Tie, the Report noted the following:

> *"Expansion of the East-West Tie or addition of local gas-fired generation would maintain adequate system reliability in the Northwest after coal-fired generation has been shut down in the region. A comparison of these options concludes that, while the overall costs of these options are similar, the transmission option compared to new long-term gas generation provides greater operational flexibility, reduces losses and congestion, and enables additional renewable resource developments in the Northwest. For these reasons, the OPA is recommending this option for the Northwest. It also recommends proceeding with development work on the expansion of the East-West Tie to allow it to*

come into service as soon as possible after coal phase out. Given the development timelines of new transmission, interim resources would be required to maintain local reliability until the transmission can come into service."

2.2.2. Ontario's Long-Term Energy Plan, 2010, Ministry of Energy

The 2010 Long-Term Energy Plan was published by the Ministry of Energy on November 23, 2010. The purpose of the 2010 LTEP was to serve as an update to the 2007 IPSP, given the developments in technology, demographic and economic trends and growth of the renewable energy sector. The Long-Term Energy Plan sets out goals and targets for each of the following:

- demand;
- supply;
- conservation;
- reliable transmission/modern distribution;
- aboriginal communities;
- energy in Ontario's economy – capital investments; and,
- electricity prices.

In terms of reliable transmission/modern distribution, the 2010 Long-Term Energy Plan notes the following:

"Reliable transmission and modern delivery is the backbone of Ontario's electricity system. It is crucial; for supporting Ontario's evolving supply mix, including the closing of coal-fired plants by 2014 and the further expansion of Ontario's clean energy resources. Reliable, safe transmission brings electricity from large generators to Ontario's largest industries and local distribution companies who in turn, deliver to homes and businesses.

Transmission

Ontario must take the transmission system that's been built over the past century and continue to renew and update it to meet Ontario's growing population, evolving supply mix, and to enable more distributed energy.

The Ontario government has taken early and decisive steps to enhance existing electricity infrastructure. It is important to ensure that Ontario can efficiently upgrade the grid to carry additional renewable generation to homes, businesses and industries.

Future Needs

The Ontario government, working with its agencies, will move forward responsibly on a number of new and modernizing transmission projects as well as on improving and maintaining the Province's existing infrastructure across all regions in Ontario. These improvements will also balance environmental concerns and the cost to ratepayers. In addition to evaluating the Province's need for transmission to integrate renewables, meet provincial demand growth and ensure reliable service, system planning will address community needs.

The Plan

In 2009, the government asked Hydro One to start planning and developing a series of new transmission and distribution projects. Since that time, there have been a number of developments, such as the substantial interest in the Green Energy and Green Economy Act, 2009 to develop renewable energy projects.

Based on the advice of the OPA, the government will prudently move forward with cost-effective priority transmission projects that meet current and future demand and also:

- *accommodate renewable projects;*
- *serve new load; and,*
- *support reliability*

Ontario will proceed first with an investment of approximately $2 billion in five priority projects to be completed in the next seven years, which will ensure a growing mix of renewable sources can be reliably transmitted across the province. These priority projects together with the Bruce to Milton line, in addition to various other station and circuit upgrades, will enable approximately 4,000 MW of additional renewable energy."

Consistent with the transmission planning advice in the November 8, 2010 OPA Response, the five priority transmission projects identified in the 2010 LTEP, were as follows:

- series compensation in southwestern Ontario, which is an upgrade needed to add renewables to the grid with a target completion date of 2014;
- rewiring west of London, which is an upgrade need to add renewables to the grid with a target completion date of 2014;
- west of London, which is a new line needed to add renewables to the grid with a target completion date of 2017;
- **East-West Tie, which is a new line needed to maintain system reliability, allow more renewables and to accommodate electricity requirements of new mineral processing projects. It has a target completion date of 2016-17**; and,
- line to Pickle Lake, which is a new line needed to serve industry needs and to help future remote community connection. Its target completion date is pending further consultation.

The 2010 Long-Term Energy Plan also notes that the Project be submitted to the OEB to carry out a designation process to select the most qualified and cost-effective transmission company to develop the line.

2.2.3. Places to Grow – Growth Plan for Northern Ontario, 2011, Ontario Ministry of Infrastructure, Ontario Ministry of Northern Development, Mines and Forestry

The *Growth Plan for Northern Ontario, 2011* (Growth Plan) was prepared and approved under the *Places to Grow Act, 2005,* and took effect on March 3, 2011. This legislation allows for the province to identify and designate growth plan areas and develop strategic growth plans for these areas in a way that supports economic prosperity and achieves a high quality of life. The Growth Plan is the second growth plan released in Ontario, with the other being the *Growth Plan for the Greater Golden Horseshoe, 2006*. While the Growth Plan does not speak specifically to the need for the Project, there are some important polices that speak to the importance of modern infrastructure and energy, such as Section 5 ***Infrastructure***, which contains the following key policy references:

> "***5.1 PREAMBLE***
>
> *Efficient, modern infrastructure is critical to Northern Ontario's future. Transportation, education, health, energy, water and wastewater infrastructure, information and communications technology and community infrastructure are the building blocks for economic growth…Energy generation and transmission infrastructure in Northern Ontario supports all sectors of the northern economy, particularly large energy users in the manufacturing and resource sectors. It also supplements the energy supply to other parts of the province. The availability of renewable resources, such as hydro-electric, wind and biofuels, places the North at a significant competitive advantage when it comes to expanding Ontario's renewable energy supply. Investment on Northern Ontario's energy generation and transmission infrastructure supports the growth and development of the energy sector and also provides secure and reliable energy supply for all sectors of the northern economy.*
>
> ***5.2 CO-ORDINATED, STRATEGIC INFRASTRUCTURE INVESTMENTS***
>
> *5.2.1 Infrastructure planning, land use planning, and infrastructure investments will be co-ordinated to implement this Plan. Infrastructure includes, but is not limited to: transportation systems, water and wastewater infrastructure, waste management systems, energy infrastructure, community infrastructure, and information and communications technology infrastructure.*
>
> *5.2.2 In Northern Ontario, the Province will give priority to infrastructure investments.*
>
> ***5.6 ENERGY***
>
> *5.6.1 The Province, working with the Ontario Power Authority and licensed transmission and distribution companies, will identify investment opportunities in Northern Ontario's transmission and distribution systems to maintain reliability, meet new and growing demands, and accommodate renewable energy generation."*

2.2.4. Ontario's Long-Term Energy Plan, 2013, Ministry of Energy

The 2013 Long-Term Energy Plan, "Achieving Balance," was published by the Ministry of Energy on December 2, 2013. The purpose of the 2013 Long-Term Energy Plan was to serve as an update and to build off the 2010 Long-Term Energy Plan. The 2013 Long-Term Energy Plan is designed to balance cost-effectiveness, reliability,

clean energy, community engagement and an emphasis on conservation and demand management before building new generation. The key elements of the 2013 Long-Term Energy Plan include:

- *conservation first;*
- *annual reporting;*
- *nuclear;*
- *renewable energy;*
- *natural gas/combined heat and power;*
- *clean imports;*
- *rate mitigation and efficiencies;*
- *enhanced regional planning;*
- ***transmission enhancements;***
- *aborginal engagement;*
- *energy innovation; and,*
- *oil and natural gas.*

With regard to the transmission enhancements, the 2013 Long-Term Energy Plan acknowledges a direct focus on northwestern Ontario, noting five key areas and transmission projects, including:

- **east-west tie development**;
- northwest bulk transmission line;
- new line to Pickle Lake;
- improvements on line from Dryden to Red Lake; and,
- remote connections.

In terms of the Project need, the 2013 Long-Term Energy Plan states the following:

> *"Northwestern Ontario has recently received a lot of attention when it comes to electricity planning. That's in part because while provincial demand is generally flat, there could soon be a significant increase in energy demand in northwestern Ontario, largely because of an expected increase in mining activity.*
>
> *In 2010, Ontario began moving forward with a plan for the Northwest, when then the new East-West Tie transmission line was identified as a priority project. As part of an integrated plan to meet the needs of the Northwest, work on that new line has begun. The new East-West Tie line will reduce transmission constraints and allow a greater two-way flow of electricity across Northern Ontario. Efforts are currently focused on detailed engineering work and seeking necessary approvals such as the Environmental Assessment and engagement with First Nation and Métis communities. The proposed project is expected to be finished in 2018 and will create hundreds of jobs in the service and construction industries for the duration of development and construction.*

While the new East-West Tie line will provide a new source of supply for the Northwest, the 2013 LTEP anticipates that new resources may also be needed to make sure that users in specific parts of the northwest have the power they need."

2.3. Need for the Project

This section provides a summary on the specific documentation and reporting regarding the need for the Project prepared to date.

2.3.1. Letter to the OEB, March 29, 2011, Minister of Energy

The Minister of Energy at the time, the Honourable Brad Duguid, issued a letter to Ms. Cynthia Chaplin, Chair of the OEB on March 29, 2011 to express the government's interest that the OEB undertake a designation process to select the most qualified and cost-effective transmission company to develop the Project. Specifically, the letter stated the following:

"Ontario's Long-Term Energy Plan, published November 23, 2010, identified five priority transmission projects based on the advice of the Ontario Power Authority (OPA). Among the five priority projects is the East-West Tie, identified by the OPA primarily to meet the need of maintaining long-term system reliability in Northwest Ontario.

Consistent with the intents identified in the Long-Term Energy Plan, I am writing to express the Government's interest that the Ontario Energy Board ("the Board") undertakes a designation process to select the most qualified and cost-effective transmission company to develop the East-West Tie.

The Board's Policy Framework for Transmission Project Development Plans is well suited to apply to the East-West Tie project. Such an approach would allow transmitters to move ahead on development work in a timely manner, encourage new entrants to transmission in Ontario and bring additional resources for project development. It will also support competition in transmission in Ontario to drive economic efficiency for the benefit of ratepayers.

A designation process for the East-West Tie also promotes the Board's electricity objectives of protecting the interests of consumers with respect to prices and of promoting cost-effectiveness in the transmission of electricity. In respect of those particular ends, and given the location and value of the East-West Tie in ensuring reliability and maintaining efficiency of the system, I would expect that the weighting of decision criteria in the Board's designation process takes into account the significance of aboriginal participation to the delivery of the transmission project, as well as a proponent's ability to carry out the procedural aspects of Crown consultation.

As the Board has noted in its framework, the starting point for transmission project development planning should be an informed, effective plan from the Province's transmission planner, the OPA. As such, it would be prudent for the Board to request further analysis for the East-West Tie from the OPA to support initiation of designation process."

2.3.2. Letter to the OPA, April 25, 2011, OEB

Based on the March 29, 2011 letter from the Minister of Energy, the OEB subsequently issued a letter to the OPA on April 25, 2011 requesting a report from the OPA regarding the preliminary assessment of the need for the Project. Specifically, the letter stated the following:

> *"The Minister suggests that the designation process outlined on the Board's August 26, 2010 policy report could be used to select the most qualified and cost-effective transmission company to develop the East-West Tie line. The Board agrees and is prepared to proceed with a designation process if project planning is justified. In developing the designation policy, the Board recognized the role of the OPA as the transmission planner for the province and identified an informed, effective plan from the OPA as the trigger for starting a process.*
>
> *The Board understands that the OPA provided information to the Minister for the Long-Term Energy Plan supporting the need for an East-West Tie line in order to maintain long-term system reliability in Northwest Ontario. The Board, therefore, requests a report from the OPA regarding the preliminary assessment of the need for the East-West Tie line. The assessment should be sufficiently robust to allow the Board to determine whether the designation process should be initiated in accordance with the Board's designation policy. Final assessment of need and therefore approval to construct a line will still require a hearing before the Board for leave to construct a transmission line.*
>
> *The Board expects that the OPA's report would provide information on system reliability in relation to the East-West Tie line. More specifically, the report should include technical information as:*
>
> - *the line connection points to the existing system;*
> - *any specific routing requirements besides the connection points;*
> - *the required carrying capacity of the line;*
> - *any technical requirements to address the system need identified above; and,*
> - *any available information regarding benefits of the project to ratepayers.*
>
> *A report from the OPA by the end of June 2011 is required in order for the Board to decide whether undertaking a designation process for the East-West Tie line is justified at this time in accordance with the objectives of the Board's policy. Earlier receipt of the OPA's report would allow the Board to move ahead expeditiously.*
>
> *If the Board decides to proceed with a designation process, the Board expects the OPA will participate by providing additional information related to project requirements and need*."

2.3.3. Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion, June 30, 2011, OPA

The OPA released its report "Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion" (the OPA Report) on June 30, 2011, which was a response to the OEB's request and provided further information on the background and rationale for the Project along with recommendations on its scope and timing. Specifically, the report contains background on:

- the northwest area;
- its electricity system, conservation, historical demand and future demand scenarios;
- the northwest's internal and external supply resources;
- planning considerations for the northwest and context for the Project; and,
- specific recommendations and project scope information.

The following provides a summary of the key issues, conclusions and recommendations contained in the report.

Northwestern Ontario

The northwest area consists of the districts of Kenora, Rainy River and Thunder Bay, which accounts for approximately 60 percent of the province's land area, but only approximately 2 percent of Ontario's total population with approximately half of this population residing in the City of Thunder Bay.

Northwest Conservation and Demand

The northwest electricity system is winter-peaking and exhibits a relatively flat daily load profile that has less pronounced peaks than what occurs in southern Ontario. Historically, this is due to the predominance of large industrial loads in the northwest, which tend to operate on a continuous basis, as well as relatively minor cooling loads compared to southern Ontario. In addition, the concentration of industrial demand in the northwest also leads to sizable swings in annual energy demand as industries respond to economic changes. Since 2005, there has been a significant decline in northwest demand, primarily due to a downturn in the pulp and paper industry. The following was considered in evaluating the northwest demand scenarios:

> *"The Northwest's future electricity demand is expected to continue to be driven largely by industrial activities in the area. Key considerations are listed below:*
>
> - *the pulp and paper sector demand in the northwest has declined over recent years. In 2010, the sector's electrical demand was approximately 30% of 2005 levels. The extent and pace of recovery of the sector will influence the region's electricity demand;*
> - *the mining industry is growing in the northwest. Mining operations have resumed at the Lac Des Iles palladium mine north of Thunder Bay and requests have been made for additional supply for gold mines in the Red Lake and Pickle Lake areas. There have also been several inquiries related to the development of new mines or resuming operation at old mines in the area. Together, these developments will contribute to electricity demand growth in the area;*
> - *there is potential to develop an area situated about 300 km northeast of Thunder Bay, known as the Ring of Fire, which has been found to contain high quality rare earth metal ores, including chromite. Each active mine in the Ring of Fire could have a demand of approximately 20 to 25 MW; and,*
> - *in addition, the OPA is developing a plan to connect remote communities beyond Pickle Lake. This could add approximately 24 MW of load in the Northwest by 2020."*

Supplying Northwest Demand

To summarize, the northwest is much more reliant on internal resources to supply demand than any other area in Ontario and today these internal resources consist mainly of hydroelectric and coal-fired generation, accounting for over 90 percent of the area's internal resource capacity. Specifically, the northwest's current installed internal resource capacity is 800 MW hydro, 520 MW coal-fired, 50 MW other renewable, 40 MW gas and 50 MW demand response. The resource mix is changing in the northwest based on the government's policies related to coal-fired generation and renewable energy implementation. According to the report, the most significant changes and their related effects on the northwest system are:

- *the Thunder Bay and Atikokan coal-fired generation stations are to cease coal-fired operation by the end of 2014 in accordance with Ontario Regulation 496/07;*
- *the OPA has been directed to contract for the conversion of the Atikokan plant to run using biomass fuel. Though it will still have capacity of about 200 MW, its forecast fuel availability will limit energy production to 140 GWh per year;*
- *the government has stated that both currently operating Thunder Bay coal-fired units are to be converted to use natural gas by 2014. Under gas-fired operation, the Thunder Bay plant will be capable of providing the same capacity as it does today. However, higher fuel costs under natural gas operation will make it better suited to peaking operation[1];*
- *approximately 200 MW of new renewable resources have been contracted in the Northwest. These new resources consist primarily of wind and solar resources, but also include some hydroelectric and biomass generation. The load-meeting capability of these resources will be considered to determine their contribution to meeting Northwest demand; and,*
- *demand response resources in the Northwest are expected to total approximately 90 MW.*

> *"Over the next five years, these changes to the Northwest generation mix will increase the area's internal installed capacity. However, there will be less energy available from these internal resources than has historically been the case. Furthermore, the only internal generation resource that will be capable of providing flexible energy output will be the converted Thunder Bay plant, which will have higher unit energy costs than it currently does."*

The capability is limited and there are only three interconnections with neighbouring areas in terms of supplying the northwest demand using external resources. Its interconnection with the rest of Ontario system is through the existing East-West Tie, which has a capability to transmit 350 MW into the northwest and 325 MW out of the northwest. The Manitoba system interconnection is capable of transmitting 330 MW into the northwest and 262 MW out of the northwest, while the Minnesota interconnection is capable of transmitting 90 MW into the northwest and 140 MW out of the northwest. These interconnections cannot be fully utilized at the same time as they are limited to a combined import capability of 570 MW under normal operating conditions and this can only be achieved when there is sufficient reserve generation on standby in the northwest system. The existing East-West Tie is a very important source of firm supply to the

[1] It should be noted that at the time of writing this report it was decided that the Thunder Bay coal-fired units will not be converted to natural gas however one unit will be converted to advanced biomass.

northwest and has been relied upon heavily to supply the northwest demand in low-water years or during periods of high demand. Consistent with the planned expansion, the existing East-West Tie is a 400 km double-circuit 230 kV transmission line connecting Wawa Transmission Station (TS) and the Lakehead TS. The OPA Report identifies the following important considerations:

> *"While the nominal capacity of the existing East-West Tie's westbound transfer is currently 350 MW, there are a number of important considerations regarding this capability listed below.*
>
> - *the nominal westbound limit of 350 MW is based on operating the system to respect the outage of one of the two circuits on the East-West Tie, which share a common tower line. Elsewhere in Ontario the bulk electricity system is operated to respect the loss of both circuits on a common tower line, a practice which complies with current IESO reliability criteria and NERC[2] system design standards. Consequently, the nominal westbound limit of 350 MW for the East-West Tie does not conform to current reliability standards. Operating to respect the loss of both East-West Tie circuits would reduce its transfer capability from 350 MW to 175 MW. Loss of the East-West Tie while it is transferring 350 MW could lead to the interruption of load in the Northwest.*
> - *today, the IESO respects the double-circuit contingency limits (175 MW) on the East-West Tie when an electrical storm is detected over the Northwest, as the likelihood of losing both circuits is more likely during such events.*
> - *since 2006, there have been over 60 forced outages along the East-West Tie, averaging about 12 outages per year. Over a quarter of these outage events have been double-circuit outages in which both East-West Tie circuits were forced out of service."*

The existing East-West Tie plays a critical role in maintaining a reliable supply to the northwest, but it is not designed to consider the current IESO reliability criteria due to the terrain and distance the line has to traverse. However, new developments in the northwest will need to meet the current reliability standards, which will require that the existing transfer capability of the existing East-West Tie be reduced to 175 MW.

Planning Considerations and Context for the Project

Following the conversion of the Atikokan and Thunder Bay coal-fired powerplants, there are two basic alternatives for supplying the northwest:

- internal generation within the northwest; and,
- external resources transferred via the East-West Tie.

The OPA compared these two alternatives in terms of their cost-effectiveness, flexibility, ability to remove barriers to renewable generation development, and other benefits. The OPA Report found that the expansion of the existing East-West Tie is the preferred alternative based on a comparative anaylsis of economic, flexibility, technical, operational and other considerations. The OPA recommended that development work be initiated on this project as a result.

[2] North American Electric Reliability Corporation (NERC).

The OPA Report also included the following:

> *"In accordance with the Minister of Energy's March 29, 2011 letter to the OEB, the next step in the implementation process would be the selection of a transmitter to carry our development work. Development work includes but is not limited to: project design, specification and costing; routing and siting, preparation of necessary approvals; and consultation and communications. In most cases, development work represents a small fraction of the project cost – typically 2 to 5 percent. The OPA believes this cost is justified in order to maintain the viability of this option. The development work for the East-West Tie project will provide the necessary information to guide a final decision on whether to proceed with the project through the OEB Leave to Construct process."*

In addition, the OPA Report outlines the following regarding the scope and key milestones for the Project:

> *"The OPA has assumed that the proposed new East-West Tie would be a new double circuit 230 kV overhead transmission line. This is based on the knowledge that a 500 kV line or a high-voltage direct-current line would be more costly than a 230 kV line, while providing a similar benefit. A single circuit 230 kV line would likely have a similar cost to a double-circuit 230 kV line, but would have reduced operability during planned and forced outages. Therefore, the OPA believes that the double-circuit 230 kV line is preferred, but other options could be proposed to the extent that they meet the other project scope criteria outlined below:*
>
> - *the new line is to connect to both Wawa TS in the Northeast and Lakehead TS in the Thunder Bay area – a distance of approximately 400 km – and is to include all station termination facilities;*
> - *the new line is to be switched at Marathon TS, which is an existing station between Wawa TS and Lakehead TS. The existing East-West Tie is switched at this station;*
> - *the new line in conjunction with the existing tie is to provide total eastbound and westbound capabilities on the order of 650 MW, while respecting all NERC, NPCC[3] and IESO reliability standards;*
> - the *project should also include any reactive facilities that are to be identified in a pending IESO study. It is anticipated that this study will be available prior to the commencement of any designation process;*
> - *the target in-service date of the new line and associated reactive facilities is currently estimated to be 2017, based on typical transmission project lead times; and,*
> - *the new line should be designed to have a lifetime of at least 50 years."*

2.3.4. Feasibility Study, August 18, 2011, IESO

The Project, in conjunction with the existing East-West Tie, will provide total eastbound and westbound capabilities on the order of 650 MW, while respecting all NERC, NPCC and IESO reliability standards and the project should also include any reactive facilities to be identified in an IESO study as noted in the Project Scope outlined in the OPA Report. To address these aspects, on August 18, 2011, the IESO released a technical Feasibility Study entitled "An Assessment of the Westward Transfer Capability of Various Options

[3] North East Power Coordinating Council (NPCC).

for Reinforcing the East-West Tie," which was a study to review the requirements for reinforcing the existing East-West Tie to provide a westward transfer capability of approximately 650 MW.

The Feasibility Study summarizes the results of the analysis performed on two options for reinforcing the existing East-West Tie to achieve a transfer capability of approximately 650 MW westward, measured at Wawa TS, while respecting double-circuit contingencies at all times. The two options analyzed were:

- *Option 1: With a new 230 kV double-circuit line installed between Wawa TS and Lakehead TS, as proposed by the OPA; and,*
- *Option 2: With a new 230 kV high-capacity, single-circuit line installed between the same terminal stations.*

The study concluded that:

> "*Reinforcing the East-West Tie with a new double-circuit line would therefore offer a higher level of security since, from a planning perspective, the initial loss of the two elements of the double-circuit line would provide acceptable performance, in accordance with the prevailing standards, while requiring no control actions to be taken following the initial loss of either the double-circuit lines.*"

2.3.5. Letter to Electricity Transmitters, August 22, 2011, OEB

The OEB issued a letter on August 22, 2011 to "All Licensed Electricity Transmitters, All Applicants and Potential Applicants for an Electricity Transmitter Licence, All Interested Parties" inviting them to indicate their interest in filing a plan for development of the Project based on the June 30, 2011 OPA Report and the August 19, 2011 IESO Feasibility Study in relation to the existing East-West Tie and the Project. Key excerpts from the letter are provided below.

> *"The OPA is responsible for independent transmission planning in Ontario and has advised the Board that there is a need to proceed with development work on the East-West Tie. The Board has received the OPA's preliminary assessment of need as a basis for a designation process. The Board expects the final determination of need to be made as part of a future application for leave to construct, not through the designation process.*
>
> *The OPA Report defines a specific solution as its preferred option but acknowledges that it may be possible for other solutions to meet the requirements for the line as described in the project scope criteria of the OPA Report. The Board will call the OPA's solution, with additional requirements from the IESO Feasibility Study, the "Reference Option." Transmitters may propose alternative solutions that meet the requirements. A transmitter proposing a solution different from the Reference Option will bear the onus of proving that the alternative is the equivalent, in term of performance, reliability, cost, etc., of the Reference Option. This would include a feasibility study prepared by the IESO or prepared by the transmitter to the IESO's requirements."*

Subsequently on December 20, 2011, the OEB issued an "Information Package on the East-West Tie Line" to all the electricity transmitters that registered to develop the Project. This information package provided a project definition for designation purposes and the minimum technical requirements for the Reference Option of the Project.

According to Attachment 1 to this letter, the "Project Definition" is as follows:

> *"The project, as defined by the OPA, is for new transmission facilities between the Northeast and Northwest Ontario that, in conjunction with the existing tie, will provide total eastbound and westbound capabilities on the order of 650 MW, while respecting all NERC, NPCC and IESO reliability standards. The East-West Tie expansion should be designed to have a lifetime of at least 50 years. The East-West Tie expansion target in-service date is 2017."*

2.3.6. Designated Transmitter Decision and Order, August 7, 2013, OEB

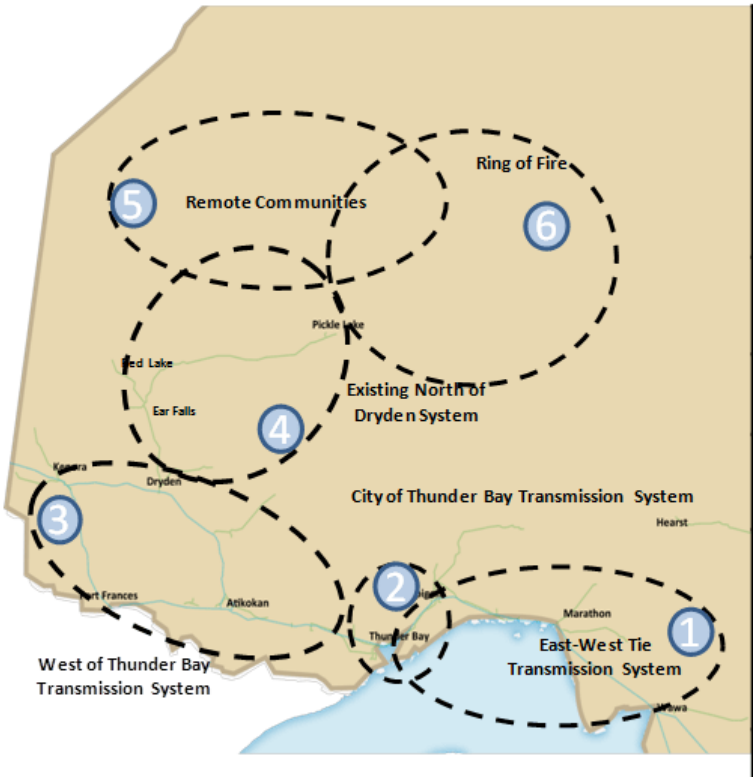
Seven transmitters registered their interest in seeking designation in response to the OEB invitation of August 22, 2011. The OEB issued a "Notice of a Proceeding" to designate a transmitter to carry out development work for the Project, and accepted 24 parties as intervenors in the proceeding. The OEB issued its "Phase 1 Decision and Order" on July 12, 2012, which established specifics for the proceeding including decision criteria, filing requirements, obligations and consequences arising on designation, the hearing process for Phase 2, and the schedule for the filing of applications for designation. The OEB received six applications for designation, and considered the applications in Phase 2 of the proceeding, with the intent of selecting one of the applicants as the designated transmitter for development of the Project.

The OEB issued its "Phase 2 Decision and Order" on August 7, 2013 selecting Upper Canada Transmission, Inc. (o/a NextBridge) as the designated transmitter to complete development work for the Project.

2.3.7. Northwest Integrated Regional Resource Plan, 2013, OPA

The OPA conducts regional planning through its Integrated Regional Resource Planning (IRRP) process, where local stakeholders collaborate in the development of integrated solutions for maintaining a reliable supply of electricity to Ontario communities. There are 21 electricity regions within Ontario, including the northwest as one distinct region. The objective of the northwest IRRP process is to develop long-term electricity plans that thoughtfully integrate relevant resource options, such as conservation and demand management, distributed generation, large-scale generation, transmission and distribution. The northwest is a very large region with diverse needs and consists of the districts of Kenora, Rainy River and Thunder Bay, which is roughly the area north of Lake Superior stretching from the Wawa area in the east and the Manitoba border in the west. The OPA, together with local communities, is undertaking planning processes in six sub-areas in order to understand and meet specific local needs, which together will represent an overall Northwest Regional Plan (**Figure 1**). Individual area plans are focused on those unique areas, but the solutions are interrelated. Area 1 is identified as the "East-West Tie Transmission System" and based on the demonstrated need to date, the northwest IRRP acknowledges that the OPA, the IESO and HONI have started working together with NextBridge to develop the Project.

Figure 1:
Northwest IRRP Sub-Areas



Source: OPA Website, 2013.

2.3.8. Updated Assessment of the Rationale for the East-West Tie Expansion, October 8, 2013, OPA

The purpose of this report was to update the OPA's June 2011 report to provide an updated assessment of the rationale for the Project, as ordered by the OEB. Over the two years since the June 2011 Report, the OPA undertook a stakeholder process to update the load forecast, which has resulted in a more robust outlook for demand growth driven largely by proposals for expansion in the mining sector. The available resources to supply the northwest were also updated in this report, with the suspension of the conversion of the Thunder Bay Generating Station to natural gas-fired operation. These developments, combined with other changes in the supply and demand outlook, strengthen the case for the Project. Specifically, the report offers the following conclusions and recommendations:

> *"As outlined in this report, a number of factors have evolved since the publication of the OPA's June 2011 Report. Electricity demand forecasts for the Northwest have increased, due to increased activity in the mining sector. At the same time, with fewer internal resources available to supply this demand (i.e., the suspension of the conversion of Thunder Bay Generating Station to natural gas), there is a greater urgency to plan supply for the Northwest. The expanded East-West Tie provides a long-term foundation for supplying the Northwest, providing greater system flexibility around which internal supply resources can be developed. Together, these updated factors strengthen the case for the East-West Tie. The OPA*

continues to recommend the East-West Tie as the preferred alternative to maintain a reliable and cost-effective supply of electricity to the Northwest over the long term.

It is the OPA's expectation that the new East-West Tie line will be a double-circuit design, providing total westbound capability of 650 MW in conjunction with the existing East-West Tie. Given the current outlook for supply and demand in the Northwest, the OPA also expects that the East-West Tie project be designed to provide the full 650 MW transfer capability when the line comes into service, rather than staging expansion. A double-circuit design has greater potential for future expandability, which means its capability could be increased in the future through the addition of further voltage control or compensation equipment, resulting in a higher thermal rating of up to about 800 MW.

The East-West Tie expansion is an important component of the long-term integrated plan for the Northwest. The OPA notes that a 2018 in-service date is appropriate for the East-West Tie project, and would not recommended increasing costs significantly in order to bring the line into service by 2017. Development work for a double-circuit line, as proposed by NextBridge Infrastructure, should proceed at this time, toward an in-service date of early 2018."

To reiterate, the purpose of this OPA Report was to provide additional information related to the need for the Project, requirements and rationale for the Project as directed by the OEB. A final assessment of need and approval to construct a line will still require a hearing before the OEB under the Leave to Construct process.

3. REFERENCES AND WORKS CITED

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OEB. 2011a. Ontario Energy Board (OEB), Letter to All Licensed Electricity Transmitters, All Applicants and Potential Applicants for an Electricity Transmitter Licence, All Interested Parties, August 22, 2011.

OEB. 2011b. Ontario Energy Board (OEB), Letter to the Ontario Power Authority, April 25, 2011.

OEB. 2011c. Ontario Energy Board (OEB) Website, Transmission Infrastructure: East-West Tie Line (EB-2011-0140).

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Ontario. 2005. Ontario Ministry of Municipal Affairs and Housing (MMAH). 2005 Provincial Policy Statement.

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OPA. 2013a. Ontario Power Authority (OPA) Website, Integrated Power System Plan I. 2013. http://www.powerauthority.on.ca/integrated-power-system-plan

OPA. 2013b. Ontario Power Authority (OPA) Website, Power System Planning at the OPA. 2013. http://www.powerauthority.on.ca/power-planning

UCT. 2013. Upper Canada Transmission, Inc., Operating as NextBridge Infrastructure – Application for Designation to Develop the East-West Tie Line, January 4, 2013.

Appendix B:
Letters of Direction

Ministry of Energy

Office of the Minister

4th Floor, Hearst Block
900 Bay Street
Toronto ON M7A 2E1
Tel.: 416-327-6758
Fax: 416-327-6754

Ministère de l'Énergie

Bureau du ministre

4e étage, édifice Hearst
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Ontario

MAR 2 9 2011

MC-2011-1537

Ms Cynthia Chaplin
Chair
Ontario Energy Board
PO Box 2319
2300 Yonge Street
Toronto ON M4P 1E4

Dear Ms Chaplin:

Ontario's Long-Term Energy Plan, published November 23, 2010, identified five priority transmission projects based on the advice of the Ontario Power Authority (OPA). Among the five priority projects is the East-West Tie, identified by the OPA primarily to meet the need of maintaining long-term system reliability in Northwest Ontario.

Consistent with the intents identified in the Long-Term Energy Plan, I am writing to express the Government's interest that the Ontario Energy Board ("the Board") undertakes a designation process to select the most qualified and cost-effective transmission company to develop the East-West Tie.

The Board's Policy Framework for Transmission Project Development Plans is well suited to apply to the East-West Tie project. Such an approach would allow transmitters to move ahead on development work in a timely manner, encourage new entrants to transmission in Ontario and bring additional resources for project development. It will also support competition in transmission in Ontario to drive economic efficiency for the benefit of ratepayers.

A designation process for the East-West Tie also promotes the Board's electricity objectives of protecting the interests of consumers with respect to prices and of promoting cost-effectiveness in the transmission of electricity. In respect of those particular ends, and given the location and value of the East-West Tie in ensuring reliability and maintaining efficiency and flexibility of the system, I would expect that the weighting of decision criteria in the Board's designation process takes into account the significance of aboriginal participation to the delivery of the transmission project, as well as a proponent's ability to carry out the procedural aspects of Crown consultation.

.../cont'd

As the Board has noted in its framework, the starting point for transmission project development planning should be an informed, effective plan from the province's transmission planner, the OPA. As such, it would be prudent for the Board to request further analysis for the East-West Tie from the OPA to support initiation of a designation process.

Sincerely,

Brad Duguid
Minister

Ontario Energy Board
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Facsimile: (416) 440-7656

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Rosemarie T. Leclair
Chair & CEO

Rosemarie T. Leclair
Président et Directrice Générale

Ontario

BY E-MAIL

April 25, 2011

Mr. Colin Andersen
Chief Executive Officer
Ontario Power Authority
120 Adelaide Street West
Ste. 1600
Toronto ON M5H 1T1

Dear Mr. Andersen:

The Board has received a letter from the Minister of Energy dated March 29, 2011 expressing an interest in having the Ontario Energy Board undertake a designation process to select the most qualified and cost-effective transmission company to develop the East-West tie line.

The Board released a policy on August 26, 2010, for transmission project development planning to accommodate the connection of renewable energy generation facilities. The policy describes a process to designate a licensed transmitter to undertake development work on any transmission network expansions or enabler lines identified by the Ontario Power Authority (the "OPA") as necessary to connect renewable generation. The designation process is intended to allow transmitters to move ahead on development work in a timely manner; to encourage new entrants to transmission in Ontario bringing additional resources for development work; and to support competition in transmission in Ontario to drive economic efficiency for the benefit of ratepayers.

The Minister suggests that the designation process outlined in the Board's August 26 2010 policy report could be used to select the most qualified and cost-effective transmission company to develop the East-West tie line. The Board agrees and is prepared to proceed with a designation process if project planning is justified. In developing the designation policy, the Board recognized the role of the OPA as the transmission planner for the province and identified an informed, effective plan from the OPA as the trigger for starting a process.

The Board understands that the OPA provided information to the Minister for the Long-Term Energy Plan supporting the need for an East-West tie line in order to maintain long-term system reliability in Northwest Ontario. The Board, therefore, requests a report from the OPA regarding the preliminary assessment of the need for an East-West tie line. The assessment should be sufficiently robust to allow the Board to determine whether the designation process should be initiated in accordance with the Board's designation policy. Final assessment of need and therefore approval to construct a line will still require a hearing before the Board for leave to construct a transmission line.

The Board expects that the OPA's report would provide information on system reliability in relation to the East-West tie line. More specifically, the report should include such technical information as:

- the line connection points to the existing system;
- any specific routing requirements besides the connection points;
- the required carrying capacity of the line;
- any technical requirements to address the system need identified above; and
- any available information regarding benefits of the project to ratepayers.

A report from the OPA by the end of June 2011 is required in order for the Board to decide whether undertaking a designation process for the East-West tie line is justified at this time in accordance with the objectives of the Board's policy. Earlier receipt of the OPA's report would allow the Board to move ahead expeditiously.

If the Board decides to proceed with a designation process, the Board expects the OPA will participate during the planning process and the designation proceeding by providing additional information related to project requirements and need.

Yours truly,

ORIGINAL SIGNED BY

Rosemarie T. Leclair
Chair and CEO

Enclosure

cc: The Honourable Brad Duguid, Minister of Energy

Appendix C:
Ontario Energy Board Information Package on the East-West Tie

Ontario Energy Board
P.O. Box 2319
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Télécopieur: 416-440-7656
Numéro sans frais: 1-888-632-6273

Ontario

BY E-MAIL

December 20, 2011

To: All Electricity Transmitters Registered for the East-West Tie Line

Re: Board File Number: EB-2011-0140
Information Package on the East-West Tie Line

Thank you for registering your interest in the designation process for the East-West Tie Line. This letter sets out additional information and announces an informational meeting for registered transmitters.

The Designation Process

As described in the Ontario Energy Board's policy *Framework for Transmission Project Development Plans* a designation process is a hearing of the Board, convened to identify a licensed transmitter who will be entitled to recover its prudently incurred development costs for a specific transmission project. Development costs begin when a transmitter is designated and end when a leave to construct application is submitted. The designated transmitter will also be able to recover its cost of becoming designated. Unsuccessful applicants will not.

As the Board stated in its policy, "the designation process of the Board is not a procurement process where the end result is a contract." This transmitter designation process is not a tender call nor does it commit the Board in any way to designate a transmitter to undertake development work.

The East-West Tie Line Project

Attached to this letter are two packages of information intended to define the project that is the subject of this designation process. Attachment 1 is a description of the scope of the East-West Tie Line for the purposes of designation. Attachment 2 is a document of Minimum Technical Requirements for the Reference Option of the East-West Tie Line that provides minimum requirements for one possible solution for expanding the East-West Tie. These requirements should be used in costing any potential application for designation.

Planning Meeting and Next Steps

Board staff will convene a meeting at the Board's offices on the 25th floor of 2300 Yonge Street on Tuesday, January 10, 2012 at 9:30 am, to discuss with the registered transmitters the filing of plans and the process for the evaluation of plans. This meeting is for registered transmitters. Other stakeholders will have other opportunities to participate in the process.

In order to attend this first meeting, you must respond with your company's name, and the name, email and telephone number of each representative attending from your company, to East-West.Tie.Line@OntarioEnergyBoard.ca. This is to ensure that the meeting facilities are adequate for the attendees expected.

Information on the Board's website

Documents related to this process are available for public inspection on the Board's website[1] and at the office of the Board during normal business hours.

Contact

Please contact Laurie Reid at 416-440-7623 or by e-mail at East-West.Tie.Line@OntarioEnergyBoard.ca with any questions. The Ontario Energy Board's toll-free number is 1-888-632-6273.

Yours truly,

Original Signed By

Kirsten Walli
Board Secretary

Attachments: Project Definition for Designation for the East-West Tie Line
Minimum Technical Requirements for the Reference Option of the East-West Tie Line

[1] http://www.ontarioenergyboard.ca/OEB/Industry/Regulatory+Proceedings/Policy+Initiatives+and+Consultations/East-West+Transmission+Tie+Line

Attachment 1: Project Definition for Designation for the East-West Tie Line

The East-West Tie Expansion

The OPA has conducted a preliminary assessment of the supply needs of Northwest Ontario (the "OPA Report[1]") and has concluded that expansion of the East-West Tie is the preferred alternative for ensuring adequate supply.

The project, as defined by the Ontario Power Authority, is for new transmission facilities between Northeast and Northwest Ontario (see Figure 1) that, in conjunction with the existing tie[2], will provide total eastbound and westbound capabilities on the order of 650 MW[3], while respecting all North American Electric Reliability Corporation, North East Power Coordinating Council and Independent Electricity System Operator reliability standards. The East-West Tie expansion should be designed to have a lifetime of at least 50 years[4]. The East-West Tie expansion target in-service date is 2017[5].

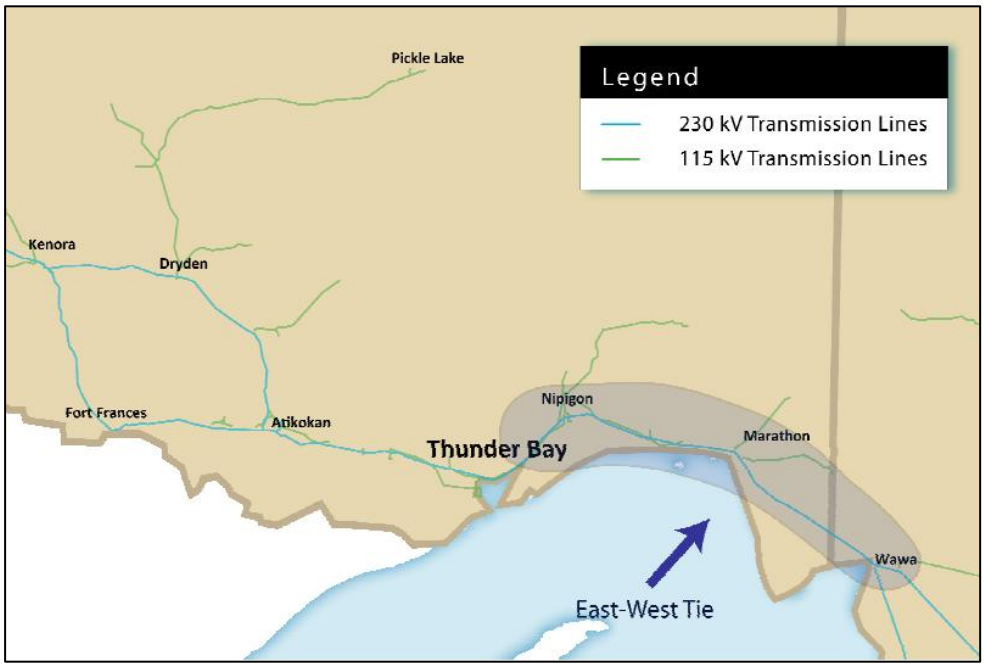

Figure 1: Existing transmission in the Northwest – Northeast corridor.

A complete East-West Tie expansion will include three parts:

[1] "Long Term Electricity Outlook for the Northwest and Context for the East-West Tie Expansion", Ontario Power Authority, June 30, 2011.
[2] The existing connection between Lakehead TS and Wawa TS consists of a 230kV double circuit line with each circuit having ratings of 365 MVA continuous (at 93ºC) and and 465 MVA limited-time emergency (at 27ºC).
[3] The OPA Report, p. 20.
[4] The OPA Report, p, 20.
[5] The OPA Report, p. 20.

1. The line consisting of conductors, structures and protection systems running from point to point (the "East-West Tie Line");
2. Upgrades to existing transformer stations to supply reactive facilities that are dependent on the specifications for the East-West Tie Line, such as have been identified by the IESO in its Feasibility Study; and
3. Interconnection of the line to the existing system at existing transformer stations including line disconnect switches.

In order to focus the designation process, the Board will limit the scope of applications to the East-West Tie Line as defined above. Therefore the definition of the East-West Tie Line for the purposes of designation is:

- A new line that, in conjunction with the existing line, will provide total eastbound and westbound capabilities in the East-West corridor on the order of 650 MW[6], while respecting all North American Electric Reliability Corporation, North East Power Coordinating Council and Independent Electricity System Operator reliability standards.
- The East-West Tie Line should be designed to have a lifetime of at least 50 years[7].
- The East-West Tie Line target in-service date is 2017[8].
- The East-West Tie Line is to be considered 2 segments: one running from Wawa TS to Marathon TS and one running from Marathon TS to Lakehead TS.
- The demarcation points of each segment of the East-West Tie Line are the first transmission line structures outside the fence of the Wawa TS, Marathon TS and Lakehead TS, but within 250 metres of that fence.
- The East-West Tie Line segments will dead-end on the structures that are the demarcation points with a mid-span opener for non-compensated lines.
- If the proposal involves series compensated AC line or DC lines, the East-West Tie Line will include the protection system, associated communications, and line isolation breaker(s).
- The project definition for the purposes of designation assumes that the East-West Tie Line between the demarcation points will be owned and operated by the designated transmitter.

The Reference Option

The OPA Report identifies a specific solution[9] as its preferred option but acknowledges that other options could be proposed provided they meet the other project scope criteria. The IESO has studied the feasibility of the OPA's preferred option, which it called the reference case, and an alternative case. The Board considers the OPA's preferred solution together with the IESO's reference case as the "Reference Option". The Reference Option is one possible, specific solution for the East-West Tie Line.

The Reference Option can be summarized as follows:

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[6] The OPA Report, p. 20.
[7] The OPA Report, p, 20.
[8] The OPA Report, p. 20.
[9] The OPA Report, p. 20.

- The East-West Tie Line will be a new double-circuit 230 kV overhead transmission line[10] with a continuous capacity of approximately 465 MVA and an emergency capacity of approximately 600 MVA (per circuit)[11];
- The East-West Tie Line will be switched at Marathon TS[12].

The Board, with the help of a consultant, has developed a document detailing the minimum technical requirements for the Reference Option that forms part of this information package. It will also be available on the Board's website. Applicants should develop proposals with costs that reflect these minimum technical requirements. Any planned deviations from them must be documented and the onus will be on the transmitter proposing the deviation to prove equivalency.

Alternative Solutions for the Defined Project

The Board welcomes technical innovation in the solution for the East-West Tie Line. Transmitters may propose alternatives to the Reference Option that meet the need as contained in the Project Description section above. A transmitter proposing an alternative to the Reference Option will bear the onus of proving that the alternative solution is the equivalent or superior to the Reference Option and the Board's minimum technical requirements in terms of performance, reliability, cost, etc. This analysis must include a feasibility study prepared by the IESO or prepared by the transmitter to the IESO's requirements.

A transmitter choosing to submit an alternative to the Reference Option should contact Mike Falvo at the IESO at (905)855-6209 or mike.falvo@ieso.ca as soon as possible regarding scheduling and process for feasibility studies.

After Designation

For clarity, the designated transmitter, once selected, will be responsible for preparing a leave to construct application for a complete, functional East-West Tie. To this end, the designated transmitter must liaise with the OPA regarding the need for the project, with the IESO for a system impact assessment, and with Hydro One Networks Inc. regarding connection of the demarcation points to the existing system.

In addition, the designated transmitter will be expected to carry out the procedural aspects of the Crown's duty to consult with affected aboriginal peoples.

The designated transmitter will be required to ensure compliance with the requirements of provincial legislation and of agencies other than the Board.

Please note that the Board has no statutory authority to procure transmission and, as such, this transmitter designation process will not create, and should not be construed

[10] The OPA Report, p. 20.
[11] The IESO Feasibility Study, p. 11.
[12] The OPA Report, p. 20.

as intended to create, contractual relations between the Board and the designated transmitter. At any time, the Board may in its sole discretion decide to not approve any plans or to terminate this transmitter designation process.

Appendix D:
List of Evaluation Criteria and Indicators

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
Natural	Natural Heritage Features (Provincial and Federal Parks, Conservation Reserves, PSWs, ANSIs and ESAs)	Number and length of the route through the feature.	Provincially and federally designated features.	Alteration and fragmentation of natural heritage features. Conflicting with provincial and/or federal policy.	Parks Canada MNR Municipalities Field study
	Wetlands (unevaluated), Waterbodies and Watercourses	Number and type of feature that is crossed, i.e., coldwater or warmwater watercourse. Length of route through the feature.	Could form part of provincially designated features. May provide habitat for aquatic species or potable water sources.	Riparian habitat alteration. In-stream habitat alteration. Alteration of hydrologic function.	MNR Municipalities Field study
	Forests, Woodlands and Vegetation	Length and number of feature crossed including Forest Management Units, seed collection areas and managed woodlots.	Could be provincially protected. Could contribute to the local economy.	Changes to native vegetation composition. Creation of new woodland edge. Invasive species and/or Weed introduction and spread. Tree/vegetation removal.	MNR Municipalities Field study
	Species at Risk	Type of species potentially affected. Identification of Species at Risk habitat.	Provincially and federally protected.	Loss and alteration of Species at Risk populations and/or habitat. Species at Risk habitat fragmentation.	MNR and Environment Canada's Species at Risk databases. Field study
	Hazardous Slopes	Area of land hazard (unstable) land crossed.	Need to identify stable land for tower location.	Potential for damage to facilities.	NTS Maps Lidar Data Field study

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
	Wildlife and Wildlife Habitat	Type of species and habitat identified and length of route through the habitat.	Could potentially be affected by the Project.	Loss and alteration of wildlife populations and/or habitat Habitat fragmentation Wildlife movement blockage Loss and/or alteration of habitat Changes to habitat availability Increase in mortality risk Displacement of wildlife	MNR Municipalities Field study
	Fish and Fish Habitat	Type of species and habitat identified and area to be crossed.	Could potentially be affected by the Project.	Riparian habitat alteration In-stream habitat alteration Fish injury or mortality Blockage of fish movement	MNR Municipalities Field study
	Air Emissions	Type of emissions expected.	Affects to nearby residents and other sensitive land uses.	Increase of localized fugitive dust emissions during construction	MOE Municipalities
	Noise	Type of emissions expected.	Affects to nearby residents and other sensitive land uses.	Temporary and transitory increase in noise emissions.	MOE Municipalities
Socio-Economic	Conservation, Parks and Recreational Areas (trails, campgrounds)	Number and length of conservation areas, parks and recreational areas crossed.	Identification and protection of existing activities in these areas.	Disruption to recreational activities and users of these facilities. Conflicts with park/conservation reserve policy.	MNR Municipalities

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
	Residential Receptors (effects to landowners including residences and cottages)	Number of directly affected private dwellings and cottages and other sensitive land uses.	Dwellings are not generally permitted directly within the transmission ROW.	Sensory and visual effects to nearby residents and cottagers. Encroachment on dwellings and other structures. Unsafe conditions if construction areas are not secured appropriately. Impact to human health in the event of a spill or other unforeseen incident. Interaction with contaminated sites.	Municipalities Mapping
	Community Infrastructure and Services	Number of hospitals, schools and other community facilities in proximity. Number of roads, rail lines, local airports, waste management facilities and other infrastructure crossed.	Minimize adverse effects to facilities and infrastructure.	Disruption or displacement of existing community facilities and infrastructure. Increased demand on existing infrastructure and local services. Increased traffic at road crossings. Increased demand for parking. Overload existing infrastructure.	Ministry of Health Municipalities Local school boards Local utilities

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
	Commercial and Industrial Activities	Type of enterprise (i.e., tourism, forestry, etc.) in proximity.	Minimize adverse effects to existing businesses.	Disruption to local businesses and tourism activities. Generate employment opportunities and economic "spin-offs" such as contracting and tendering.	Municipalities Local commerce organizations
	Mining and Aggregate Activities and Resources	Length of route through mining claims and areas identified as having significant aggregate and/or mineral resources.	Protect and maintain access to significant aggregate resources and mining activities.	Impede access to aggregate resources and mining activities. Additional electricity for mining operations.	MNR MNDM Municipalities
	Existing and Planned Land Use (i.e., development applications)	Type (existing land use) and length.	Identification of potential land use conflicts.	Land use conflicts.	MNR MMAH Parks Canada AANDC Municipality (Official Plans and Zoning By-laws)
	Visual Landscape	Number of permanent and seasonal dwellings in proximity to the route. Number of scenic viewpoints crossed.	Minimize effects to existing scenic views.	Altering of existing scenic views.	Municipalities MNR Heritage advisory organizations

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
	Traditional Land and Resources (including First Nation and Métis communities)	Identification and use of traditional land by First Nations and Métis communities. Number of First Nation reserves crossed.	Identification and protection of traditional lands.	Disruption to the use of traditional lands and other resources and activities (hunting, gathering).	First Nations Métis communities Field study
	Way of Life	Métis mobility within the identified study area. Types of teaching/ transmission programs, services and practices within the identified study area. Spiritual connection to areas within the identified study area.	Identification and protection of areas or routes critical to Métis mobility within the study area. Minimize potential adverse effects to Métis teaching/transmission programs, services and practices. Reduce disconnection from spiritually key areas within the study area.	Disruption or loss of areas or routes critical to Métis mobility. Land use conflicts with familial or community teaching / transmission practices. Increased demand on existing Métis provincial education programs and services. Land use conflicts with Captain of the Hunt and circumvention of authority of designated Captain. Qualitative disconnect from areas or sites of Métis tradition. Damage or loss of key spiritual areas to Métis Way of Life.	Métis communities Field study Traditional land use data

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
	Harvesting	Type of harvesting activities exercised within the identified study area. Identification of key cultural species harvested. Identification of conditions required for continued harvest.	Identification and protection of areas used for Métis harvesting.	Reduced access to preferred locations of harvest. Loss or alteration of key cultural species harvested. Changes to known harvesting conditions required for continued harvest.	Métis communities Field study Traditional land use data
	Cultural Heritage Resources (built, cultural heritage landscapes, archaeology)	Number and type of feature crossed.	Identification and protection of significant heritage resources.	Damage to, or the loss of, significant cultural heritage resources.	Municipalities Stage 1 archaeological assessment Field study Desktop study Provincial and federal heritage databases Historical mapping Heritage advisory organizations
	Conformity with Provincial Policy	Need to conform with policy.	Conformity with provincial policy.	Non-conformity with provincial policy.	Provincial Policy (Provincial Policy Statement, OPA)

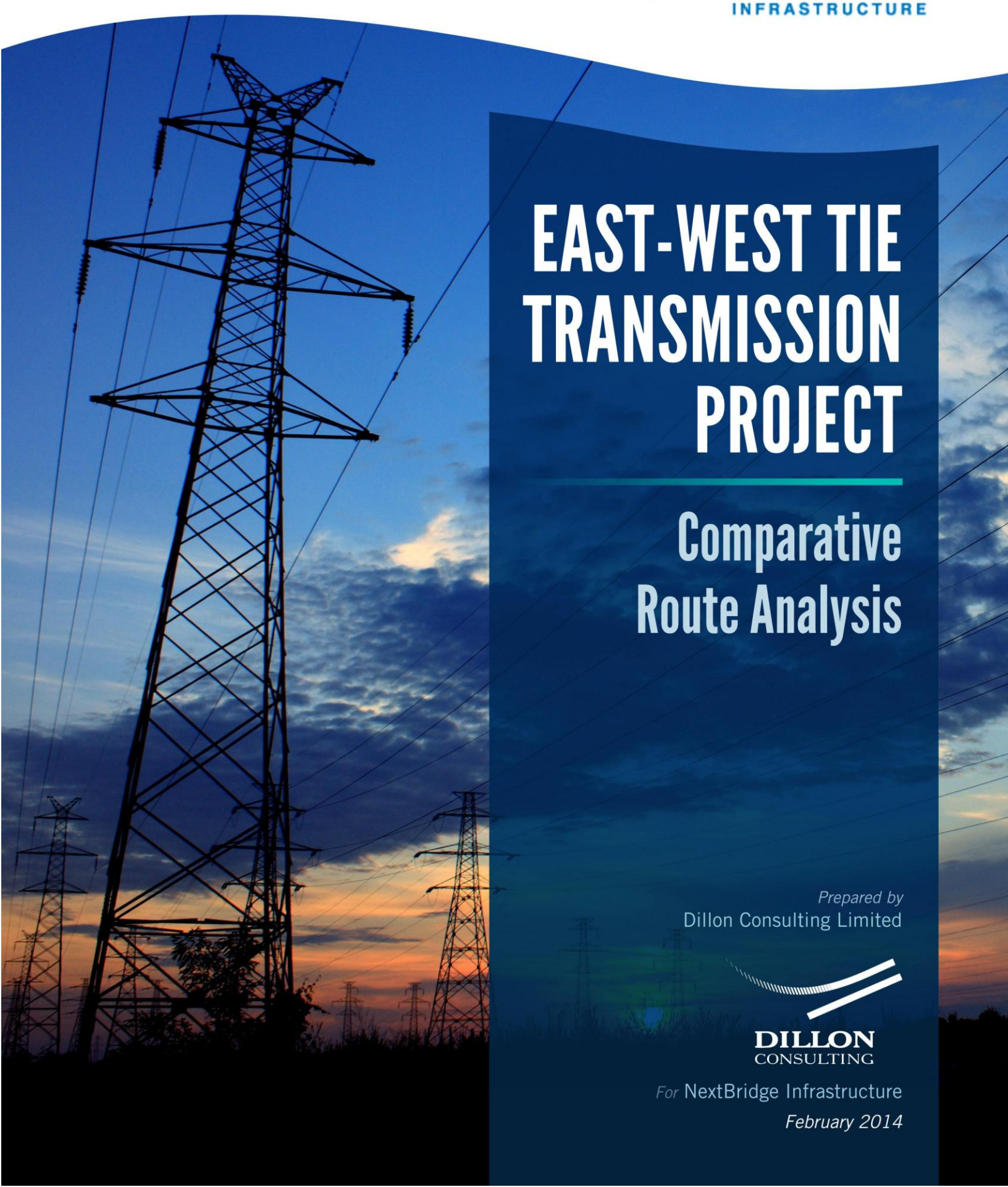
List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
Technical	Shortest and most direct route	Length of route in km.	TBD	n/a	NextBridge Applicable safety standards and requirements
	Use existing linear ROWs including major roads, railways, and utility corridors	Length of route located parallel to existing ROWs.	Route located within, or parallel to, existing ROWs generally have few adverse effects compared to new corridors.	n/a	NextBridge Applicable safety standards and requirements
	Minimize crossings of other infrastructure such as rail lines, road and pipelines	Number of existing infrastructure crossed.	Reducing the amount of existing infrastructure cross may reduce potential for damage to facilities and overall Project costs.	n/a	NextBridge Applicable safety standards and requirements
	Road access	Number of existing access roads that can be used to access the route.	TBD	n/a	NextBridge Applicable safety standards and requirements
	Safety and compatibility with electricity grid	TBD	TBD	n/a	NextBridge Applicable safety standards and requirements

List of Evaluation Criteria and Indicators					
Factor	**Criteria**	**Indicator(s)**	**Rationale for Selection**	**Potential Effect(s)**	**Data Source(s)**
	Minimize transmission line corners	Number of transmission line corners.	TBD	n/a	NextBridge Applicable safety standards and requirements
	Reduce number of transmission line cross overs	Number of transmission line crossovers.	TBD	n/a	NextBridge Applicable safety standards and requirements
	Use favourable terrain (and sub-terrain) for tower locations and avoid areas with insufficient working space	TBD	TBD	n/a	NextBridge Applicable safety standards and requirements

Notes:
TBD – To be developed and will be provided as part of the EA, where appropriate
n/a – Not applicable
List may change based on new information obtained during the EA

Appendix E:
Comparative Route Analysis

NEXTBRIDGE INFRASTRUCTURE



EAST-WEST TIE TRANSMISSION PROJECT

Comparative Route Analysis

Prepared by
Dillon Consulting Limited

DILLON CONSULTING

For NextBridge Infrastructure

February 2014

Comparative Route Analysis for the East-West Tie Transmission Project

Prepared for:

NEXTBRIDGE INFRASTRUCTURE L.P.

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February 2014

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1. INTRODUCTION

NextBridge Infrastructure L.P. (NextBridge) is proposing to construct the East-West Tie Transmission Project (the Project). The Project consists of a new, approximately 400 kilometre (km) double-circuit 230 kilovolt (kV) transmission line that generally parallels an existing double-circuit 230 kV transmission line corridor (existing East-West Tie) connecting the Wawa Transformer Station (TS) to the Lakehead TS near Thunder Bay (with a connection at the Marathon TS), which is referred to as the Reference Route. Alternative Routes were also developed to avoid federal lands including two First Nation Reserves and Pukaskwa National Park.

The purpose of the Project is to improve reliability and maintain efficiency of the electricity transmission system in northwestern Ontario by expanding the existing East-West Tie capability, recognizing the need and justification for the Project as previously established by the Province through past analysis and decisions. The development (i.e., construction) of this Project would implement the Ontario Power Authority's (OPA) recommendation to construct a new double-circuit 230 kV overhead transmission line.

An Individual Environmental Assessment (EA) is underway for the Project. One component of the EA is to complete detailed floral and faunal field studies. In order to focus the detailed fieldwork program, it was necessary to make a determination of which side of the existing transmission facilities to locate the Reference Route and the Alternative Route around Pukaskwa National Park. The routes were identified for analysis as they follow existing transmission facilities. The remaining portion of the Alternative Route around Pukaskwa National Park, as well as the Alternative Routes around the two First Nation reserves, do not follow existing linear distrubances such as roads, rails or utility corridors and thus were not included in this comparative route analysis. The portions of the Alternative Routes that do not following existing linear disturbances were reviewed from natural, socio-economic, physical and technical perspectives and were refined as a result of this analysis.

The results of the analysis indicate that the north side of the Reference Route (i.e., north side of the existing East-West Tie) is preferred. The anlaysis also indicates that the south side of the Alternative Route around Pukaskwa National Park (i.e., south side of the existing transmission facility) is preferred. The purpose of this document is to provide the rationale for this decision.

2. METHODOLOGY

An analysis of the physical, socio-economic, natural and technical conditions found on each side of the respective corridors was made in order to determine the preferred side of the existing corridors to follow using the criteria and indicators provided in **Table 1**. The criteria was selected and customized based on the type of environment located in the area and the indicators were selected and refined based primarily on available desktop data. Desktop data included secondary source information such as official plans, GIS mapping, orthophotographics, data provided by government agencies and other existing literature.

Feedback received from the public Open Houses and other consultation activities completed to date was also reviewed.

The analysis involved comparing the north side of the existing East-West Tie and the existing transmission facility which the Alternative Route around Pukaskwa National Park follows with the south side using the criteria and indicators to determine which side would likely have the least potential for adverse physical, socio-economic, natural and technical effects while meeting the requirements established by NextBridge and other regulatory bodies. An approximately 56 metre (m) wide right-of-way (ROW) located directly adjacent to the existing transmission facilities was used for the purposes of the analysis.

Other considerations were also taken into account during the analysis to assist in the determination of which side of the corridor is preferred. These considerations were based on observations made between 57 m and 500 m from the edge of the existing transmission corridors and are provided in **Section 4**.

Table 1: Criteria and Indicators

Factor	Criteria	Indicator
Physical	Soil	Area of agricultural fields crossed within the proposed ROW (ha)
Socio-Economic	Private property	Number of properties potentially affected within the proposed ROW
		Number of potential dwelling displacements
		Number of potential property buyouts required within the proposed ROW
	Land Use	Number of settlement areas crossed by the proposed ROW
		Number of Forest Management Units within the proposed ROW
		Area of Conservation Areas within the proposed ROW (ha)
		Area of Conservation Reserves within the proposed ROW (ha)
		Area of Provincial Parks within the proposed ROW (ha)
		Area of National Parks within the proposed ROW (ha)
		Area of mines within the proposed ROW (ha)
		Area of mining claims within the proposed ROW (ha)
		Number of mining claims crossed by the proposed ROW
		Area of aggregate pits within the proposed ROW (ha)
		Area of high potential for aggregate resources within the proposed ROW (ha)
		Area of land designated for commercial and industrial purposes within the proposed ROW (non-mining) (ha)
	Community Services	Number of hospitals and healthcare facilities crossed by the proposed ROW
		Number of schools and educational institutions crossed by the proposed ROW
		Number of community centres crossed by the ROW
	Tourism and Recreation	Distance of trails crossed by the proposed ROW (m) (Ontario Trails Network)
		Area of campgrounds crossed by the existing ROW (ha)
		Number of outpost camps crossed by the ROW
		Number of golf courses crossed by the proposed ROW
	Aesthetics	Number of scenic viewpoints within the proposed ROW
	Non-Aboriginal Archaeology, Cultural Heritage, Traditional Land and Resource	Length of ROW with archaeological potential (km)
		Number of archaeological sites within the proposed ROW
		Number of known cemeteries crossed by the proposed ROW
		Area of traditional land uses/harvest areas identified within the proposed ROW (ha)

Factor	Criteria	Indicator
	Use	
	Aboriginal Archaeology, Cultural Heritage, Traditional Land and Resource Use	Length of ROW with archaeological potential (km)
		Number of archaeological sites within the proposed ROW
		Area of First Nation reserves within the proposed ROW (ha)
		Area of traditional land use/harvest areas identified within the proposed ROW (ha)
		Area of traditional burial grounds within the proposed ROW (ha)
Natural	Areas of Natural and Scientific Interest	Area of mapped Provincially Significant Areas of Natural and Scientific Interest (Earth Science and Life Science) within the proposed ROW (ha)
		Area of mapped Candidate Areas of Natural and Scientific Interest (Earth Science and Life Science) within the proposed ROW (ha)
	Wetlands	Area of mapped Provincially Significant Wetlands within the proposed ROW (ha)
		Area of mapped previously evaluated non-provincially significant wetlands within the proposed ROW (ha)
		Area of mapped unevaluated wetlands within the proposed ROW (ha)
	Waterbodies and Watercourses	Number of mapped watercourses crossed by the proposed ROW (ha)
		Area of mapped waterbodies (not including watercourses) crossed by the proposed ROW (ha)
	Forest Resources	Area of previously logged lands within the proposed ROW (ha)
		Area of seed collection lands within the proposed ROW (ha)
	Wildlife Habitat	Area of mapped potential significant wildlife habitat within the proposed ROW (ha)
		Number of mapped nesting sites within the proposed ROW
	Species at Risk	Area of mapped Woodland Caribou continuous habitat within the proposed ROW
		Area of mapped Woodland Caribou discontinuous habitat within the proposed ROW
Technical	Community Infrastructure	Number of roads crossed
		Number of rail lines crossed
		Number of pipelines crossed
		Number of local airports crossed
	Constructability	Overall length of proposed ROW
		Area of hazard (unstable) land crossed by the proposed ROW (ha)
		Number of transmission line corners required
		Number of transmission line crossovers required
		Distance of existing access roads available
		Distance of new access roads required
		Favourable terrain (i.e., poor, moderate, good)
		Sufficient work space (i.e., poor, moderate, good)

3. COMPARATIVE ANALYSIS

Table 2 provides the results of the analysis that was completed to determine which side of the existing East-West Tie transmission corridor is preferred for the Project. **Table 3** provides the results of the analysis that was completed for the Alternative Route around Pukaskwa National Park.

Table 2: Comparative Analysis
Reference Route

Factor	Criteria	Indicator	North Side of Existing ROW	South Side of Existing ROW
Physical	Soil	Area of agricultural fields crossed within the proposed ROW (ha)	7.4	8.6
Socio-Economic	Private property	Number of properties potentially affected within the proposed ROW	5 buildings	2 buildings
		Number of potential dwelling displacements	5 buildings	2 buildings
		Number of potential property buyouts required within the proposed ROW	5	2
	Land Use	Number of settlement areas crossed by the proposed ROW	n/a	n/a
		Number of Forest Management Units within the proposed ROW	9	9
		Area of Conservation Areas within the proposed ROW (ha)	0	0
		Area of Conservation Reserves within the proposed ROW (ha)	59.30	48.10
		Area of Provincial Parks within the proposed ROW (ha)	26.73	32.19
		Area of National Parks within the proposed ROW (ha)	193.81	194.14
		Area of mines within the proposed ROW (ha)	n/a	n/a
		Area of mining claims within the proposed ROW (ha)	369.43	370.83
		Number of mining claims crossed by the proposed ROW	80	71
		Area of aggregate pits within the proposed ROW (ha)	3 pits; 3.2 ha	2 pits; 0.58 ha
		Area of high potential for aggregate resources within the proposed ROW (ha)	3.21 ha 3 active aggregate pits	0.58 ha 2 active aggregate pits
		Area of land designated for commercial and industrial purposes within the proposed ROW (non-mining) (ha)	2.65 ha 3 industrial properties	1.12 ha 3 industrial properties
	Community Services	Number of hospitals and healthcare facilities crossed by the proposed ROW	0	0
		Number of schools and educational institutions crossed by the proposed ROW	0	0

Factor	Criteria	Indicator	North Side of Existing ROW	South Side of Existing ROW
		Number of community centres crossed by the ROW	0	0
	Tourism and Recreation	Distance of trails crossed by the proposed ROW (m) (Ontario Trails Network)	170.09	117.73
		Area of campgrounds crossed by the existing ROW (ha)	0	0
		Number of outpost camps crossed by the ROW	0	0
		Number of golf courses crossed by the proposed ROW	0	0
	Aesthetics	Number of scenic viewpoints within the proposed ROW	n/a	n/a
	Non-Aboriginal Archaeology, Cultural Heritage, Traditional Land and Resource Use	Length of ROW with archaeological potential (km)	n/a	n/a
		Number of archaeological sites within the proposed ROW	0	0
		Number of known cemeteries crossed by the proposed ROW	0	0
		Area of traditional land uses/harvest areas identified within the proposed ROW (ha)	n/a	n/a
	Aboriginal Archaeology, Cultural Heritage, Traditional Land and Resource Use	Length of ROW with archaeological potential (km)	n/a	n/a
		Number of archaeological sites within the proposed ROW	n/a	n/a
		Area of First Nation reserves within the proposed ROW (ha)	45.63	44.6
		Area of traditional land uses/harvest areas identified within the proposed ROW (ha)	n/a	n/a
		Area of traditional burial grounds within the proposed ROW (ha)	n/a	n/a
Natural	Areas of Natural and Scientific Interest	Area of mapped Provincially Significant Areas of Natural and Scientific Interest (Earth Science and Life Science) within the proposed ROW (ha)	n/a	n/a
		Area of mapped Candidate Areas of Natural and Scientific Interest (Earth Science and Life Science) within the proposed ROW (ha)	n/a	n/a
	Wetlands	Area of mapped Provincially Significant Wetlands within the proposed ROW (ha)	1.08	0.68
		Area of mapped previously evaluated non-provincially significant wetlands within the proposed ROW (ha)	n/a	n/a
		Area of mapped unevaluated wetlands within the proposed ROW (ha)	34.58	38.56
	Waterbodies and Watercourses	Number of mapped watercourses crossed by the proposed ROW (ha)	404	382
		Area of mapped waterbodies (not including watercourses) crossed by the proposed ROW (ha)	53.72	51.99

Factor	Criteria	Indicator	North Side of Existing ROW	South Side of Existing ROW
	Forest Resources	Area of previously logged lands within the proposed ROW (ha)	n/a	n/a
		Area of seed collection lands within the proposed ROW (ha)	n/a	n/a
	Wildlife Habitat	Area of mapped potential significant wildlife habitat within the proposed ROW (ha)	8.35	5.14
		Number of mapped nesting sites within the proposed ROW	0	0
	Species at Risk	Area of mapped Woodland Caribou continuous habitat within the proposed ROW (ha)	589.01	588.40
		Area of mapped Woodland Caribou discontinuous habitat within the proposed ROW (ha)	1,189.12	1,189.86
Technical	Community Infrastructure	Number of roads crossed	50	50
		Number of rail lines crossed	14	14
		Number of pipelines crossed	n/a	n/a
		Number of local airports crossed	0	0
	Constructability	Overall length of proposed ROW	398.72	398.72
		Area of hazard (unstable) land crossed by the proposed ROW (ha)	n/a	n/a
		Number of transmission line corners required	n/a	n/a
		Number of transmission line crossovers required	7	6
		Distance of existing access roads available	n/a	n/a
		Distance of new access roads required	n/a	n/a
		Favourable terrain (i.e., poor, moderate, good)	Good	Moderate to poor
		Sufficient work space (i.e., poor, moderate, good)	Good	Moderate to poor

Note: n/a means not available at this time based on desktop review

Table 3: Comparative Analysis
Alternative Route Around Pukaskwa National Park (between Marathon and White River)

Factor	Criteria	Indicator	North Side of Existing ROW	South Side of Existing ROW
Physical	Soil	Area of agricultural fields crossed within the proposed ROW (ha)	0	0
Socio-Economic	Private property	Number of properties potentially affected within the proposed ROW	1 building	0
		Number of potential dwelling displacements	2 buildings	0
		Number of potential property buyouts required within the proposed ROW	1	1
	Land Use	Number of settlement areas crossed by the proposed ROW	1 cottage area 5.8 ha	1 cottage area 52.3 ha
		Number of Forest Management Units within the proposed ROW	3	1
		Area of Conservation Areas within the proposed ROW (ha)	0	0
		Area of Conservation Reserves within the proposed ROW (ha)	22.29	0
		Area of Provincial Parks within the proposed ROW (ha)	0	0
		Area of National Parks within the proposed ROW (ha)	0	0
		Area of mines within the proposed ROW (ha)	n/a	n/a
		Area of mining claims within the proposed ROW (ha)	204.78	200.00
		Number of mining claims crossed by the proposed ROW	52	54
		Area of aggregate pits within the proposed ROW (ha)	0	0
		Area of high potential for aggregate resources within the proposed ROW (ha)	0	0
		Area of land designated for commercial and industrial purposes within the proposed ROW (non-mining) (ha)	0	0
	Community Services	Number of hospitals and healthcare facilities crossed by the proposed ROW	0	0
		Number of schools and educational institutions crossed by the proposed ROW	0	0
		Number of community centres crossed by the ROW	0	0
	Tourism and Recreation	Distance of trails crossed by the proposed ROW (m) (Ontario Trails Network)	0	0
		Area of campgrounds crossed by the existing ROW (ha)	1	1
		Number of outpost camps crossed by the ROW	0	0
		Number of golf courses crossed by the proposed ROW	0	0

Factor	Criteria	Indicator	North Side of Existing ROW	South Side of Existing ROW
	Aesthetics	Number of scenic viewpoints within the proposed ROW	n/a	n/a
	Non-Aboriginal Archaeology, Cultural Heritage, Traditional Land and Resource Use	Length of ROW with archaeological potential (km)	n/a	n/a
		Number of archaeological sites within the proposed ROW	0	0
		Number of known cemeteries crossed by the proposed ROW	0	0
		Area of traditional land uses/harvest areas identified within the proposed ROW (ha)	n/a	n/a
	Aboriginal Archaeology, Cultural Heritage, Traditional Land and Resource Use	Length of ROW with archaeological potential (km)	n/a	n/a
		Number of archaeological sites within the proposed ROW	n/a	n/a
		Area of First Nation reserves within the proposed ROW (ha)	0	0
		Area of traditional land uses/harvest areas identified within the proposed ROW (ha)	n/a	n/a
		Area of traditional burial grounds within the proposed ROW (ha)	n/a	n/a
Natural	Areas of Natural and Scientific Interest	Area of mapped Provincially Significant Areas of Natural and Scientific Interest (Earth Science and Life Science) within the proposed ROW (ha)	n/a	n/a
		Area of mapped Candidate Areas of Natural and Scientific Interest (Earth Science and Life Science) within the proposed ROW (ha)	n/a	n/a
	Wetlands	Area of mapped Provincially Significant Wetlands within the proposed ROW (ha)	n/a	n/a
		Area of mapped previously evaluated non-provincially significant wetlands within the proposed ROW (ha)	n/a	n/a
		Area of mapped unevaluated wetlands within the proposed ROW (ha)	16.77	16.00
	Waterbodies and Watercourses	Number of mapped watercourses crossed by the proposed ROW (ha)	59	51
		Area of mapped waterbodies (not including watercourses) crossed by the proposed ROW (ha)	4.40	4.12
	Forest Resources	Area of previously logged lands within the proposed ROW (ha)	n/a	n/a
		Area of seed collection lands within the proposed ROW (ha)	n/a	n/a
	Wildlife Habitat	Area of mapped potential significant wildlife habitat within the proposed ROW (ha)	n/a	n/a
		Number of mapped nesting sites within the proposed ROW	n/a	n/a

Factor	Criteria	Indicator	North Side of Existing ROW	South Side of Existing ROW
	Species at Risk	Area of mapped Woodland Caribou continuous habitat within the proposed ROW (ha)	62.61	62.79
		Area of mapped Woodland Caribou discontinuous habitat within the proposed ROW (ha)	377.84	377.37
Technical	Community Infrastructure	Number of roads crossed	5	5
		Number of rail lines crossed	1	1
		Number of pipelines crossed	n/a	n/a
		Number of local airports crossed	0	0
	Constructability	Overall length of proposed ROW	78.55	78.55
		Area of hazard (unstable) land crossed by the proposed ROW (ha)	n/a	n/a
		Number of transmission line corners required	n/a	n/a
		Number of transmission line crossovers required	0	0
		Distance of existing access roads available	n/a	n/a
		Distance of new access roads required	n/a	n/a
		Favourable terrain (i.e., poor, moderate, good)	Moderate to poor	Good
		Sufficient work space (i.e., poor, moderate, good)	Moderate to poor	Good

Note: n/a means not available at this time based on desktop review

The evaluation was completed for the area between Marathon and near White River. The Alternative Route turns south near White River and does not follow existing transmission facilities thus a comparison of which side of the north-south Alternative Route is not applicable. The Alternative Route around Pukaskwa National Park was refined to minimize environmental, physical, technical and socio-economic effects.

4. OTHER CONSIDERATIONS

This section provides an overview of other considerations that were taken into account as part of the analysis.

Reference Route

TransCanada Highway – The TransCanada Highway (Highway 17) and associated developed areas is located primarily to the south of the Reference Route between Thunder Bay and Marathon. Use of the north side of the existing East-West Tie in these areas will maximize the distance between the Project and the highway.

Loon Lake – A large number of cottages are located on Loon Lake. Use of the north side of the existing East-West Tie in this area will maximize the distance between the Project and these residents.

Ruby Lake Natural Environment Provincial Park – The majority of the Park is located on the south side of the Reference Route (i.e., Reference Route forms northern boundary of the Park). Use of the north side of the existing East-West Tie in this area will maximize the distance between the Project and the Park while also allowing for the potential avoidance of the Park entirely.

Fire Hill Lake – Cottages are located on the north side of Fire Hill Lake. While the use of the north side of the existing East-West Tie in this area will not maximize the distance between the Project and these residents, there are no direct effects anticipated to result.

Lake Superior – The Reference Route travels along the northern shore of Lake Superior. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the lake.

Gravel River Conservation Reserve – More of this reserve is located on the north side of the Reference Route however the most significant area of the reserve (i.e., Gravel River) is located on the south side of the Reference Route. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the Gravel River.

Nishi Lake – A southerly local refinement to the Reference Route would be required to cross this feature. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the lake.

Pays Plat First Nation Reserve – Use of the north side of the existing East-West Tie in this area will maximize the distance between the Project and developed First Nation reserve areas. Should the Alternative Route around the reserve lands be selected, no cross over of the existing transmission line would be required if the Reference Route was located on the north side.

McLean's Lake – McLean's Lake parallels the north side of the Reference Route. Use of the south side of the existing East-West Tie will maximize the distance between the Project and the lake.

Antler Lake – Antler Lake parallels the south side of the Reference Route. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the lake.

Reid Lake – Reid Lake parallels the south side of the Reference Route. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the lake.

Unnamed Lake Located south of Lizard Lake – The lake parallels the south side of the Reference Route. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the lake.

Craig's Pit Expansion Area – The south side of the Reference Route is located within the expansion area. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the expansion area.

Little Santoy Lake – The shoreline of this lake is located on the south side of the Reference Route in this area. Use of the north side of the existing East-West Tie will maximize the distance between the Project and the lake.

Existing Transmission Line Near Steel River Crossing – Use of the south side of the existing East-West Tie will maximize distance between the Project and the existing transmission line located on the north side of the Reference Route.

Existing Transmission Line West of Little Pic River – There are two potential crossings of existing transmission lines on the north side of the Reference Route. Use of the south side of the existing East-West Tie will maximize distance between the Project and the existing transmission lines.

Existing Transmission Line West of Marathon - There are two potential crossings of existing transmission lines on the south side of the Reference Route. Use of the north side of the existing East-West Tie will maximize distance between the Project and the existing transmission lines.

Marathon TS – There is a built-up area located to the immediate south of the TS. Use of the north side of the existing East-West Tie will maximize distance between the Project and the developed area.

White Lake Natural Environment Provincial Park – A section of Pukaskwa National Park is located along the south side of the Reference Route in this area. Use of the north side of the existing East-West Tie will maximize distance between the Project and the Park.

North of Widgeon Lake - A section of Pukaskwa National Park is located along the south side of the Reference Route in this area. Use of the north side of the existing East-West Tie will maximize distance between the Project and the Park.

Nimoosh Waterway Provincial Park – Nimoosh River parallels the Reference Route on the south side. Use of the north side of the existing East-West Tie will maximize distance between the Project and the river.

Michipicoten First Nation Reserve – The Reference Route travels through this First Nation reserve. Should the Alternative Route around the reserve be selected, having the Reference Route on the north side of the existing East-West Tie would be preferred to avoid having to cross the existing line.

Alternative Route Around Pukaskwa National Park

The Alternative Route around Pukaskwa National Park was refined to minimize environmental, physical, technical and socio-economic effects. The south side of the Alternative Route around Pukuskwa National Park between Marathon and near White River was preferred due to technical concerns relating primarily to topography and water crossings. It was also determined that an easterly north-south sub-route was preferred. Alternative Routes will continue to be refined as necessary as part of the EA.

5. CONCLUSION

Reference Route

The comparative analysis determined that the north side of the Reference Route (i.e., north side of existing East-West Tie) was slightly preferred from an environmental, socio-economic and technical perspective. When considering a wider study area (i.e., up to 500 m) from the north and south sides of the Reference Route, it was found that the north side maximizes the distance between human settlement, recreational areas, and provincial parks.

The use of the north side of the existing East-West Tie also reduces the number of potential cross overs of the existing East-West Tie that would be required in the event that the Alternative Routes around the First Nation reserves are selected. It is not only technically difficult and expensive to cross over (or under) high voltage transmission lines but this also becomes a weak point in the system as the possibility of both lines being damaged increases due to their proximity. Additional clearing and land rights are also required. Cross overs may occur should unforeseen environmental or technical constraints be encountered, and/or as a result of consultation activities, but one of the routing objectives is to minimize them wherever possible.

Alternative Route Around Pukaskwa National Park

As previously described, the south side is preferred from an environmental, socio-economic and technical perspective. There are fewer waterbodies that must be spanned and more favourable terrain that would be crossed on the south side of the route along which transmission facilities already exist.