

**TAB L-1-1**

1 **Permitting Plan**

2 **The Proposed Routes**

3 The Project covers the area immediately north of Lake Superior from the Lakehead TS  
4 in the west to the Wawa TS in the east. Two potential routes have been determined for  
5 the Project:

- 6 (i) the Preliminary Preferred Route; and  
7 (ii) the Reference Route.

8 The Preliminary Preferred Route is a 409 km route that parallels the existing Hydro One  
9 Transmission Line for 279 km before departing the existing line for 130 km. By following  
10 a different path, the Preliminary Preferred Route avoids disturbing the environmentally  
11 sensitive lands in Pukaskwa National Park and the culturally significant Pays Plat and  
12 Michipicoten First Nation Reserves. This route also has the advantage of more  
13 favourable access and permitting and better conditions for construction and  
14 foundations.

15 The Reference Route is a 402 km route that parallels the existing Hydro One  
16 Transmission Line for its entire length from the Lakehead TS in the west to the Wawa  
17 TS in the east. The Reference Route passes directly through Pukaskwa National Park  
18 as well as the Pays Plat and Michipicoten First Nation Reserves.

19 While a finalized route will be selected in the first year after designation, the final route  
20 will not be determined until substantial progress has been made in the EA process.  
21 Route refinements may also be required in order to accommodate revisions based on  
22 supplementary information from terrestrial, archaeological, and aquatic fieldwork, as  
23 well as comments from the public, landowners, regulatory agencies and First Nation  
24 and Métis communities.

## **Required Permits and Approvals**

The Project will require permits and approvals from the federal and provincial governments and certain municipalities. Obtaining these permits will involve extensive consultation with regulatory agencies. The Applicant plans to begin consultations with regulatory agencies early in the Project planning process to ensure a streamlined permitting process and full sharing of relevant Project information.

A preliminary list of key federal, provincial and municipal permits and approvals is included in Exhibit L-1-2. This list will evolve over time as the Project design is finalized after any modifications based on consultation with First Nation and Métis peoples, local stakeholders and government agencies. Before any of the provincial approvals are granted, the Project will need to go through the Ontario EA process.

## **Federal Environmental Assessment**

Regulation SOR/2012-147: *Regulations Designating Physical Activities* under CEAA identifies projects that require federal environmental assessments. It is the Applicant's understanding that the Project would not be considered a "designated physical activity" under the CEAA since the EWTL does not have a voltage of 345 kV or more.

CEAA 2012 does, however, impose requirements for projects on federal lands. Since the EWTL may cross First Nation Reserves and a National Park, both Aboriginal and Northern Development Canada and Parks Canada, among other federal authorities, will need to advise on whether the Project is likely to cause significant adverse environmental effects.

If the federal Minister of the Environment is satisfied that the substantive requirements of CEAA 2012 can be met by the Ontario EA process, and if Ontario requests substitution, the federal Minister of the Environment must allow for the substitution of the federal EA process by the Ontario EA process. The federal Minister of the Environment will make this determination based on the Ontario EA report.

**Ontario Environmental Assessment**

The Project will be required to complete an individual EA under Ontario's *Environmental Assessment Act*. An individual EA represents the highest level of environmental scrutiny for proposed projects.

There are four key phases of the EA process in Ontario:

- (i) EA Terms of Reference Preparation;
- (ii) EA Terms of Reference Review and Approval;
- (iii) EA Study Preparation; and
- (iv) EA Study Review and Approval.

As part of the individual EA process, the Applicant will prepare Terms of Reference (“**ToR**”) that will establish a framework for the preparation and review of the EA. The ToR will outline how the individual EA will be conducted and will ensure that the public, First Nation and Métis communities and governmental agencies can comment on the Project and have access to key information about the Project. The ToR must be approved by the Ontario Minister of the Environment to ensure that it meets the requirements of Ontario's *Environmental Assessment Act*. Once the Ontario Minister of the Environment has approved the ToR, the Applicant will prepare the EA study for review and public comment.

**Other Relevant Regulatory Legislation Not Requiring Permitting**

In addition to obtaining required permits and approvals, the Applicant must comply with a number of federal and provincial statutes, regulations and guidelines. Although not necessarily requiring formal permits or approvals, these statutes, regulations and guidelines must be addressed throughout the EA process and before and during construction.

Relevant Ontario statutes, regulations and guidelines that must be complied with include the following:



- (i) the *Endangered Species Act, 2007* administered by the Ontario Ministry of Natural Resources;
- (ii) the Ontario Biodiversity Strategy (2005);
- (iii) waste regulations and guidelines made under the Ontario *Environmental Protection Act* regarding the systematic control, collection, storage, transportation, treatment, recovery and disposal of waste including hazardous waste; and
- (iv) Ontario Ministry of the Environment water management policies and guidelines.

Applicable federal statutes, regulations and guidelines that must be complied with include the following:

- (i) the *Aeronautics Act* administered by Transport Canada;
- (ii) the *Canada Transportation Act* administered by Transport Canada;
- (iii) the *Fisheries Act* administered by the Department of Fisheries and Oceans and Environment Canada;
- (iv) the *Migratory Birds Convention Act, 1994* administered by Environment Canada;
- (v) the *Navigable Waters Protection Act* administered by Transport Canada;
- (vi) the *Railway Safety Act* administered by Transport Canada;
- (vii) the Policy on Wetland Conservation (1991); and
- (viii) the Canadian Biodiversity Strategy (1995).

**Permitting Schedule**

The Applicant has determined that the permitting process would commence upon designation. The Applicant estimates that it would take approximately one year from the date of designation to develop and submit the ToR for the EA to the Ontario Minister of the Environment. Allowing three months for the Ontario Minister of the Environment approval, the Applicant estimates that the ToR would be completed by September 2014.

Concurrent with the development and approval of the ToR, the Applicant would prepare and analyze environmental information for the EA process. The Applicant anticipates that the Project could be approved under the Ontario EA process early in the third quarter of 2016. To expedite the Project Schedule by approximately one year, the Applicant plans to submit the LTC application to the Board while the EA process is underway. Similarly, the Applicant plans to begin the application for permits that must be obtained outside of the Ontario EA process during the LTC application period and approximately 11 months ahead of the anticipated EA approval date. If this expedited permitting and approvals plan proceeds as expected, the Applicant anticipates that construction would commence late in the third quarter of 2016. Further details on the permitting and Project schedule are included at Exhibit N.

A preliminary list of key federal, provincial and municipal permits and approvals is included in Exhibit L-1-2. The Applicant's Permits, Licences and Approvals Plan Report is included at Exhibit L-2-1. The Project Corridor Analysis and Critical Environmental Issues Assessment Report is included at Exhibit L-3-1. Finally, the Applicant's Environmental Assessment Plan is included at Exhibit L-4-1.

**TAB L-1-2**

## List of Key Permits and Approvals

Federal			
Nature (Name) of Permit	Issuing Authority	Application/Engineering Requirements	Scheduling
<b>Canadian Environmental Assessment Act</b>	Canadian Environmental Assessment Agency	<ul style="list-style-type: none"> <li>CEAA will evaluate alternatives, effects, mitigation and monitoring for projects effects, if project is applicable.</li> </ul>	<ul style="list-style-type: none"> <li>Initiate during EA, if applicable.</li> </ul>
<b>Navigable Water Crossing Including Culvert Crossings</b>	Transport Canada (TC)	<ul style="list-style-type: none"> <li>Conductor crossing locations on Navigable waters</li> <li>Drawings of types of structures</li> <li>Culvert locations and dimensions</li> <li>Plan and profile of line showing the height of conductor</li> </ul>	<ul style="list-style-type: none"> <li>Could be initiated during EA. Prior to stringing of conductor</li> <li>2 month lead time</li> </ul> <p>These permits will be applied for in parallel with CA and MNR permits</p>
<b>Fisheries Act Authorization</b>	Fisheries and Oceans Canada (DFO)	<ul style="list-style-type: none"> <li>Crossing locations on fish bearing waters</li> <li>Drawings of types of structures</li> <li>Proposed mitigation</li> </ul>	<ul style="list-style-type: none"> <li>Could be initiated during EA.</li> <li>3 month lead time</li> </ul> <p>These permits will be applied for in parallel with CA and MNR permits</p>
<b>Aeronautical Obstruction Clearance for Height Hazards</b>	Transport Canada (TC)	<ul style="list-style-type: none"> <li>Height of towers</li> <li>Lighting Requirements</li> </ul>	Prior to tower steel erection
<b>Species at Risk Act</b>	Environment Canada (EC) Department of Fisheries and Oceans (DFO) Parks Canada (PC)	<ul style="list-style-type: none"> <li>Required if Federally Protected Species at Risk is identified along the Reference Route</li> <li>Requirements will vary by species and nature of impact</li> <li>Consideration of alternatives, mitigation designs and demonstration of not jeopardizing survival or recovery of affected species</li> </ul>	<ul style="list-style-type: none"> <li>During EA</li> </ul> <p>The Act allows for timelines for granting of permits to be established, to date no regulations have been passed. Timelines will depend on complexity of permit</p>
<b>Land Leases, Licences/Permits – Indian Act, Territorial Lands Act</b>	Aboriginal and Northern Development Canada (AANDC)	<ul style="list-style-type: none"> <li>For Project infrastructure crossing First Nation Reserve Lands</li> </ul>	During EA

Provincial			
Nature (Name) of Permit	Issuing Authority	Application/Engineering Requirements	Scheduling
<b>Archaeological Clearance</b>	Ministry of Culture	<ul style="list-style-type: none"> <li>Stage 1 archaeological study along ROW (and additional stages as required)</li> </ul>	<ul style="list-style-type: none"> <li>Prior to road access construction</li> <li>Follow-up required</li> </ul>
<b>Encroachment Permit for Provincial Highways (conductor)</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>Crossing requirements documentation</li> <li>Engineering team to provide plan and profile drawings</li> </ul>	<ul style="list-style-type: none"> <li>Prior to conductor stringing</li> </ul>
<b>Encroachment Permit for Provincial Highways (access roads)</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>Drawings</li> <li>Proposed access road locations</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> </ul>
<b>Building and Land Use Permit</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>Required for any construction within 400m of their ROW</li> </ul>	<ul style="list-style-type: none"> <li>Prior to construction</li> </ul>
<b>Commercial Access Permit for Upgrades of Access Roads from Provincial Highways</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>Access requirements documentation</li> <li>Drawings</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> </ul>
<b>Leave to Construct</b>	Ontario Energy Board	<ul style="list-style-type: none"> <li>Completion of Ministry of Environment (MOE) Compliant Environmental Assessment (EA)</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> </ul>
<b>Permit to take water</b> (temporary)	Ministry of Environment	<ul style="list-style-type: none"> <li>Proposed locations and withdrawal rates of areas where pumping or water may be required in excess of 50,000L/day</li> </ul>	<ul style="list-style-type: none"> <li>Prior to extraction of water in excess of 50,000L/day</li> </ul>
<b>ECA's (formerly CofA)</b>	Ministry of Environment	<ul style="list-style-type: none"> <li>May be required for noise or sewage</li> </ul>	<ul style="list-style-type: none"> <li>Prior to construction</li> </ul>
<b>Development Permit</b> (Generic Regulation Ontario Regulation 97/04 CA Act Development, interference with wetlands and alterations to shorelines and watercourses)	Conservation Authorities (The Lakehead Region Conservation Authority (LRCA) is the only Conservation Authority (CA) within the Study Area)	<ul style="list-style-type: none"> <li>Crossing and construction locations on watercourses, wetlands and flood control areas</li> <li>Drawings of types of culverts at watercourses</li> <li>Proposed mitigation</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> <li>Construction crossings of cold water creeks is restricted to the summer months</li> </ul> <p>Clear span crossings have no restrictions</p>
<b>Land Use and Work Permits under the Public Lands Act</b>	MNR	<ul style="list-style-type: none"> <li>Land Use Permits - Multi-Site Land Use Permit, Crown Easement, Crown Lease, Crown Patent, Licence of Occupation</li> <li>Work Permits - Crossing locations on watercourses/wetlands/roads. Drawings of types of structures required.</li> <li>Drawings of types of water course crossings</li> <li>Proposed mitigation</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> <li>This will be conducted in concert with the CA and DFO application process.</li> </ul>

Provincial			
Nature (Name) of Permit	Issuing Authority	Application/Engineering Requirements	Scheduling
<b>Crown Lands Act</b> <b>Crown Forest Sustainability Act</b> <b>Provincial Parks and Conservation Reserves Act</b> <b>Conservation Authorities Act</b> <b>Fish and Wildlife Conservation Act</b> <b>Endangered Species Act</b> <b>Forest Fire Prevention Act</b>	MNR	<ul style="list-style-type: none"> <li>• Crown Lands Interest Report. For all Crown Lands – including forest resources and beds of navigable waters</li> <li>• Will need to determine who forest resources are licenced to. If not licenced will need to obtain a Forest Resource Licence from MNR under the Crown Forest Sustainability Act</li> <li>• MNR will evaluate alternatives, effects, mitigation and monitoring for projects within Provincial Parks or Conservation Reserves</li> <li>• Hazard lands will be determined by MNR when no conservation authority is present.</li> <li>• Permits/approvals may be required under the Fish and Wildlife Conservation act - furbearing mammals, game wildlife, and specially protected wildlife species</li> <li>• ESA permits will be required for any Endangered Species identified along the Reference Route</li> <li>• Permits may be required under the Forest Fire Prevention act if prescribed burns are required</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate during EA</li> <li>• ESA permits will likely be C-permits and will require detailed mitigation plans, demonstration of overall benefit to the species, and possibly long term agreements for stewardship</li> </ul> <p>Note: potential for timing constraints (6 to 12 month)</p>
<b>Explosives Act and Transportation of Dangerous Goods</b>	Natural Resources Canada	<ul style="list-style-type: none"> <li>• Permits for vehicles used for the transportation of explosives; and</li> <li>• Certificates for carrying out, on an occasional and temporary basis, activities relating to the manufacture, testing or storage of explosives</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to Construction</li> </ul>

4

Municipal			
Nature (Name) of Permit	Issuing Authority	Application/Engineering Requirements	Scheduling
<b>Access/Use Permit from Municipal Road &amp; Heavy Load Transportation</b>	Municipalities and Townships	<ul style="list-style-type: none"> <li>• Access requirements documentation</li> <li>• Drawings, may require a standard culvert drawing</li> <li>• Coordinate with Municipal Road Superintendents to receive preliminary clearance for proposed entrances</li> </ul>	Prior to access road construction
<b>Building Permits</b>	Municipalities	<ul style="list-style-type: none"> <li>• Expansion of Stations Drawings</li> </ul>	Prior to construction
<b>Tree Cutting Notification (if required)</b>	Municipalities and Townships	<ul style="list-style-type: none"> <li>• Replacement plan</li> <li>• Areas of trees to be removed including species</li> </ul>	Prior to construction
<b>Environmental Protection Plan or Right of Way</b>		<ul style="list-style-type: none"> <li>• If required</li> </ul>	During EA

Municipal			
Nature (Name) of Permit	Issuing Authority	Application/Engineering Requirements	Scheduling
Development Plan			
Environmental Assessment Approval	Ministry of Environment	<ul style="list-style-type: none"> <li>EA</li> </ul>	Prior to construction

5

Other			
Nature (Name) of Permit	Issuing Authority	Application/Engineering Requirements	Scheduling
Utilities	Pipelines (oil and gas) Fibre Optic Telecommunications	<ul style="list-style-type: none"> <li>Engineered crossing diagrams</li> </ul>	<ul style="list-style-type: none"> <li>Prior to construction in crossing area 2 month lead time</li> </ul>
Railway Work Permits/ Construction Permits	CN & CP	<ul style="list-style-type: none"> <li>Crossing diagrams</li> </ul>	<ul style="list-style-type: none"> <li>Prior to construction in crossing area During acquisition of property rights</li> </ul>
Mining Act R.S.O. 1990, c.M.14)	Ministry of Northern Development and Mines (MNDM)	<ul style="list-style-type: none"> <li>Identify mining claims that could be impacted by the route.</li> </ul>	Under the Mining Act, it is illegal to deface, alter, remove or disturb any lawfully placed mining claim marker.
Outage Permits	IESO, OGCC	<ul style="list-style-type: none"> <li>Staging diagrams</li> </ul>	<ul style="list-style-type: none"> <li>Prior to construction</li> </ul>

6

**TAB L-2-1**



**Permits, Licences and Approvals Plan Report**

# Renewable Energy Systems Americas Inc.

East-West Transmission Reinforcement Project  
Permits, Licenses and Approvals Plan

Prepared for:

**Renewable Energy Systems Americas Inc.**

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December 14, 2012  
File No. 160960725



**Stantec**

## Record of Revisions

Revision	Date	Description
0	November 2012	Provided to RES (electronic copy)
1	December 2012	Final submitted to RES

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## **1 INTRODUCTION**

The Ontario Energy Board has initiated a proceeding to designate an electricity transmitter to undertake development work for a new electricity transmission line between Northeast and Northwest Ontario: the East-West Tie line. The Board assigned File No. EB-2011-0140 to the designation proceeding. The Board's primary objective in this proceeding is to select the most qualified transmission company to develop, and to bring a leave to construct application for, the East-West Tie line.

This Permits, Licensing and Approvals Plan (Plan) was conducted as part of the planning process for the East-West Tie, from Lakehead TS to Wawa TS (the Project). This Plan has been produced for The Applicant in support of their application for designation. This Plan is consistent with the Ontario Energy Board requirements outlined in the Phase 1 Decision and Order (July 12, 2012).

## **2 PERMITS/LICENCES/APPROVALS**

The following table summarizes the post-EA permits, licences and approvals that will be required for the Project.

**FEDERAL**

Nature (Name) of Permit	Issuing Authority	Permit/Authorization Trigger	Engineering and other Information Required for Application/Clearance	Permitting Strategy	Estimated Time to Obtain Permit and Fees (If Applicable)
<b>Navigable Water Crossing</b> <i>Including Culvert Crossings</i>	Transport Canada (TC)	<ul style="list-style-type: none"> <li>Construction of structures within a watercourse that could impede the navigability of that water course e.g. access road crossing.</li> </ul>	<ul style="list-style-type: none"> <li>Conductor crossing locations on Navigable waters</li> <li>Drawings of types of structures</li> <li>Culvert locations and dimensions</li> <li>Plan and profile of line showing the height of conductor</li> </ul>	<ul style="list-style-type: none"> <li>Submit prior to completion of EA</li> <li>Could be initiated during EA. Prior to stringing of conductor</li> <li>These permits will be applied for in parallel with CA and MNR permits</li> </ul>	<ul style="list-style-type: none"> <li>6 to 8 months</li> <li>N/A</li> </ul>
<b>Fisheries Act Authorization</b>	Fisheries and Oceans Canada (DFO)	<ul style="list-style-type: none"> <li>Construction of structures within fish habitat that could result in a Harmful Alteration Death or Destruction of the fish habitat</li> </ul>	<ul style="list-style-type: none"> <li>Crossing locations on fish bearing waters</li> <li>Drawings of types of structures to be placed in fish habitat</li> <li>Proposed mitigation to reduce impact on habitat</li> </ul>	<ul style="list-style-type: none"> <li>Submit prior to completion of EA</li> <li>These permits will be applied for in parallel with CA and MNR permits</li> </ul>	<ul style="list-style-type: none"> <li>6 to 8 months</li> <li>N/A</li> </ul>
<b>Aeronautical Obstruction Clearance for Height Hazards</b>	Transport Canada (TC)	<ul style="list-style-type: none"> <li>Potential for interference with aircraft</li> </ul>	<ul style="list-style-type: none"> <li>Height of towers</li> <li>Lighting Requirements</li> </ul>	<ul style="list-style-type: none"> <li>Prior to tower steel erection</li> </ul>	<ul style="list-style-type: none"> <li>TBD</li> </ul>
<b>Explosives Act and Transportation of Dangerous Goods</b>	Natural Resources Canada	<ul style="list-style-type: none"> <li>Permits for vehicles used for the transportation of explosives; and</li> <li>Certificates for carrying out, on an occasional and temporary basis, activities relating to the manufacture, testing or storage of explosives</li> </ul>	<ul style="list-style-type: none"> <li>Construction plan.</li> </ul>	<ul style="list-style-type: none"> <li>Prior to Construction</li> </ul>	<ul style="list-style-type: none"> <li>TBD</li> </ul>

**FEDERAL**

<b>Nature (Name) of Permit</b>	<b>Issuing Authority</b>	<b>Permit/Authorization Trigger</b>	<b>Engineering and other Information Required for Application/Clearance</b>	<b>Permitting Strategy</b>	<b>Estimated Time to Obtain Permit and Fees (If Applicable)</b>
<b>Species at Risk Act</b>	Environment Canada (EC) Department of Fisheries and Oceans (DFO) Parks Canada (PC)	<ul style="list-style-type: none"> <li>Required if Federally Protected Species at Risk is identified along the Reference Route</li> </ul>	<ul style="list-style-type: none"> <li>Location of project infrastructure relative to the SAR. Requirements will vary by species and nature of impact</li> <li>Consideration of alternatives, mitigation designs and demonstration of not jeopardizing survival or recovery of affected species</li> </ul>	<ul style="list-style-type: none"> <li>Submit prior to completion of EA</li> <li>The Act allows for timelines for granting of permits to be established, to date no regulations have been passed. Timelines will depend on complexity of permit</li> </ul>	<ul style="list-style-type: none"> <li>Completed through EA process</li> <li>NA.</li> </ul>
<b>Land Leases, Licenses/Permits – Indian Act, Territorial Lands Act</b>	Aboriginal and Northern Development Canada (AANDC)	<ul style="list-style-type: none"> <li>For Project infrastructure crossing First Nation Reserve Lands</li> </ul>	<ul style="list-style-type: none"> <li>For Project infrastructure crossing First Nation Reserve Lands</li> </ul>	<ul style="list-style-type: none"> <li>During EA</li> </ul>	<ul style="list-style-type: none"> <li>Completed through EA process</li> <li>NA.</li> </ul>

**PROVINCIAL**

<b>Nature (Name) of Permit</b>	<b>Issuing Authority</b>	<b>Permit/Authorisation Trigger</b>	<b>Engineering and other Information Required for Application/Clearance</b>	<b>Permitting Strategy</b>	<b>Estimated Time to Obtain Permit and Fees (If Applicable)</b>
<b>Archaeological Clearance</b>	Ministry of Culture	<ul style="list-style-type: none"> <li>• Presence of cultural heritage resources</li> </ul>	<ul style="list-style-type: none"> <li>• Stage 1 archaeological study along ROW (and additional stages as required)</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to road access construction</li> <li>• Follow-up required</li> </ul>	<ul style="list-style-type: none"> <li>• Completed through EA process</li> <li>• NA.</li> </ul>
<b>Encroachment Permit for Provincial Highways (conductor)</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>• Encroachment of project infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Crossing requirements documentation</li> <li>• Engineering team to provide plan and profile drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to conductor stringing</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Encroachment Permit for Provincial Highways (access roads)</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>• Encroachment of project infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Drawings</li> <li>• Proposed access road locations</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to access road construction</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Building and Land Use Permit</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>• Required for any construction within 400m of their ROW</li> </ul>	<ul style="list-style-type: none"> <li>• Project routing</li> <li>• Drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to construction</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Commercial Access Permit for Upgrades of Access Roads from Provincial Highways</b>	Ministry of Transportation	<ul style="list-style-type: none"> <li>• Encroachment of project infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>• Project routing</li> <li>• Drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to access road construction</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Leave to Construct</b>	Ontario Energy Board	<ul style="list-style-type: none"> <li>• Construction and operation of electricity transmission facility</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of Ministry of Environment (MOE) Compliant Environmental Assessment (EA)</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of EA and application</li> </ul>	<ul style="list-style-type: none"> <li>• Project dependent</li> </ul>
<b>Permit to take water (temporary)</b>	Ministry of Environment	<ul style="list-style-type: none"> <li>• Taking of water in excess of 50,000L/day</li> </ul>	<ul style="list-style-type: none"> <li>• Proposed locations and withdrawal rates of areas where pumping of water may be required in excess of 50,000L/day. E.g. excavation of tower foundations in wetlands.</li> </ul>	<ul style="list-style-type: none"> <li>• Application submitted prior to extraction of water in excess of 50,000L/day</li> </ul>	<ul style="list-style-type: none"> <li>• 4 to 6 months</li> <li>• For category 1 and 2 applications \$750 per</li> </ul>



PROVINCIAL

Nature (Name) of Permit	Issuing Authority	Permit/Authorisation Trigger	Engineering and other Information Required for Application/Clearance	Permitting Strategy	Estimated Time to Obtain Permit and Fees (If Applicable)
					permit.
<b>ECA's (formerly CofA)</b>	Ministry of Environment	<ul style="list-style-type: none"> <li>Facilities generating regulated emissions to the environment. Substation, operations facilities etc.</li> </ul>	<ul style="list-style-type: none"> <li>Building location, size, function and design.</li> </ul>	<ul style="list-style-type: none"> <li>Submission of application upon completion of final design.</li> </ul>	<ul style="list-style-type: none"> <li>TBD</li> </ul>
<b>Development Permit</b> (Generic Regulation Ontario Regulation 97/04 CA Act Development, interference with wetlands and alterations to shorelines and watercourses)	Conservation Authorities (The Lakehead Region Conservation Authority (LRCA) is the only Conservation Authority (CA) within the Study Area)	<ul style="list-style-type: none"> <li>Construction activities with a regulated area as defined by the Conservation Authority (typically around water courses, wetlands etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Crossing and construction locations on watercourses, wetlands and flood control (regulated) areas</li> <li>Drawings of types of culverts at watercourses</li> <li>Proposed mitigation</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> <li>Construction crossings of cold water creeks is restricted to the summer months</li> <li>Clear span crossings have no restrictions</li> </ul>	<ul style="list-style-type: none"> <li>4 to 6 months</li> <li>For culvert installations and activities in regulated areas applications \$300 per permit.</li> </ul>
<b>Land Use and Work Permits under the Public Lands Act</b>	MNR	<ul style="list-style-type: none"> <li>Use of navigable water courses (Crown Land) to install project infrastructure</li> <li>Land Use Permits - Multi-Site Land Use Permit, Crown Easement, Crown Lease, Crown Patent, License of Occupation</li> </ul>	<ul style="list-style-type: none"> <li>- Crossing locations on watercourses/wetlands/roads. Drawings of types of structures required.</li> <li>Drawings of types of water course crossings</li> <li>Legal survey of location of structure</li> <li>Proposed mitigation</li> </ul>	<ul style="list-style-type: none"> <li>Prior to access road construction</li> <li>This will be conducted in concert with the CA and DFO application process.</li> </ul>	<ul style="list-style-type: none"> <li>6 to 8 months</li> <li>\$150 per application as well as a yearly fee based on per linear foot of crown land used. Determined upon application.</li> </ul>

PROVINCIAL

Nature (Name) of Permit	Issuing Authority	Permit/Authorisation Trigger	Engineering and other Information Required for Application/Clearance	Permitting Strategy	Estimated Time to Obtain Permit and Fees (If Applicable)
<b>Crown Lands Act</b> <b>Crown Forest Sustainability Act</b> <b>Provincial Parks and Conservation Reserves Act</b> <b>Conservation Authorities Act</b> <b>Fish and Wildlife Conservation Act</b> <b>Endangered Species Act</b> <b>Forest Fire Prevention Act</b>	MNR	<ul style="list-style-type: none"> <li>• Work Permits</li> <li>• Utilisation of Crown Land to install and operate the proposed infrastructure.</li> </ul>	<ul style="list-style-type: none"> <li>• Completion of a Crown Lands Interest Report. For all Crown Lands – including forest resources and beds of navigable waters</li> <li>• Will need to determine who forest resources are licensed to. If not licensed will need to obtain a Forest Resource License from MNR under the Crown Forest Sustainability Act</li> <li>• MNR will evaluate alternatives, effects, mitigation and monitoring for projects within Provincial Parks or Conservation Reserves</li> <li>• Hazard lands will be determined by MNR when no conservation authority is present.</li> <li>• Permits/approvals may be required under the Fish and Wildlife Conservation act - furbearing mammals, game wildlife, and specially protected wildlife species</li> <li>• ESA permits will be required for any Endangered Species identified along the Reference Route</li> <li>• Permits may be required under the Forest Fire Prevention act if prescribed burns are required</li> </ul>	<ul style="list-style-type: none"> <li>• Initiate During EA</li> <li>• ESA permits will likely be C-permits and will require detailed mitigation plans, demonstration of overall benefit to the species, and possibly long term agreements for stewardship</li> </ul> <p>Note: potential for timing constraints (6 to 12 month)</p>	<ul style="list-style-type: none"> <li>• TBD</li> <li>• No fee required for ESA permits.</li> <li>• Allow 8 to 12 months to obtain ESA permits.</li> </ul>

**MUNICIPAL**

Nature (Name) of Permit	Issuing Authority	Permit/Authorization Trigger	Application/Engineering Requirements	Permitting Strategy	Estimated Time to Obtain Permit and Fees (If Applicable)
<b>Access/Use Permit from Municipal Road &amp; Heavy Load Transportation</b>	Municipalities	<ul style="list-style-type: none"> <li>• Encroachment of project infrastructure on municipal roadways</li> </ul>	<ul style="list-style-type: none"> <li>• Access requirements documentation</li> <li>• Drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to access road construction</li> <li>• Coordinate with Municipal Road Superintendents to receive preliminary clearance for proposed entrances</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Building Permits</b>	Municipalities	<ul style="list-style-type: none"> <li>• Construction of project facilities within municipality</li> </ul>	<ul style="list-style-type: none"> <li>• Station/building Drawings</li> </ul>	<ul style="list-style-type: none"> <li>• Submit final design drawings prior to construction</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Tree Cutting Notification (if required)</b>	Municipalities	<ul style="list-style-type: none"> <li>• Removal of trees for construction on municipally managed lands</li> </ul>	<ul style="list-style-type: none"> <li>• Location and areas of trees to be removed including species</li> <li>• Replacement plan</li> </ul>	<ul style="list-style-type: none"> <li>• Confirm requirements with municipality prior to construction</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>

OTHER

Nature (Name) of Permit	Issuing Authority	Permit/Authorization Trigger	Application/Engineering Requirements	Permitting Strategy	Responsibility
<b>Utilities</b>	Pipelines (oil and gas) Fibre Optic Telecommunication utilities, water main, sewer	<ul style="list-style-type: none"> <li>• Crossing or construction activity in proximity to assets and utilities</li> </ul>	<ul style="list-style-type: none"> <li>• Crossing diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to construction in crossing area</li> <li>• 2 month lead time</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>
<b>Railway Work Permits/ Construction Permits</b>	CN & CP	<ul style="list-style-type: none"> <li>• Crossings required for construction purposes and access</li> </ul>	<ul style="list-style-type: none"> <li>• Crossing diagrams</li> </ul>	<ul style="list-style-type: none"> <li>• Prior to construction in crossing area</li> <li>• During acquisition of property rights</li> </ul>	<ul style="list-style-type: none"> <li>• Rail America (CN). 6 to 8 weeks.</li> <li>• CP. 6-8 months.</li> </ul>
<b>Mining Act R.S.O. 1990, c.M.14)</b>	Ministry of Northern Development and Mines (MNDM)	<ul style="list-style-type: none"> <li>• Mining claims that could be impacted by the route.</li> <li>• Under the Mining Act, it is illegal to deface, alter, remove or disturb any lawfully placed mining claim marker.</li> </ul>	<ul style="list-style-type: none"> <li>• Preferred route</li> </ul>	<ul style="list-style-type: none"> <li>• Begin discussion with MNDM upon release of preliminary preferred route.</li> </ul>	<ul style="list-style-type: none"> <li>• TBD</li> </ul>

### 3 ASSUMPTIONS/CHALLENGES

Permits/Approvals will not be issued without EA approval from the Minister. Therefore schedule will be contingent upon EA.

It has been assumed that the application process for permits/approvals will be initiated during the EA process, however we have assumed that permit will be in-hand approximately 6 months following the MOE decision.

Changes in federal regulations (Bill C-38, July 2012) makes amendments to the Fisheries Act, the Canadian Environmental Protection Act, the Species At Risk Act and the National Energy Board Act. At the time of preparing this permitting plan the associated Regulations had not been updated. Updates may impact permitting requirements.

Cost assumes agency consultation; field work required to prepare data for the permit applications (stream morphology measurements and modeling for culvert sizing for any access road crossings) and the preparation and submission of the permitting packages. Specific requirements will be determined following data collection for the EA. Costs could vary significantly depending on agency consultations. Permit application fees have not been included.

Cost generally assumes permitting requirements for federal Species at Risk and species covered under the provincial Endangered Species Act (ESA). Specific requirements will be determined following data collection for the EA and consultation with agencies. Specific ESA requirements could significantly impact costs.

The Migratory Birds Convention Act poses serious constraints to construction activities that might result in harm to birds or bird nests during the nesting season. Permits are not issued for incidental take of migratory birds (therefore the Act is not referenced in the table above), so various due diligence efforts will be required to minimize the risk of incidental take. The main due diligence measure should be limiting the major habitat disturbance activities such as forest clearing, grubbing and site preparation to the period from late summer to early spring (generally the second week of August to the second week of May for this area of the Province).

#### 4 CLOSING

This Plan for the East-West Tie Project has been prepared by Stantec Consulting Ltd. for the sole benefit of The Applicant, and may not be used by any third party without the express written consent of The Applicant. The data presented in this report are in accordance with Stantec's understanding of the Project as it was presented at the time of reporting.

Respectfully submitted,  
**STANTEC CONSULTING LTD.**

Written by:

Reviewed/Approved by:



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Senior Project Manager



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**Peter Prier**  
Senior Principal, Energy & Environment,  
Environmental Services

**TAB L-3-1**

**Project Corridor Analysis and Critical Environmental Issues Assessment**





**RENEWABLE ENERGY SYSTEMS  
AMERICAS INC.EAST-WEST  
TRANSMISSION REINFORCEMENT  
PROJECT CORRIDOR ANALYSIS  
AND CRITICAL ENVIRONMENTAL  
ISSUES ASSESSMENT**

File No. 160960725  
December 2012

Prepared for:

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**RENEWABLE ENERGY SYSTEMS AMERICAS INC.EAST-WEST TRANSMISSION  
REINFORCEMENT PROJECT CORRIDOR ANALYSIS AND CRITICAL ENVIRONMENTAL  
ISSUES ASSESSMENT**

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**RENEWABLE ENERGY SYSTEMS AMERICAS INC.EAST-WEST TRANSMISSION  
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## **1.0 Introduction**

---

The Ontario Energy Board has initiated a proceeding to designate an electricity transmitter to undertake development work for a new electricity transmission line between Northeast and Northwest Ontario: the East-West Tie line. The Board assigned File No. EB-2011-0140 to the designation proceeding.

The Board's primary objective in this proceeding is to select the most qualified transmission company to develop, and to bring a leave to construct application for the East-West Tie line.

This Corridor Analysis and Critical Environmental Issues Assessment (CEIA) has been developed as part of the planning process for the East-West Tie, from Lakehead TS to Wawa TS (the Project). This Report has been produced for The Applicant in support of their Application for designation, consistent with the Ontario Energy Board requirements outlined in the Phase 1 Decision and Order (July 12, 2012).

### **1.1 BACKGROUND**

The new overhead transmission line is proposed for construction immediately adjacent to the existing double circuit Hydro One Wawa TS to Lakehead TS line (Reference Route). Although the primary location for the new line has been identified as parallel to the existing 230 kilovolt (kV) Reference Route line, the location has not been studied in detail.

Routing a new transmission line adjacent to the Reference Route typically minimizes the negative effects, such as disturbance, habitat loss and/or fragmentation on environmental and socio economic features. For example, the existing land use already includes transmission facilities (towers and overhead lines etc.), the increase in Right of Way (ROW) width is typically less than the width of a new ROW and access roads can be shared where applicable.

The purpose of this study is to evaluate alternative routes and develop/identify associated recommendations, such as a preliminary preferred route and potential route refinement areas, in relation to prescribed environmental and socio-economic features. Two primary alternatives have been identified 1) North of Reference Route, 2) South of Reference Route. These are discussed in more detail below. Additional alternative alignments have also been identified to avoid the Pukaskwa National Park and Michicopoten First Nation Reserve areas in the section between Wawa TS and Marathon TS (Segment E, Section 1.2). Quantitative and qualitative evaluations have been undertaken for these alternatives (Refer to Section 3.3).

It is important to note that this study has been undertaken by a desktop evaluation and site reconnaissance only. No detailed field surveys have been completed. Most importantly, no stakeholder, agency or First Nation consultation or engagement has been undertaken.

Resources used, such as the Ministry of Natural Resources' (MNR) Lands Information Ontario (LIO) data base include known and identified features and are not expected to be comprehensive for such a large and remote area. A preliminary preferred alignment will be identified along with potential route refinement areas based on this desktop evaluation. Route refinement areas will also likely be identified during the EA consultation phase and will require further study and verification. It is likely that additional features and constraints will be identified during the detailed field work for the EA.

## **1.2 SPATIAL BOUNDARIES**

The spatial boundaries for the discussion that follows considered one or more of the following three areas:

- The **Project Location**: The general area surrounding the Reference Route.
- The **Study Area**: One kilometer to either side of the Reference Route.
- The **Route**: The preliminary alignment for the North of Reference Route and South of Reference Route alternatives have been off-set 100m each side of the Reference Route. Some "metrics" consider features within 500 m of the alternative alignments. The Route has been sub-divided into 5 segments based on existing access, constructability, geology/terrain and vegetation:

### **A - Thunder Bay to Nipigon River (85 km)**

- Rolling terrain and moderate vegetation regrowth after logging.
- Fair to good access roads
- Nipigon River crossing
- New four-lane highway under development (Hwy 17)

### **B - Nipigon River to Terrace Bay-Aguabson River Crossing (86 km)**

- Fair access roads – several gated
- Hills and large rock outcrops
- Significant waterbodies

### **C - Terrace Bay to Marathon (60 km)**

- Steep terrain with significant vertical height variations
- Limited access
- Heavy vegetation

- Little Pic River crossing (largest span), railroad and highway crossings

**D - Marathon to White River (28 km)**

- Steep terrain with significant vertical height variations
- Limited to no access from Highway
- Heavy vegetation regrowth after logging

**E - White River to Wawa (140 km)**

- Low elevation
- Flat terrain with dense vegetation
- Muskeg bogs with significant standing water
- Very limited road access – water hazards

## **2.0 Description of Existing Natural and Socio Economic Environment Along Reference Route**

---

A desktop review of information on the natural and socio-economic environment was completed for the 2km corridor buffer study area. A site reconnaissance was also undertaken on October 1 – 3, 2012 to verify some of the published information. The reconnaissance visit included driving the length of the line and accessing the Reference Route using existing access roads. In general the site was relatively easily accessible in the western section and access was relatively limited in the eastern section. Photographs of the site visit are provided in **Appendix A**.

Descriptions of the various components of the land uses are provided in the following sections.

### **2.1 LAND USE – PLANNING CONTEXT**

#### **2.1.1 Federal Policies**

The Project encompasses the immediate northern shore of Lake Superior from the Lakehead TS in the west to the Wawa TS in the eastern portion of the Project Location. The Project Location is largely forested, with sporadic locations of resource use, transportation corridors and rural development in this region of Ontario. There are various Provincial plans, acts and policies that inform land use. The goal of each plan, policy or act is to protect, maintain and restore a healthy environment. Overviews of some of the key planning documents which will inform this project are as follows:

#### **National Park Management Plans**

National park management plans are developed and implemented as a strategic and long-term guide on how Canada's national parks are managed. Plans are developed individually for each park and must be approved by the minister responsible for Parks Canada. *Canada's National Parks Act (2000)* requires that each park plan be reviewed every five years to ensure that it is relevant to its purpose;

*“ensure that there is a clearly defined direction for the maintenance or restoration of ecological integrity and, in light of this primary goal, for guiding appropriate use.”*

Pukaskwa National Park is the only National Park within the Study Area. As previously stated, the existing Reference Route traverses a portion of the Park. Therefore, an alternative to avoid the Pukaskwa National Park boundary has been developed by the Applicant. Planning and implementation of this Project will meet the minimum requirements of the management plan including consultation with the Park.

## **2.1.2 Provincial Policies**

### **Provincial Policy Statement (2005)**

The *Provincial Policy Statement (2005)* (PPS) provides direction for the province on matters related to land use planning and development. The intent of the PPS is to provide direction on:

- The efficient use and management of land and infrastructure,
- Protection of the environment and resources; and,
- Ensuring appropriate opportunities for employment and residential development, including support for a mix of uses.

The PPS provides the framework for effective and efficient land use patterns aimed at sustaining the well-being of the province. This Project will meet or exceed the minimum criteria set out in the PPS by evaluating a preliminary preferred route which parallels the existing transmission line ROW. Routing adjacent to the existing ROW supports the intent of the PPS by conserving land and resources, minimizing environmental and social impacts and by maintaining the current and accepted land use patterns.

### **Growth Plan for Northern Ontario, 2011**

The Provincial government established the *Growth Plan for Northern Ontario, 2011* to provide a framework for the prosperity of Northern Ontario. The Act is structured around six themes; economy, people, communities, infrastructure, environment and Aboriginal Peoples. The plan sets out the following purposes:

- To enable decisions about growth to be made in ways to sustain a robust economy, build strong communities and promote a healthy environment and a culture of conservation;
- To promote a rational and balanced approach to decisions about growth that builds on community priorities, strengths and opportunities and makes efficient use of infrastructure;
- To enable planning for growth in a manner that reflects a broad geographical perspective and is integrated across natural and municipal boundaries; and,
- To ensure that a long-term vision and long-term goals guide decision-making about growth and provide for the co-ordination of growth policies among all levels of government.



This Project will meet or exceed the intent of the Plan by producing jobs that draw from the skilled labour pool in northern communities and retain jobs once construction is complete. The goal of this Project is to improve infrastructure in the north. A route that parallels the existing ROW minimizes the impact to the environment, a principle concept of the growth plan. An Aboriginal engagement and consultation program, which is fundamental to the plan, will be operational throughout the entire Project life. Through effective planning and implementation, this Project will meet the intent of the Growth Plan for Northern Ontario, 2011.

### **Provincial Parks and Conservation Reserves Act, 2006**

The intent of the Provincial Parks and Conservation Reserves Act, 2006 as defined by the Act is to:

*“permanently protect a system of provincial parks and conservation reserves that includes ecosystems that are representative of all of Ontario’s natural regions, protects provincially significant elements of Ontario’s natural and cultural heritage, maintains biodiversity and provides opportunities for compatible, ecologically sustainable recreation”*

With respect to planning and management of Provincial Parks and Conservation Reserves, the Act is guided by the following principle:

*“Maintenance of ecological integrity shall be the first priority and the restoration of ecological integrity shall be considered.”*

The Project will consider all Provincial Park and Conservation Reserve plans along the preferred route; additional information is provided in the following sections.

#### **2.1.2.1 Provincial Management Plans**

##### **Provincial Park Management Plans**

Ontario Parks, an agency of the provincial government, develops management plans individually for each provincial park. Each plan contains policies specific to that park which address resource management, operations and development. The intent of a provincial park management plan is to act as a guide to protect, preserve and enhance the ecological integrity of the park.

The Reference Route crosses the following eight Provincial Parks/Nature Reserves:

- Black Sturgeon River Provincial Park
- Gravel River Provincial Nature Reserve
- Kama Hills Provincial Nature Reserve
- Nimoosh Provincial Park

- Pukaskwa River Provincial Park
- Ruby Lake Provincial Park
- White Lake Provincial Park
- Craig's Pit Provincial Park (recommended addition status)

Individual management plans will be reviewed on an as needed basis throughout the lifecycle of the Project.

### **Forest Management Plans**

The intent of the MNR forest management plan is to ensure forests are protected with sustainability in mind. A forest management plan is developed for each management unit and contains:

- Management Unit Description
- Long-Term Management Direction
- Planned Operations
- Determination of Sustainability
- Description of Monitoring Plan
- Supplementary Documentation

The long-term management direction defines the type of forest that each management unit is intended to be and the necessary steps to achieve the desired forest. Outlined in the long-term management direction are:

- Current forest conditions
- Silviculture ground rules and strategy
- Management consideration
- Desired forest and benefits
- Management strategy
- Available harvest area
- Selection of areas for harvest
- Assessment of objective achievement
- Social and economic assessment

Planned operations describe in detail the work plan for a one to two year period. Planned operations identify short term work operations such as:

- Harvest

- Renewal and maintenance
- Roads
- Water crossings
- Other crossings of concern
- Water crossing decommissioning
- Aggregate extraction and pits
- Fire prevention and preparedness
- Monitoring and assessment

The Route traverses nine Forest Management Units:

- Lakehead Forest
- Black Spruce Forest
- Lake Nipigon Forest
- Kenogami Forest
- Pic River Ojibway Forest
- Big Pic Forest
- Black River Forest
- White River Forest
- Algoma Forest

Approved plans provide the framework for forest management activities of access road construction, harvest, renewal and maintenance within the management unit.

Forest management plans will be reviewed on an as needed basis until construction is complete. In addition, the Applicant has obtained Forest Resource Inventory (FRI) data from MNR for the Project Location. The Project will adhere to the intent of each management plan in consultation with the MNR.

The following information has been obtained from the FRI data. Information includes general percentage of cover type for each segment based on the preliminary preferred route presented in Section 3.4.

# RENEWABLE ENERGY SYSTEMS AMERICAS INC.EAST-WEST TRANSMISSION REINFORCEMENT PROJECT CORRIDOR ANALYSIS AND CRITICAL ENVIRONMENTAL ISSUES ASSESSMENT

Description of Existing Natural and Socio Economic Environment Along Reference Route

December 2012

## Cover Type

Discription	Column Labels	BFL	BFW	BSH	DAL	FOR	GRS	ISL	OMS	OTH	RCK	RRW	TMS	UCL	WAT	Grand Total
Thunder Bay to Nipigon River		0.6%	0.6%	4.8%	1.0%	86.1%	0.4%	0.0%	1.6%	0.0%	0.6%	0.9%	0.0%	1.9%	1.6%	100.0%
Nipigon River to Terrace Bay		0.1%	0.1%	1.3%	0.0%	91.3%	0.0%	0.0%	2.2%	0.0%	0.2%	0.1%	0.4%	0.5%	3.7%	100.0%
Terrace Bay to Marathon		0.3%	0.0%	0.2%	0.0%	82.3%	0.0%	0.0%	0.7%	0.0%	3.6%	0.0%	0.4%	9.6%	2.9%	100.0%
Marathon to White River		1.3%	0.0%	1.2%	0.0%	87.9%	0.0%	0.0%	1.0%	0.0%	1.1%	0.0%	0.0%	5.6%	2.1%	100.0%
White River to Wawa		0.0%	0.0%	0.4%	0.0%	91.8%	0.0%	0.0%	2.6%	0.0%	0.3%	0.1%	0.2%	1.2%	3.3%	100.0%
Pukaskwa Alternative		0.0%	0.0%	1.4%	0.0%	85.7%	0.0%	0.0%	5.1%	0.0%	0.7%	0.2%	1.8%	0.2%	5.0%	100.0%

BFL	Undefined - appears to be utility cooridor
BFW	Watercourse
BSH	Brush and alder
DAL	Developed Agricultural Land
FOR	Productive Forest
GRS	Grass and Meadow
ISL	Small Island
OMS	Open Wetland
OTH	Other
RCK	Rock
RRW	Right-of-Way
TMS	Treed Wetland
UCL	Unclassed
WAT	Water

## Stage of Development

Discription	DEPHARV	DEPNAT	FRSTPASS	FTGNAT	FTGPLANT	FTGSEED	LOWMGMT	LOWNAT	MODCUT	NEWNAT	NEWPLANT	NEWSEED	THINPRE	Grand Total
Thunder Bay to Nipigon River	0.00%	0.00%	0.00%	79.13%	0.78%	0.00%	0.00%	5.64%	0.00%	0.50%	0.00%	0.00%	0.04%	100.00%
Nipigon River to Terrace Bay	0.52%	6.20%	0.00%	77.93%	2.84%	0.00%	0.00%	0.28%	0.00%	3.09%	0.42%	0.00%	0.00%	100.00%
Terrace Bay to Marathon	0.36%	0.00%	0.00%	78.73%	2.17%	0.40%	0.00%	0.00%	0.00%	0.67%	0.00%	0.00%	0.00%	100.00%
Marathon to White River	2.11%	0.00%	0.00%	81.65%	0.00%	0.00%	0.00%	0.72%	0.00%	3.39%	0.00%	0.00%	0.00%	100.00%
White River to Wawa	1.57%	0.00%	0.00%	82.16%	1.29%	0.00%	0.00%	0.99%	0.00%	3.24%	2.48%	0.12%	0.00%	100.00%
Pukaskwa Alternative	2.57%	0.00%	0.14%	69.68%	1.17%	0.00%	0.33%	2.89%	0.47%	4.21%	2.26%	2.02%	0.00%	100.00%
	<b>1.01%</b>	<b>1.01%</b>	<b>0.01%</b>	<b>55.14%</b>	<b>0.80%</b>	<b>0.13%</b>	<b>0.04%</b>	<b>1.54%</b>	<b>0.05%</b>	<b>1.62%</b>	<b>0.94%</b>	<b>0.23%</b>	<b>0.00%</b>	<b>100.00%</b>

FTGPLANT	free growing: mainly planted regeneration
FTGSEED	free growing: mainly seeded regeneration
LOWMGMT	not satisfactorily regenerated harvest disturbance
LOWNAT	not satisfactorily regenerated natural disturbance
MODCUT	undefined
NEWNAT	recently renewed : mainly natural regeneration
NEWPLANT	recently renewed : mainly planted
NEWSEED	recently renewed : mainly seeded
THINPRE	received a pre-commercial thinning/spacing treatment

## Watershed Management Plans

Watershed management plans are developed by agencies, Conservation Authorities (CAs), organizations and municipalities to protect, restore and maintain watersheds. Watershed management plans occur at three levels; the entire watershed, regional and site specific. Agencies, such as the federal government, help to identify wide ranging issues that affect the entire watershed. Regional plans can be developed by CAs, the MNR and organizations comprised of ordinary citizens. Site specific plans can be implemented by the above groups as

well as a municipality or township. Planning and the involvement of any particular authority must take into consideration the scope and scale of the project with regards to whether impacts occur at the entire watershed, regional or site specific scale.

Watershed management plan provide a framework for how water resources are to be protected and improved as land uses change. A watershed management plan often includes the following:

- Watershed management strategy
- Identification of form and function of natural systems
- Relationship of watershed plan to sub-watershed plans
- Watershed issues
- Plan recommendations
- Implementation plans

The Lakehead Region Conservation Authority (LRCA) is the only CA within the Study Area. In the absence of a CA, agencies, organizations and municipalities may form watershed management plans.

There are several organizations, such as the Nipigon Watershed Advisory Committee and Lake Superior Watershed Conservancy, within the Project Location which take ownership of developing plans to protect the Lake Superior Watershed. These organizations and those alike, focus on the regional scale of the watershed. The Lake Superior Binational Program is a joint agency partnership between the United States and the Canadian Federal Government focused on identifying broad ranging watershed issues that occur at the entire watershed scale. Organizations, agencies and municipalities have an important role in the preservation and enhancement of the Lake Superior Watershed.

Throughout the Project, consultation with the Federal and Provincial governments, MNR, LRCA and various other government and non-government organizations will occur where plans have been developed.

### **MNR Crown Land Use**

Provincial Crown Lands are managed by the MNR through the authority of the *Public Lands Act*. The intent of the Act and policies within is to develop consistent rulings and providing a balance to social, economic and environmental interests while maintaining acceptable land use practices.

The Project will meet or exceed the intent of the *Federal Real Property and Federal Immovables Act* and the *Public Lands Act* through consultation with the appropriate agencies throughout the lifecycle of the Project.

## **Forest Fire Management Plan**

The *Forest Fire Management Strategy for Ontario* was created and is maintained by the MNR. The intent of the management plan is to increase public safety while protecting and maintaining forest resources. The MNR's management strategy includes guidance on:

- Ensuring public safety
- Protecting wood supply
- Promoting fire's role in the ecosystem
- Enhancing partnerships and agreements
- Promoting public education and prevention
- Managing the business of fire management; and
- Managing fire response

The MNR has identified six Fire Management Zones, for which it has prepared separate plans for each. The Study Area overlaps with three: the Boreal zone, Great Lakes/St. Lawrence zone, and Parks fire management zones. The Boreal fire management zone spans the Study Area and the single instance of a Park zone (Pukaskwa) which overlaps the Boreal zone. The Great Lakes/St. Lawrence zone is crossed by eastern most tip of the study area.

Pukaskwa National Park has developed the '*Fire Management Plan Pukaskwa National Park*' (2007). The intent of the plan is to establish the ecological role of fire within the park and to clearly outline fire suppression methods in the event of an emergency.

The Project will meet or exceed the minimum requirement of each plan, where necessary, in consultation with the MNR, National and Provincial Parks.

## **Woodland Caribou Conservation Plan**

The following plans act as a guide for the preservation of Ontario's ecosystem.

The MNR has developed and maintains the Woodland Caribou Conservation Plan. The plan was developed to provide direction on the conservation and recovery of the Woodland Caribou. The plan has nine guiding principles:

- Adaptive management which combines science and the use of new information to continuously improve management over time
- Ecosystem-based management that considers all the natural factors that affect and sustain caribou
- A healthy boreal forest that supports self-sustaining caribou populations

- The precautionary principle, which means that incomplete information should not be used as a reason for delaying conservation action
- A focus on the long-term sustainability of caribou ranges including the consideration of cumulative impacts
- Consideration of caribou population health and habitat condition in resource development decisions
- A science-based approach to caribou recovery that recognizes existing knowledge and limitations
- A commitment to incorporating Aboriginal Traditional Knowledge in decision-making where available.
- Consideration of social, economic and environmental concerns in the context of long-term caribou survival.

Consultation will be undertaken with MNR as the Project progresses throughout the ToR and EA phases.

### **Wildlife Management**

Wildlife management strategies are developed and implemented by the MNR. The MNR has produced two documents that act as general guides for the management of wildlife in Ontario. *Our Sustainable Future* and *Protecting what Sustains Us – Ontario's Biodiversity Strategy* have been developed to protect, preserve and allow for the prosperity of Ontario's wildlife.

The MNR also has specific management policies that address various species or groups of species that may occur in the study area including:

- Cervids (moose, deer, elk and caribou)
- Moose
- Marten
- Black Bear
- Forest Raptors
- Colonial Nesting Birds

In addition to wildlife management strategies, wildlife can be protected through provincial and federal policy. The '*Endangered Species Act*' (2007) (ESA) is a provincial policy focused on protecting sensitive and endangered species and habitats within the province. The '*Species at Risk Act*' (2002) (SARA) is a federal policy focused on protecting sensitive and endangered species and habitats within Canada.

The Project will meet the intended requirements of the Wildlife Management strategies set out by the MNR and conform to all provincial and federal legislation. Consultation with the MNR and agencies will occur throughout the lifecycle of the Project.

### **Provincially and Locally Significant Wetland Policies**

Ontario's wetlands are protected through a number of policies from the municipal to the provincial level. Any development nearby a wetland (30 to 120 m) may be regulated by the local CA, the MNR or through regional or municipal government. Developments that require Planning Act approval nearby wetlands are also subject to the PPS (2005). Public infrastructure is exempt.

The only CA with jurisdiction on a portion of the Study Area is the LRCA. Consultation with the MNR, LRCA and local governments will be undertaken as the Project progresses.

### **Areas of Natural and Scientific Interest**

Areas of Natural and Scientific Interest (ANSI's), as defined by the MNR, are:

*“areas of land and water that represent significant geological (earth science) and biological (life science) features”*

Earth science ANSI's may consist of a great number of features such as rock formations, fossils or landforms such as drumlins and eskers. Life science ANSI's also consist of a great number of features. Some include forests, wetlands and natural landscapes.

Earth and life science ANSI's are protected through the *PPS, 2005*, which has been addressed at the beginning of this section. The Project will meet the minimum required of the *PPS* by minimizing potential impacts to ANSI's and outlining any mitigation should it be necessary.

No ANSI's are crossed by the route. The following three ANSI and Candidate ANSI are found within the Study Area

- Kama Hills (Earth Science)
- Makwa River (Candidate ANSI, Life Science)
- Jimmy Kash River (Candidate ANSI, Life Science)



### **2.1.3 Municipal**

#### **Districts, Townships and Municipalities**

The Study Area consists of townships/municipalities, private and crown land located within the Districts of Thunder Bay and Algoma, Ontario. These are summarised as follows:

##### **Thunder Bay District**

The Study Area includes portions of seven municipalities: Township of Dorion, Township of Red Rock, Township of Nipigon, Township of Terrace Bay, Township of Schreiber, Town of Marathon, and Municipality of Shuniah.

##### **Algoma District**

The Study Area includes a portion of the Municipality of Wawa in the District of Algoma.

Each municipality is responsible for establishing and implementing an Official Plan (OP). OP matters relate to local issues such as land use planning, development and natural heritage. During the lifecycle of the Project each local government will be consulted and OP's adhered to.

## **2.2 CLIMATE, PHYSIOLOGY AND GEOLOGY**

### **2.2.1 Climate**

Annual precipitation totals for the Project Location range from a low of 700 mm to a high of 1050 mm. Precipitation tends to increase during the summer months with an average between 80-100 millimetres (mm) for the month of July and decreases during the winter months with an average between 40 mm to 90 mm (Baldwin et al., 2001).

Mean daily minimum temperatures during January range between -18°C to -24°C. These temperatures can cause significant freezing depths of land and water. Mean daily maximum temperatures during July range between 19°C to 24°C.

### **2.2.2 Physiology**

#### **Surficial Geology**

Surficial deposits in the Project Location are discontinuous and dominated by ground moraine, lacustrine deposits and other glacial landforms. The majority of the Project Location consists of a thin and discontinuous layer of ground moraine with depths ranging between approximately 0.9 and 2.5 m. Lacustrine deposits have been surveyed to be up to 100 feet in depth, although their depth depends on local bedrock depressions (Zoltai, 1965). In some areas, lacustrine deposits may be much less than 30 m where bedrock is void of depressions. There are many occurrences, throughout the Project Location, of bedrock exposure at the surface.

### **2.2.3 Geology**

#### **Bedrock Geology**

Bedrock mapping of Ontario shows that the rocks in Northern Ontario are nearly exclusively of igneous and metamorphic origin (OGS 1991a, 1991b). Bedrock exposure at the surface is a common occurrence with the likelihood increasing in the vicinity of the north shore of Lake Superior (Zoltai, 1965 and Boissonneau, 1968). Most excavations for Project components, such as transmission towers, will encounter bedrock due to the shallow nature of surficial deposits and depths needed to obtain structural stability of project infrastructure.

The majority of the bedrock within the Project Location is metamorphosed granite in the form of gneiss and granodiorite. Also found in abundance are mafic (igneous rocks rich in iron or magnesium). There are several occurrences of metamorphosed sedimentary rock, although they represent a small fraction of the Project Location.

### **2.3 TERRESTRIAL ENVIRONMENT**

A preliminary review of the natural heritage features that may potentially occur within or surrounding the Study Area was undertaken to identify natural heritage constraints and opportunities. The terrestrial environment Natural Heritage Features considered in the evaluation of route preferences fall into four broad categories:

- 1) Designated Features (Parks, Reserves and ANSI's);
- 2) Wetlands (Provincially Significant and Others);
- 3) Endangered and Threatened Species and Habitat; and,
- 4) Significant Wildlife Habitat (Seasonal Concentration Areas of Animals, Rare Vegetation Communities, Specialized Habitat for Wildlife, Habitat for Species of Conservation Concern, and Animal Movement Corridors).

The MNR's LIO data base was used as a source of known information to identify features for available subcomponents (i.e. aquatic feeding habitat; cervid movement corridors, moose and caribou wintering areas, etc.) within the above noted four categories in this preliminary assessment. The LIO information is not expected to be comprehensive for such a large and remote area; additional features and constraints will be identified during the detailed field work for the EA. The LIO information was supported through a general review of information available from the Committee on the Status of Endangered Species in Canada (COSEWIC) and the Committee on the Status of Species at Risk in Ontario (COSSARO) reports, Ontario breeding bird, mammal and herpetofaunal Atlases.

The Study Area is subdivided into five geographic Segments/Sections, from west to east (Segments A – E, as identified in Section 1.2). Where natural heritage features are concentrated within a certain portion of the route, the relevant Segment is noted.

### 2.3.1 Designated Areas

There is one National Park, six Provincial Parks, two conservation reserves two nature reserves, one forest reserve and three ANSI's are located within the Study Area (listed in previous sections).

### 2.3.2 Wetlands

Wetlands are areas seasonally or permanently covered by shallow water, or where groundwater is close to, or at, the land surface. Wetlands are identified through the presence of hydric soils and a community of water-tolerant plant species (OMNR, 2010). Wetlands which are identified as provincially significant are those which have been mapped and scored using a ranking system known as the Ontario Wetland Evaluation System (OWES), which awards points based on productivity and diversity, human use, hydrologic functions, and unique characteristics such as geographical rarity (OMNR, 2010). Many northern Ontario wetlands have not yet been evaluated using OWES.

The proposed transmission route crosses a single Provincially Significant Wetland bordering the Nipigon River, south of Lake Helen, in Section B (Nipigon River to Terrace Bay-Aguabson River Crossing). The route also crosses many unevaluated wetlands along its entire length.

### 2.3.3 Endangered and Threatened Species

Three terrestrial species listed as Endangered or Threatened at the provincial or federal level were identified as potentially occurring within the general area surrounding the Route (**Table 1**). A description of each species, their general habitat requirements, and likelihood for habitat overlap with the Study Area is included below.

**Table 1: Terrestrial Endangered and Threatened species potentially present within the Study Area**

Type	Common Name	Scientific Name	S - Rank	COSSARO	COSEWIC	Date
Bird	American White Pelican	<i>Pelecanus erythrorhynchos</i>	S2B	NAR	THR	7/7/2009
Bird	Peregrine Falcon	<i>Falco peregrinus</i>	S3B	SC	THR	6/23/2007
Mammal	Woodland Caribou	<i>Rangifer tarandus caribou</i>	S4	THR	THR	N/A

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Species in Canada

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer)

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

S#B- Breeding status rank

S4: Apparently Secure—Uncommon but not rare

NAR: Not At Risk

THR: Threatened

SC: Special Concern

N/A: not applicable

### **American White Pelican**

The American White Pelican reaches the northern limit of its range at Lake Nipigon, where one of two established breeding colonies in Ontario is located (American White Pelican Recovery Team, 2011). Nesting surveys at Lake Nipigon in 2006 and 2009 identified over 600 nests, located on five islands in the lake, and establishment of a new nesting island in 2009 suggests that the population may be expanding. A larger, and more established breeding colony is located at Lake of the Woods. Black Bay, along the North Shore of Lake Superior, is a new breeding site for the species, with 12 active nests observed in 2010. The key characteristics of nesting habitat for the American White Pelican are isolated islands free from disturbance and an abundance of small-bodied schooling fish as prey. According to the Recovery Strategy for the American White Pelican (AWPRT, 2011), the most critical aspect of American White Pelican conservation is protection of breeding colonies.

The Study Area is located to the north of Black Bay and south of Lake Nipigon, consequently no disturbance to established nesting colonies of American White Pelican from the proposed transmission route is anticipated.

### **Peregrine Falcon**

The Peregrine Falcon has traditionally been a rare breeder in Ontario, nesting on tall, steep cliff ledges adjacent to water. Peregrine Falcons breeding territories contain several nest sites, with pairs alternating between nest sites from one year to another. Thus, the absence of a nesting pair on a ledge on year does not preclude the ledge from consideration as critical habitat (OMNR, 2008a). Critical feeding areas are lakes and large rivers with an abundance of waterfowl and shorebirds, which may be located up to 27km from a nest site.

More recently, Peregrine Falcons have been released in various urban centers in Ontario where they successfully nests on tall buildings, and hunt urban birds such as pigeons and starlings. Recent increases in the species' abundance and distribution in both natural areas and urban environments reflect the large-scale recovery efforts across the species range (Cadman et al, 2007). However, the majority of Ontario's breeding population is still found along Lake Superior (OMNR, 2008a). Despite significant recovery from population declines due to exposure to organochlorine pesticides, particularly DDT, limiting factors still include pesticide use in the species' wintering range as well as human disturbance at nest sites and increased legal and illegal harvest for falconry (COSEWIC, 2007).

According to the LIO database, no Peregrine Falcon nesting sites have been identified within the Study Area. However the species is present in the project location and its habitat may overlap with the Study Area where suitable nesting and feeding areas are present.

## **Woodland Caribou**

One of the most sensitive natural features in the Study Area is habitat for woodland caribou, a federally and provincially Threatened species. A majority of the Study Area lies within an area of 'discontinuous caribou distribution' in the Lake Superior Coast Caribou Recovery Zone, as per the MNR's Caribou Conservation Plan (MNR 2012) and Caribou Recovery Strategy (MNR 2008b). In this area of discontinuous distribution the habitat is less capable of supporting caribou and they do not occur in great numbers relative to the habitat further north. However, it is still considered important habitat and it supports the movement of caribou between Lake Superior and the more densely populated areas to the north. The area includes an isolated, stable population of caribou in Pukaskwa National Park. The Recovery Strategy for the Woodland Caribou identifies some potential effects of transmission lines at the landscape level, including fragmentation, stating that 'linear corridors, especially those bisecting caribou winter range, may directly relate to increased mortality' (MNR 2008b).

The Reference Route does not pass directly through any Caribou Wintering Areas; however it does cross approximately 1.2 km of Caribou Migration Area located in the Lake Superior Highlands Conservation Reserve and extending east of the Reserve into the Study Area corridor.

The Lake Superior recovery zone and the presence an active population of Woodland Caribou in Pukaskwa National Park will be of interest to regulators and stakeholders.

### **2.3.4 Significant Wildlife Habitat**

#### **2.3.4.1 Seasonal Concentration Areas**

##### **Moose Late Winter Area**

In late winter, Moose concentrate in dense conifer stands which provide a favourable microclimate and protection from predators, as well as permitting easier movement because of reduced snow accumulation under the forest canopy. Coniferous tree stands should have at least 60% canopy closure and the majority of trees should be greater than 6m tall to provide ideal late winter habitat (OMNR, 2000). Typical tree species include Hemlock, Balsam Fir, and White Spruce. Moose are more heavily dependent on late winter habitat in the northern part of their range where cold temperatures and snow depth are more extreme (OMNR, 2000).

The proposed transmission route intersects several moose late winter areas in sections A and B, from the Black Sturgeon River to just north of Ruby Lake.

##### **Waterfowl Staging Area**

Waterfowl staging areas are large wetlands, typically adjacent to large bodies of water, where waterfowl aggregate to replenish energy reserves during migration periods. Staging waterfowl

may forage in adjacent agricultural areas, and move to nearby thicket swamps for over-night roosting. Many species of waterfowl return to the same staging areas year after year. The network of staging areas along North America's major migratory routes is essential for the successful movement of waterfowl from winter to summer ranges (OMNR, 2000).

Although waterfowl staging areas have been identified within the general area of the project route, the Study Area does not overlap with any of these significant wildlife habitat features.

### Deer Staging Area

A deer staging area is an area where deer rest during migration and are known to concentrate during winter (MNR, 2000).

Deer staging areas have been identified directly to the north and south of the Study Area in Section B, just west of Rainbow Falls Provincial Park.

#### 2.3.4.2 Rare Vegetation Communities

The Natural Heritage Information Centre (NHIC) review indicates that 2 provincially rare vegetation communities (**Table 2**) are known to occur within the Study Area:

- American Dune Grass – Beach Pea – Sand Cherry Dune Grassland Type; and,
- Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline Type

These communities are generally associated with the Lake Superior shoreline or cliff and talus physiographic features. Many of the rare species documented in and near the Study Area (Section 1.1.4.4) are plants associated with these communities.

**Table 2: Rare Vegetation Communities potentially present within the Study Area**

Type	Community Name	S - Rank	COSSARO	COSEWIC	Date	Route Segment*
Community	American Dune Grass - Beach Pea - Sand Cherry Dune Grassland Type	S2	N/A	N/A		C, D, E, E3
Community	Great Lakes Arctic-Alpine Basic Open Bedrock Shoreline Type	S3	N/A	N/A	1973	C, E, E3

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer)

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

N/A: not applicable

\* Table 9 identifies the alternatives for each route segment

### **2.3.4.3 Specialized Habitat for Wildlife**

#### **Bald Eagle and Osprey Nesting, Foraging and Perching Habitat**

Osprey and Bald Eagle preferentially nest along lake shorelines and in wetlands close to productive fishing waters. Osprey nesting trees are typically dead and isolated coniferous trees, with the nest located at or near the top of the tree. Bald Eagles nest in large, live trees located in mature or old-growth forest, preferably located on an island. Both species will use the same nesting tree, or even nest, year after year, in some cases for decades. Perching trees are large snags or live trees which provide an unobstructed flight path and good visibility of clear, shallow water for fishing. The majority of fishing occurs within 50m of shoreline, in clear water less than 6m deep.

An Osprey nesting site is located within the Study Area, within approximately 1km of the proposed Nipigon sub-station. Numerous Osprey and Bald Eagle nests have been identified in the general area surrounding the project route.

#### **Woodland Raptor Nesting Habitat**

Woodland raptors nest in large, mature trees in forests with full canopy closure and a limited understory. Many species are highly territorial, thus woodland raptor nests are seldom within 1km of one another. New nests are typically constructed each year, although they may be constructed in the same tree or within the same territory as the previous year. Each woodland raptor species has unique nesting habitat characteristics, with preferences for forest size, age, composition, proximity to water, and availability of tree cavities.

Raptor nesting sites are located within the general area surrounding the project route, however not within the Study Area.

#### **Moose Aquatic Feeding Area**

In early summer, moose consume large quantities of aquatic plants, particularly submergent species, in order to replenish their bodies with sufficient sodium for antler development and lactation. Moose may move up to 30km to reach preferred feeding sites, and will feed for several hours each day. Aquatic feeding areas must have an abundance of high-sodium aquatic plant species, and be located in an undisturbed area with adjacent forest habitat for shade and cover.

Moose aquatic feeding areas are distributed throughout the Study Area, overlapping with many of the unevaluated wetlands along the transmission corridor.

#### **Denning Site, Eastern Wolf**

Eastern Wolf dens are located in a variety of sites, from rock caves and hollow logs or stumps, to ground excavations in well-drained soils (MNR 2005). Although the same den site is not



typically used every year, den sites are re-used by wolf packs. Factors such as prey distribution, inter- and intraspecific harassment, and pack familiarity with an area are thought to explain fine-scale den selection in this species. Wolves are most vulnerable during the denning period, thus protection of traditional den sites is recommended (MNR 2005).

Eastern Wolf den sites have been identified within the general area of the project route, however the Study Area does not overlap with any identified den sites. As wolf den sites are difficult to locate, protection of appropriate habitat should be considered during planning.

#### **2.3.4.4 Habitat for Species of Conservation Concern**

A preliminary review of the MNR NHIC database was conducted in October 2012 using the smallest available one km square NHIC units (**Table 3**; data updated August 2012). Vegetation communities and wildlife species with provincial S ranks of S1, S2, S3 or SX are termed provincially rare.

Considering the size of the Study Area, relatively few provincially rare wildlife species at risk have been recorded. A total of 35 rare species of plants, and 10 rare species of terrestrial wildlife (including birds, mammals, terrestrial mollusks and insects), as well as one unidentified “sensitive species”, has been documented in the NHIC (2012) database.

It is of note that an ecosite inventory of Pukaskwa National Park has been completed using the Northwestern Ontario Forested and Wetland Ecosite Classification. Sampling primarily occurred in portions of the park which were accessible to float equipped aircraft. ESG International Inc. (now Stantec) was retained to undertake the inventory (1997). The most common wetland was found to be a Meadow Marsh and the most common hardwood community was trembling aspen. Pukaskwa Pits were also observed (in cobblestone beaches), these are small holes dug in the ground by ancestors of the Ojibwa.

**Table 3** identifies significant terrestrial species and communities which have been recorded within and surrounding the Study Area.



**RENEWABLE ENERGY SYSTEMS AMERICAS INC. EAST-WEST TRANSMISSION REINFORCEMENT  
PROJECT CORRIDOR ANALYSIS AND CRITICAL ENVIRONMENTAL ISSUES ASSESSMENT**

Description of Existing Natural and Socio Economic Environment Along Reference Route

December 2012

**Table 3: Rare terrestrial species potentially present within and surrounding the Study Area**

Type	Common Name	Scientific Name	S - Rank	COSSARO	COSEWIC	Date	Route Segment *
Bird	Bald Eagle	<i>Haliaeetus leucocephalus</i>	S2N,S4B	NAR	SC	4/17/1998	B
Lepidoptera	Red-disked Alpine	<i>Erebia discoidalis</i>	S3			5/22/1994	A, B
Lepidoptera	Taiga Alpine	<i>Erebia mancinus</i>	S3			6/12/1994	A, B, D
Lepidoptera	Large Marble	<i>Euchloe ausonides</i>	S3			6/12/1994	A, B, C, D
Lepidoptera	Macoun's Arctic	<i>Oeneis macounii</i>	S3			6/28/1986	A, B, C
Odonata	Sedge Darner	<i>Aeshna juncea</i>	S3?			8/8/1910	A, B
Odonata	Subarctic Darner	<i>Aeshna subarctica</i>	S2S3			8/6/1910	A, B
Plant	Pale Moonwort	<i>Botrychium pallidum</i>	S1			7/23/1993	A, B
Plant	Pumpelly's Brome	<i>Bromus pumpellianus</i>	SH			7/24/1957	A, C, D, E3
Plant	A Moss	<i>Bryum blindii</i>	S2			7/15/1931	A, C
Plant	Scabrous Black Sedge	<i>Carex atratiformis</i>	S2			6/21/1958	A,
Plant	Mountain Firmoss	<i>Huperzia appressa</i>	S3?			6/20/1954	A, B
Plant	Auricled Twayblade	<i>Listera auriculata</i>	S3			ND	A
Plant	A Lichen	<i>Pannaria conoplea</i>	S1S2			6/8/1968	A, B
Plant	Franklin's Scorpionweed	<i>Phacelia franklinii</i>	S2			8/23/1937	A, B
Plant	Braun's Holly Fern	<i>Polystichum braunii</i>	S3			6/23/1963	A
Plant	Soft Cinquefoil	<i>Potentilla pulcherrima</i>	S2			7/17/1963	A
Plant	A Moss	<i>Rhizomnium gracile</i>	S1			1884-06-27	A, B
Plant	Desert Ragwort	<i>Senecio eremophilus</i>	S2			7/20/1987	A
Plant	Alpine Woodsia	<i>Woodsia alpine</i>	S2			7/11/1951	A
Plant	Mountain Woodsia	<i>Woodsia scopulina</i>	S3			6/17/2001	A
Plant	Heart-leaved Alexanders	<i>Zizia aptera</i>	S1			7/1/1912	A, C, D
Plant	Yellow Mountain Avens	<i>Dryas drummondii</i>	S1			8/12/2001	B
Plant	Long-styled Rush	<i>Juncus longistylis</i>	S3			6/26/1995	B
Plant	Large-leaved Sandwort	<i>Moehringia macrophylla</i>	S2			6/20/2001	B, E, E3
Plant	A Lichen	<i>Anaptychia setifera</i>	S3			7/18/1962	C, D
Plant	Upswept Moonwort	<i>Botrychium ascendens</i>	S1			6/21/2008	C
Plant	Prairie Moonwort	<i>Botrychium campestre</i>	S1			6/17/1986	C
Plant	Western Moonwort	<i>Botrychium hesperium</i>	S1			1/1/1980	C, E, E3
Plant	False Northwestern Moonwort	<i>Botrychium pseudopinnatum</i>	S1			6/28/2009	C
Plant	Spatulate Moonwort	<i>Botrychium spatulatum</i>	S1			6/22/2000	C
Plant	A Moss	<i>Bryum pallens</i>	S1			8/12/1971	C
Plant	A Moss	<i>Grimmia teretinervis</i>	S2			8/13/1971	C
Plant	A Moss	<i>Grimmia torquata</i>	S1			8/13/1971	C
Plant	A Moss	<i>Myurella tenerrima</i>	S1			8/13/1971	C
Plant	A Lichen	<i>Peltigera collina</i>	S1			9/1/1965	C, D
Plant	A Liverwort	<i>Scapania gymnostomophila</i>	S3?			8/22/1959	C, D, E3
Plant	Northern Twayblade	<i>Listera borealis</i>	S1S2			7/2/1976	D, E3
Plant	Clinton's Clubrush	<i>Trichophorum clintonii</i>	S2S3			6/21/1970	D, E3

**RENEWABLE ENERGY SYSTEMS AMERICAS INC. EAST-WEST TRANSMISSION REINFORCEMENT PROJECT CORRIDOR ANALYSIS AND CRITICAL ENVIRONMENTAL ISSUES ASSESSMENT**

Description of Existing Natural and Socio Economic Environment Along Reference Route

December 2012

**Table 3: Rare terrestrial species potentially present within and surrounding the Study Area**

Type	Common Name	Scientific Name	S - Rank	COSSARO	COSEWIC	Date	Route Segment *
Plant	Woolly Beach-heath	<i>Hudsonia tomentosa</i>	S3			6/26/2009	E
Plant	Oval-leaved Bilberry	<i>Vaccinium ovalifolium</i>	S3			8/16/1938	E, E3
Mammal	Northern Myotis	<i>Myotis septentrionalis</i>	S3			8/9/1968	B, C, E, E3
Mollusk	Classification Uncertain	<i>Vertigo paradoxa</i>	S2S3			9/24/1938	B, C
Mollusk	Tapered Vertigo	<i>Vertigo elatior</i>	S2S3			1939-06	D, E3
	Unknown	<i>Sensitive Species</i>				9/8/2008	B

COSSARO: Committee on the Status of Species at Risk in Ontario

SH: Possibly Extirpated (Historical)

COSEWIC: Committee on the Status of Endangered Species in Canada

S#N- Non Breeding status rank

S1: Critically Imperiled—Critically imperiled in the province (often 5 or fewer occurrences)

S#B- Breeding status rank

S1S2: Extremely rare to very rare in Ontario

?: Not yet ranked; or, following a ranking, rank inexact or uncertain

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer)

SC: Special Concern

S2S3: Very rare to uncommon in Ontario

NAR: Not At Risk

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

N/A: not applicable

S4: Apparently Secure—Uncommon but not rare

\* Table 9 identifies the alternatives for each route segment

### 2.3.4.5 Animal Movement Corridor

Animal movement corridors are linear, vegetated landscape features which link major habitats (ex. breeding and feeding) and provide cover for wildlife moving through relatively unfamiliar territory (OMNR, 2000). The composition of a corridor differs based on the species' requirements, thus corridors may include riparian zones and shorelines, wetland buffers, valleys, woodlands, and anthropogenic features such as utility corridors and hedgerows.

Woodland Caribou move between winter habitat, consisting mainly of large tracts of lowland black spruce, and refuge habitat, consisting of mature and old conifer forest or peatland (OMNR, 2008b). In winter, Caribou will move across frozen lakes, due to the long sight distance provided by the open ice. Female Woodland Caribou will often move to islands and peninsulas of large lakes and rivers for calving (OMNR, 2008b). The Study Area crosses approximately 1.2 km of a Caribou Migration Area, located in and just east of the Lake Superior Highlands Conservation Reserve.

## 2.4 AQUATIC ENVIRONMENT

A preliminary review of the aquatic features that may potentially occur along or surrounding the proposed alignment was undertaken to identify potential fisheries and aquatic habitat constraints. The MNR's LIO database identifies some information for these aquatic features, such as flow and thermal regime, where the data exist. It is not expected to be comprehensive for such a large and remote area; additional features and constraints will be identified during the detailed field work for the EA.

### 2.4.1 Watercourses and Water Bodies

Based on a review of aerial photography, topographic mapping, and a site visit conducted October 1-3 2012, numerous aquatic features are known to occur along the Route between Wawa TS and Lakehead TS. It is estimated that approximately 300 watercourses (rivers/creeks), 15,500 m of waterbodies (lakes), and 150 wetland pockets occur along the Route, from Lakehead TS to Wawa TS, all of which have the potential to support fisheries habitat. The MNR's LIO database identifies numerous named watercourses and water bodies along the proposed corridor (**Table 4**). Numerous additional unnamed tributaries to these and other unnamed watercourses are also present along the Reference Route but are not identified specifically in this preliminary review.

**Table 4: Named Watercourses and Waterbodies Crossed by Reference Route (note: data is not generally presented in order crossed)**

Wild Goose Creek	Big Duck Creek	Reverse Creek
Mackenzie River	Ansell Creek	East Reverse Creek
Bittern Creek	Fog Creek	Fox River
Anderson Creek	Blackbird Creek	Pukaskwa River
Spring Creek	Santoy Creek	East Pukaskwa River
Wolf River	Prairie River	Stares Creek
Coldwater Creek	Dead Horse Creek	Dog River
Blind Creek	Culvert Creek	Jimmy Kash River
Jackfish River	Mink Creek	Makwa River
Dublin Creek	Craddock Creek	Wawa Creek
Little Cypress River	Hare Creek	Trout Creek
Little Gravel River	Angler Creek	Coleman Creek
Paddy Creek	Camp 14 Creek	Lurch River
Little Pays Plat Creek	Little Black River	Gus Creek
Willie Whites Creek	Brush Creek	Pokei Creek
McLean's Creek	Willow River	Obatanga Creek
Mussy Lake	Whitesand Lake	Willow Lake
Cannon Lake	Lyne Lake	Nancy Lake
Little Hilma Lake	Reid Lake	Gornupkagama Lake

**RENEWABLE ENERGY SYSTEMS AMERICAS INC. EAST-WEST TRANSMISSION REINFORCEMENT PROJECT CORRIDOR ANALYSIS AND CRITICAL ENVIRONMENTAL ISSUES ASSESSMENT**

Description of Existing Natural and Socio Economic Environment Along Reference Route

December 2012

**Table 4: Named Watercourses and Waterbodies Crossed by Reference Route (note: data is not generally presented in order crossed)**

Mutt Lake	Aguasabon River	Pinei Lake
Jeff Lake	Claire Lake	Jimmy Kash Lake
Twin Lakes	Antler Lake	Cinders Lake
Black Sturgeon River	Whitesand River	Firesand River
Oskabukuta River	Upper Jimmy Kash Lake	Michipicoten River
Bittern Lake	Lake B	Anjigami River
Hilma Creek	Moberley Lake	Eaglet Lake
Nipigon River	Steel River	Doré Lake
Ivan Lake	Del Lake	
Ozone Creek	Little Pic River	
Bremner River	Grassy Lake	
Hydro Lake	Little Santoy Lake	
Cavers Lake	Red Sucker Lake	
Nishin Lake	Pic River	
Pays Plat River	Black River	
Elbow Lake	White River	
McLean's Lake	One Island Lake	

## 2.4.2 Endangered and Threatened Aquatic Species

Fisheries and Oceans Canada's (DFO) aquatic species at risk mapping is unavailable for the Study Area. However, a preliminary review of the MNR's NHIC database was conducted in October 2012. Two fish species listed as Endangered or Threatened at the provincial or federal level were identified as potentially occurring within the general area surrounding the project route (**Table 5**). A description of each species, their general habitat requirements, and likelihood for habitat overlap with the Study Area is included below.

**Table 5: Endangered or threatened aquatic species recorded within and surrounding the study area**

Type	Common Name	Scientific Name	S - Rank	COSSARO	COSEWIC	Date	Route Segment*
Fish	Lake Sturgeon (Great Lakes - Upper St. Lawrence River population)	<i>Acipenser fulvescens pop. 3</i>	S2	THR	THR	7/18/1976	A
Fish	Shortjaw Cisco	<i>Coregonus zenithicus</i>	S2	THR	THR	Nov-46	A

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Species in Canada

S2: Imperiled—Imperiled in the province, very few populations (often 20 or fewer)

THR: Threatened

\* Table 9 identifies the alternatives for each route segment

## **Lake Sturgeon**

Lake Sturgeon is the largest freshwater fish in Canada and is the only species of sturgeon in Canada that is found solely in freshwater. Adult Lake Sturgeon range in size from approximately 90 cm to 142 cm in length and weigh up to approximately 35 kg (Scott and Crossman, 1990). They live on the beds of large rivers and lakes, and are usually found in water between 5 m and 10 m deep (SARA, 2012a). Lake Sturgeon typically spawn in the spring over large substrates in fast flowing water, between 0.6 m and 5 m deep.

Lake Sturgeon feed on a variety of benthic organisms depending on the season, location and type of substrate. Typical food includes benthic fish, benthic macroinvertebrates, and occasionally fish eggs (SARA, 2012a).

Historically, commercial fishing was a major cause of population declines in Lake Sturgeon, and, due to the organisms' longevity and sporadic spawning activities, populations have never fully recovered. Recently, the predominant anthropogenic activity that is having substantial effects on Lake Sturgeon is the construction of hydroelectric dams. Dam construction can result in the loss of habitat, as well as habitat fragmentation, and alteration of watercourse flow regimes (SARA, 2012a).

According to the NHIC database (2012), the last record of Lake Sturgeon from watercourses within and surrounding the study area is from 1976. Habitat within Study Area watercourses is consistent with Lake Sturgeon habitat requirements, therefore it is possible that this species is present within the Study Area.

## **Shortjaw Cisco**

The Shortjaw Cisco is a member of the Whitefish family that is found in lakes, at depths between 20 m and 180 m. Adult Shortjaw Cisco can be between 150 mm and 300 mm in length and weigh up to 300 g (SARA, 2012b). Historically, they have inhabited Lake Superior, Lake Michigan, Lake Huron and Lake Nipigon, but their current range is thought to be restricted to Lake Superior and Lake Nipigon (SARA, 2012b).

Shortjaw Cisco spawn in spring or fall, and deposit their eggs on the lake bottom (SARA, 2012b).

Shortjaw Cisco prey consists of small organisms found in the water column or on the lake bed. The ciscoes themselves are an important food source for larger fish such as Lake Trout and Burbot (SARA, 2012b).

Historically, Shortjaw Cisco declines are likely related to over-fishing in the early part of the 20<sup>th</sup> century. Recently, increased competition and predation from introduced exotic species (particularly Rainbow Smelt and Alewife), has had further negative impacts on Shortjaw Cisco populations (SARA, 2012b).

Although NHIC (2012) reports historic occurrences of Shortjaw Cisco from watercourses within and surrounding the Study Area, the species has not been captured in 66 years, and it is unlikely that it is present within the Study Area.

### 2.4.3 Other Rare Aquatic Species

Species with provincial S ranks of S1, S2, S3 or SX are termed provincially rare. Considering the size of the Study Area, relatively few provincially rare species have been recorded. **Table 6** identifies rare aquatic species that have been recorded within and surrounding the Study Area. One rare species of fish has been documented in the NHIC database (2012).

**Table 6: Rare aquatic species recorded within and surrounding the study area**

Type	Common Name	Scientific Name	S - Rank	COSSARO	COSEWIC	Date	Route Segment*
Fish	Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	S3	SC	SC	1997	A, B, C

COSSARO: Committee on the Status of Species at Risk in Ontario

COSEWIC: Committee on the Status of Endangered Species in Canada

S3: Vulnerable—Vulnerable in the province, relatively few populations (often 80 or fewer)

SC: Special Concern

\* Table 9 identifies the alternatives for each route segment

## 2.5 NATURAL HAZARDS

When developing a transmission line, there are natural hazards which must be considered during the planning stages in order to minimize the potential of the hazard. One such hazard is the steep slopes associated with valleylands of watercourses, specifically those which drain directly into Lake Superior. In addition, steep slopes occur within a few kms of Lake Superior's shores where ground moraine tapers off and bedrock or lacustrine deposits prevail. The following section characterizes and describes the steep slopes encountered along the Reference Route and provides a contrast to the five sections of the transmission line as described in Section 1.2.

### Thunder Bay to Nipigon River

The section of transmission line from Thunder Bay to the Nipigon River is approximately 85 km in length and can be characterized as being relatively flat with occasional steep slopes. Along this portion of the route, there are occasions where slopes range between 16% and 35% but slopes between 0% and 5% are most common. As mentioned in the introduction to this section, steep slopes occur as a result of valleylands and also, the boundary between ground moraine and lacustrine deposits. The most significant slope occurs in the Township of Dorion where the Reference Route traverses the boundary of ground moraine and lacustrine deposits.

**Nipigon River to Terrace Bay Aquasabon River Crossing**

The section of transmission line from the Nipigon River Crossing to Terrace Bay Aquasabon River Crossing is approximately 86 km in length and can be characterized as a stretch with many significant slopes associated with valleylands and few instances of relatively flat topography. Slopes between 16% and 35% are common, although slopes between 0% and 5% are most common. Slopes of greater than 35% will likely be encountered over this portion of the route.

**Terrace Bay to Marathon**

The section of Reference Route from Terrace Bay Aquasabon River Crossing to Marathon is approximately 57 km in length and slopes can be characterized as moderate to significant. More than half of this route experiences slopes between 0% and 5%, although, slopes between 6% and 15% are common. This portion of the route also experiences occasions where slopes are between 16% and 35%.

**Marathon to White River**

The section of Reference Route from Marathon to the White River Crossing is approximately 30 km in length and can be characterized as relatively flat. Slopes between 0% and 5% are most common, although, slopes between 6% and 15% occur. Slopes between 16% and 35% occur infrequently over this section of the Preliminary Route.

**White River to Wawa**

The section of Reference Route from the White River Crossing to Wawa is approximately 140 km in length and can be characterized as a stretch with many slopes. Most common to this stretch are slopes between 0% and 15% while occurrences of slopes between 16% and 35% are not uncommon.



## Topography

Topography in the Study Area can be described as relatively flat with many occurrences of topographic relief, or slopes, associated with watercourses and surficial deposits. Topography, generally, is flat with exception to two features:

- Valleylands associated with watercourses; and,
- The division, or boundary, between ground moraine (to the north) and exposed bedrock and or lacustrine deposits (to the south).

## 2.6 ARCHAEOLOGY AND CULTURAL HERITAGE

The Study Area lies within an area of archaeological potential given its proximity to Lake Superior. The Preferred route alignment will be evaluated to properly define specific areas of archaeological potential by means of a Stage 1 archaeological assessment, but generally the Route has been potentially occupied from 7000 BC until the present day. **Table 7** presents a summary of the culture history for the northern Lake Superior shore line which is discussed below.

**Table 7: Cultural Chronology of the Northern Shore of Lake Superior**

Period	Groups	Time Period	Comments
Paleo-Indian	Plano Group	7000 - 5000 BC	unfluted projectile points; big game hunters; small camps along strandlines
Archaic	Shield Archaic	5000 - 500 BC	seasonal camps; cold hammering of native copper
Initial Woodland	Laurel Culture	500 BC - 1000 AD	introduction of pottery; evidence for exchange networks
Terminal Woodland	Blackduck Culture	1000 - 1650 AD	fabric-impressed globular ceramic vessels
Contact Aboriginal	Various Algonkian Groups	1650 - 1850 AD	early European contact and fur trade
Late Historic	Euro-Canadian	1850 AD - present	European settlement and treaties

The following summary of the possible archaeological resources and occupation of the northern Lake Superior shore line is based on Bray and Epp 1984, Champagne 2007, Dawson 1983, Government of Ontario 1997, Hinshelwood 2004, Julig 1994, Mason 2002, Morris 1943, Ross and Arthurs 1979 and Wright 1995-2004.

The north shore of Lake Superior was either beneath the Wisconsin Glacier or submerged under glacial Lake Minong until approximately 7000 BC when Paleo-Indian groups moved into the area from the west or south. The Plano phase of the Paleo-Indian culture (7000 - 5000 BP) includes a variety of temporal and regional variations in tool sets composed of unfluted points. Plano sites tend to be found on the beaches of the Upper Great Lakes and former beaches on the shores of glacial lakes (strandlines). For example, the Brohm site is located south of the



Route east of Thunder Bay on a strandline. Evidence from Plano sites indicates a reliance on big-game hunting (i.e., caribou, extinct Pleistocene mammals) as well as the use of boats. Plano groups were likely small, occupying the same sites seasonally over a long period of time.

The Shield Archaic period (5000 - 500 BC) in Northern Ontario is evidenced by campsites throughout the Canadian Shield. Early Shield Archaic hunters followed the same subsistence patterns as Plano hunters. As the Continental Glacier receded and the glacial lakes dried, Archaic hunters moved farther into the interior of Northern Ontario following the caribou and, for a brief period, moose populations. Tool technologies were adapted to include axes, adzes and chisels in response to the developing northern forests. Stone tools are generally ground or polished rather than the chipped and flaked tools that occurred in the Plano period and early Archaic. The addition of copper as a raw material led to the production of a more specialized Southern Shield Archaic tool set that included a variety of tools for woodworking and more commonly fishing. Fishing technology grew to include copper harpoons, fish hooks and large gaff hooks. In addition to tool technology development, ceremonial burial practices developed in the Southern Shield Archaic period to include the practice of depositing grave goods. There was also an increase in trade with groups throughout the Great Lakes region with trade networks extending into Southern Ontario and the American Midwest.

The Initial Woodland period in Northern Ontario (500 BC - 1000 AD) is characterized by the introduction of ceramics as part of the Laurel culture. There is no evidence that ceramic technology developed independently in Northern Ontario, instead, the skill level indicates the introduction of a new group of people into Northern Ontario. Settlement patterns of the Initial Woodland period indicate seasonal settlement generally along major watercourses. Subsistence continued to depend more heavily on hunting in the interior of Northern Ontario and on fishing in the Upper Great Lakes Region. New tool technologies include net sinkers, which have been found at sites along the shore of Lake Superior and red ochre appears to have been used as pigment. The practice of using burial mounds was also adopted during the Initial Woodland period.

The Terminal Woodland period (1000 - 1650 AD) is marked by changes in the shape of ceramic artifacts. Whereas Initial Woodland ceramics were generally conical in shape with stamped decoration, Terminal Woodland ceramics were globular and fabric or cord-impressed. As with the introduction of Laurel pottery, there is no evidence that Terminal Woodland Blackduck ceramics developed in Northern Ontario. Throughout the Terminal Woodland, sites become larger and more extensive although they remain seasonal in nature. Villages were likely composed of extended families or hunting bands. Rock paintings also appear during the Terminal Woodland.

The Algonkian culture moved into Northern Ontario during the Terminal Woodland and is identified through the development of new pottery types. Small scrapers and projectile points used for hunting and fur processing become an integral component of the stone tool set as well as bone awls and copper knives, fish hooks and scrapers. Algonkian groups became more mobile as food sources became sparser and seasonally unreliable as the climate changed

during the Little Ice Age (*circa* 1550 AD). Trade networks with Iroquoian villages to the south were established allowing Algonkian hunters to exchange furs for agricultural goods.

The fur trade further developed during the late 17<sup>th</sup> and 18<sup>th</sup> centuries as European groups (specifically the French and the English) founded and abandoned a number of trading posts. Documented First Nations and Europeans sites have been found close to the Study Area. Both Thunder Bay and Wawa were sites of trading posts that appeared and disappeared or expanded and contracted during this time. The area crossed by the Route was subject to the Robinson-Superior Treaty between the local Ojibway groups and the Crown which, signed in 1850. In the last half of the 19<sup>th</sup> century Euro-Canadian settlements began to stabilize and grow as the fur trade was overshadowed by the introduction of railways, logging and mining.

Patterns of land use by historic Euro-Canadian groups to some extent mirror those of the Aboriginal people. This is not surprising, since the same general needs existed, such as proximity to potable water, access to natural resources, and a level, well drained habitation site. On the other hand, the Euro-Canadian conversion of both fertile and more marginal land for agricultural purposes, the development of non-water travel routes, the exploitation of different resources such as subsurface mineral deposits, and other differences in land use patterns make potential modeling of Euro-Canadian and other non-Aboriginal historic sites somewhat less reliable. Fortunately, these sites are more visible than their prehistoric counterparts, which helps offset this lower level of predictive reliability.

Stepping outside of the chronological narrative presented here, one Aboriginal archaeological feature that cannot be dated with certainty is Pukaskwa pits. These are typically located on cobble beaches where the cobbles are rearranged to construct a low-walled enclosure with a flooring depression. Their function is still debated, as is their date of use. These pits have been recorded along the shores of Pukaskwa National Park (as well as other locations). The corridor's study area is proposed to run through the northeast corner of Pukaskwa National Park and while it will not necessarily impact any of these pits, the Pukaskwa pits do provide evidence of past Aboriginal activity in the area which may still be visible in the archaeological record.

Given the length of time and variety of occupation along the northern Lake Superior shore line, Aboriginal and Euro-Canadian archaeological resources could be present. A detailed Stage 1 archaeological assessment of the Preferred Route Alignment will assist in focusing efforts on those areas most likely to retain archaeological potential.

## **2.7 SOCIO-ECONOMIC FEATURES**

A network of infrastructure, such as roads, hydrocarbon facilities, hydroelectric facilities, railways and utilities is well established in the Study Area. Infrastructure has been developed to connect sparsely populated and remote rural communities of Northern Ontario with each other and the rest of the Province.

## Roads and Railways

The Study Area is traversed by numerous roads. Provincial highways located in the Study Area are Highway 101, Highway 11 and Highway 17. The Study Area is further bisected by a series of arterial/county roads and many local/township roads.

The MTO has initiated planning for the expansion of Highway 17 between McKenzie Station and Birch Beach roads in the municipality of Shuniah. It is envisioned that this stretch will become a four lane highway. The location of the proposed highway expansion is a minimum of 1 KM from the boundary of the Study Area.

The Study Area contains evidence of the historical importance of railways, as well as the decline in rail use due to alternative modes of transportation and the resultant abandonment of railway lines. There is one active and one abandoned railway in the Study Area. Canadian Pacific owns the only active railway in the Study Area. This railway runs west to east along the north shore of Lake Superior from Manitoba through Ontario and beyond. One small section of rail was found to be inactive within the entire Study Area. It is located south of the Township of Schreiber and appears to have been connected to the only active railway in the Study Area. Additional railways may have been abandoned, but have since been converted into multi-use recreational trails.

The number of highways, local roads and railways crossed by each segment of the Reference Route is shown in **Table 8**.

<b>Table 8: Number of Highways, Local Roads and Railway crossed by each segment of the Reference Route</b>					
	<b>Thunder Bay to Nipigon</b>	<b>Nipigon to Terrace Bay</b>	<b>Terrace Bay to Marathon</b>	<b>Marathon to White River</b>	<b>White River to Wawa</b>
<b>Highways</b>	2	3	7	5	5
<b>Local Roads</b>	44	4	3	0	5
<b>Railways</b>	2	5	6	1	1

## **Hydrocarbon Facilities**

Several oil and gas transmission pipelines are located in the Study Area, as evidenced by information contained from the MNR, roadside markers and Stantec's familiarity with the area.

## **Hydroelectric Facilities**

High and low voltage electric transmission lines are present throughout the Study Area. High voltage transmission lines typically consist of steel towers conducting 115 to 500 kV through their lines. Low voltage distribution lines consist of wooden or concrete poles that support lines conducting 13.5 to 44 kV, and are usually found within road right-of-ways. Transformer and distribution stations are also associated with these lines.

The Greenwich Wind Farm is located to the north of the Study Area, in Dorion. Infrastructure relating to the wind farm (the Greenwich GenTie) is located immediately north of the Reference Route. The Gen Tie presents a constraint should the preferred route be located to the north of the Reference Route.

## **Utilities**

It is likely that a variety of buried and overhead utilities (pipelines, telephone, fiber optic, watermains, etc.) are located adjacent to roadways in the Study Area. Identification of such utilities will be undertaken by the proponent prior to construction.

## **Mining Claims**

Northern Ontario is known for its mining potential, specifically precious metals and minerals. Within the Study Area there are many active mining claims and dispositions. A mining claim is an area that has been staked by an individual or mineral exploration company who holds a valid prospectors license. A mining claim allows the individual or company access to the minerals within the staked boundaries of the site (surface or subsurface). The claim provides the individual or company with rights to minerals as provided under the Mining Act of Ontario.

A disposition is an area of land where the ownership status and permitted activities are permitted by legal means (patent, lease or license of occupation). Dispositions allow for surface rights, mining rights or both. Each disposition and terms within are unique to every site and should be reviewed individually should the Preliminary Route overlap with a feature.

The Route travels within 500 m of many active claims and dispositions. Due to the large number of active claims and dispositions in the Study Area, the Route and one of these features may overlap. To minimize potential impacts to any operations, consultation with the mine operator and or owner will occur during the Project.

### **First Nation Reserves**

The existing Reference Route passes directly through two First Nation Reserves, Pays Plat and Michipicoten. However, alternative alignments around Reserves will be considered by the Applicant.

## **3.0 ROUTE SELECTION**

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### **3.1 OVERALL ROUTE SELECTION**

Selection of a Preferred Route for a linear facility is a complex process involving a number of important factors. These include:

- Life cycle costs to construct, operate, and maintain the facility;
- Land acquisition;
- Stakeholder preference;
- Environmental and socio-economic considerations;
- Engineering and constructability.

The applicant evaluated most of these important factors before identifying the Preliminary Preferred Route. However, the consideration of stakeholder preference and detailed on-site environmental surveys and secondary effects, such as opening a new Right-of-Way (ROW) has not been addressed at this stage.

### **3.2 ENVIRONMENTAL METHODOLOGY**

The following section outlines the process by which the preliminary preferred route alignment for the Project was determined. The preliminary preferred route represents the general location in which a preferred route for the transmission line will be defined (the preferred route will be defined during a detailed routing study). The process consists of:

- *Step 1:* identification of routing objectives and environmental and socio-economic constraints and opportunities;
- *Step 2:* generation of alternative routes;
- *Step 3:* detailed desk top evaluation of alternate routes and identification of a Preliminary Preferred Route;

Finalization of the preferred route will be completed during the EA process. Route refinement areas may be required in order to accommodate revisions related to terrestrial, archaeological, and aquatic fieldwork information as well as agency, aboriginal, public and landowner comments. A route refinement is a portion of the preferred route where a modification or realignment may have the potential to offer significant environmental or engineering advantages over the preliminary route, or as a result of landowner consultation.

### **3.3 ROUTING OBJECTIVES, AND ENVIRONMENTAL AND SOCIO-ECONOMIC CONSTRAINTS AND OPPORTUNITIES**

#### **3.3.1 Routing Objectives**

Routing objectives are the general principles used to create reasonable and/or feasible alternate routes. Alternative routes selected within the Study Area were generated based on the following three objectives:

1. Routes should follow a reasonably direct path between end-points, minimizing length as well as potential for environmental and socio-economic impacts;
2. Existing linear features should be utilized or paralleled to the extent possible in order to minimize impacts to previously undisturbed land; and,
3. Routes should avoid sensitive environmental and socio-economic features to the extent possible; where sensitive features cannot be avoided, alternative routes should be located to minimize impacts.

#### **3.3.2 Environmental and Socio-Economic Constraints and Opportunities**

Environmental and socio-economic constraints represent features with potential to be adversely affected by the construction or operation of a transmission line, or that possess unique attributes. Opportunities are represented by features that provide a suitable location for the alignment of a transmission line (e.g. a linear corridor). Features considered as either constraints or opportunities were identified through an environmental and socio-economic inventory in the early stages of the Project. Identification of sensitive environmental and socio-economic features against which the alternative routes would be assessed was based on the following criteria:

- Site-specific mitigation measures would be required to minimize potential impacts;
- The feature has been selected or designated for protection; and/or,
- The feature has been recognized through local, regional, provincial, or federal policy, plan, or statute, or is otherwise valued as an environmental or socio-economic resource.

### **3.4 GENERATION OF ALTERNATIVE ROUTES**

Generation of the alternative route options was based on the routing objectives and environmental and socio-economic constraints and opportunities outlined in Step 1. Route segments were determined based on similar environmental features and a reasonable or logical interconnection of the endpoints, while paralleling an existing linear disturbance. Route segments that could eventually form part of an alternate route were considered where linear

features both satisfied the first routing objective, and avoided and/or minimized environmental impacts to sensitive features.

### **3.4.1 Identification of Study Area**

A 2km study area was identified which is centered on the existing Reference Route. All environmental/social features within this study area have been mapped (**Appendix B**).

### **3.4.2 Identification of Transmission Line Alternative Route Segments**

As discussed in Section 1.2, the study area has been divided into the following segments/sections for further analysis:

- A) Thunder Bay to Nipigon River
- B) Nipigon River to Terrace Bay Aquasabon River Crossing
- C) Terrace Bay to Marathon
- D) Marathon to White River
- E) White River to Wawa

### **3.4.3 Identification of Alternatives for each Segment**

Alternative routes were identified for each segment (**Table 9**). Two alternatives have been identified for most segments (north and south of the Reference Route). Additional alternatives have been identified for Segment E. As this segment passes through the Pukaskwa National Parks and the Michicopoten First Nation Reserve, two additional alternatives have been evaluated. One is a greenfield route around the park (Alternative E3 - Pukaskwa National Park By-Pass) and the other alternative would generally run parallel to Highway 17 (Alternative E4 - Highway 17 Parallel).

It has been assumed that the northern and southern reference route alternatives are offset 100m from the existing transmission line. The offset has been established on the assumption that the ROWs will be located immediately adjacent to each other. Typical ROW width is approximately 45 meters (150 ft).

The greenfield route was identified during the site reconnaissance work. The route has generally been identified to intersect with the minimal amount of natural features and First Nation Reserves, whilst also been located in relatively close proximity to existing access routes.

The Highway 17 corridor has generally been considered, a location along the corridor has not been identified at this time.



**Table 9: Alternative Routes for Each Segment**

Segment		Alternatives
A	Thunder Bay to Nipigon River	1. North of Reference Route 2. South of Reference Route
B	Nipigon River to Terrace Bay Aquasabon River Crossing	1. North of Reference Route 2. South of Reference Route
C	Terrace Bay to Marathon	1. North of Reference Route 2. South of Reference Route
D	Marathon to White River	1. North of Reference Route 2. South of Reference Route
E	White River to Wawa	1. North of Reference Route 2. South of Reference Route 3. Pukaskwa National Park By-Pass 4. Highway 17 Parallel

### 3.5 ALTERNATE ROUTE EVALUATION AND IDENTIFICATION OF A PRELIMINARY PREFERRED ROUTE

The route segments were comparatively evaluated, with the primary goal of determining the potential environmental and socio-economic impacts of each route segment. It is important to note that no detailed routing study or consultation with stakeholders has been undertaken at this stage.

These alternate route options were subject to a comparative analysis that considered the relative advantages and disadvantages of each route using both a quantitative and qualitative approach. Due to the relative homogeneity of the study area, the qualitative information is presented in Section 2.

The “metric” criteria that were used to evaluate the alternate routes are identified below:

#### Environmental

- Watercourses (river/creek) crossed (#)
- Water bodies (lake) crossed (m)
- Wetlands – Provincially Significant crossed (m)
- Wetlands – Other crossed (m)
- Forest crossed (m)
- ANSI crossed (m)
- Candidate ANSI crossed (m)
- National Park crossed (m)
- Provincial Park crossed (m)
- Conservation Area crossed (m)

- Moose Wintering Area crossed (m)
- Caribou Wintering Area crossed (m)
- Bear Management Area crossed (m)
- Steep slopes crossed (0-5%, 6-15%, 16-35%, >35% ).

### **Social/Cultural**

- First Nation Reserves crossed (#, m)
- Airports/Airstrips within 500 m of centerline (#)
- Oil/Gas Utilities crossed (pipelines crossed #, wells within 500m)
- Highways crossed (#)
- Local Roads crossed (#)
- Railway crossed (#)
- Municipalities/Townships crossed (#)
- Mining Claims within 500 m of centerline (#)
- Landfills within 500 m of centerline (#)

### **Technical**

- Total ROW length
- # of existing transmission lines crossed
- Length of existing transmission lines paralleled

#### **3.5.1 Quantitative Evaluation**

The quantitative evaluation of the route alternatives is a desktop exercise that involves quantifying through measurement or count for environmental and socio-economic features (classified according to the evaluation criteria) that are traversed by each alternative route. The detailed “metrics” evaluation is presented in **Appendix C** and is summarized in **Tables 10** and **11** below. The cells in the detailed tables (**Appendix C**) have been colour coded to identify which route has the least potential impact upon a particular criterion (green) – most preferred, the greatest potential impact upon a particular criterion (red) – least preferred. Cells that fall between these two categories (yellow) – equally preferred.

**Table 10: Summary of Metrics for each Route Segments**

	<b>Thunder Bay to Nipigon</b>	<b>Nipigon to Terrace Bay</b>	<b>Terrace Bay to Marathon</b>	<b>Marathon to White River</b>	<b>White River to Wawa</b>	<b>Summary of Preference</b>
<b>Environmental</b>	South	Equal	North	North	Equal	<b><i>North/Equal</i></b>
<b>Social/Cultural</b>	South	North	North	Equal	Equal	<b><i>North/Equal</i></b>
<b>Technical</b>	South	South	South	South	South	<b><i>South</i></b>
<b>Summary of Overall Preference</b>	<b><i>South</i></b>	<b><i>Equal</i></b>	<b><i>North</i></b>	<b><i>Equal</i></b>	<b><i>Equal</i></b>	-

The table above generally shows that at the level studied a northern route alignment is generally preferred, however in many cases there is an equal preference. The only exception is in the segment from Thunder Bay to Nipigon where a southern alignment is preferred.

The following is a summary of the total lengths of the alternatives (these do not include any potential route refinements of the Reference Route around First Nation Reserves or river crossings):

- North Reference: 401 km
- South Reference: 401 km
- Highway: 438 km
- Park Bypass: 408 km

A comparative analysis of the Reference Route, the By-Pass Alternative and Highway 17 Alternative between White River and Wawa (Segment E) was also undertaken, as summarized in **Table 11** below.

**Table 11: Comparison of Metrics for Reference Route and By-Pass Route (Segment E)**

	<b>White River to Wawa (Reference Route – note: North and South Alternatives show equal preference)</b>	<b>By-Pass Route (E3)</b>	<b>Highway (E4)</b>
<b>Environmental</b>	Partially Preferred	Most Preferred	Least Preferred
<b>Social/Cultural</b>	Partially Preferred	Most Preferred	Least Preferred
<b>Technical</b>	Least Preferred	Most Preferred	Partially Preferred
<b>Summary of Overall Preference for Segment E</b>	<b>Partially Preferred</b>	<b><i>Most Preferred</i></b>	<b><i>Least Preferred</i></b>

The table above shows that the By-Past Route is preferred in Segment E.

### **3.5.2 Preliminary Preferred Route**

The Applicant has identified two potential routes for the Project: the Reference Route, a route that adjoins the existing East-West Tie Line (to the north of the existing Line); and a Preliminary

Preferred Route, a route that departs from the existing line for approximately 123 km. Portions of the Reference Route traverse First Nations reserve lands and a portion of Pukaskwa National Park. However, the proposed Preliminary Preferred Route by-passes these areas, thereby reducing the impact on aboriginal communities and environmentally sensitive park lands. The Preliminary Preferred Route would also takes advantage of more favourable access, anticipated permitting, and construction/foundation conditions

Potential constraint areas have been identified in **Appendix B** and **Table 12**. Particular attention may be required to these general constraint areas during the detailed routing study.

**Table 12: Summary of the Preliminary Preferred Route**

Segment/Section	Preference	Length (KM)	Comments
Lakehead to Nipigon	North	84,898	<ul style="list-style-type: none"> <li>- Greenwich GenTie</li> <li>- Two houses located in relatively close proximity to exiting Reference Route.</li> </ul>
Nipigon to Terrace Bay	North	86,426	<ul style="list-style-type: none"> <li>- Northern alignment may enable re-routing around Pays Plat First Nation Reserve (if required) – it is anticipated that this would be approximately a 1km length deviation</li> </ul>
Terrace Bay to Marathon	North	57,217	<ul style="list-style-type: none"> <li>- Potential re-route for Steel River crossing</li> </ul>
Marathon to White River	North	30,049	<ul style="list-style-type: none"> <li>- Potential re-route for Pic River crossing</li> </ul>
White River to Wawa	North Bypass	130,446 (By-Pass)	<ul style="list-style-type: none"> <li>- A northern alignment would enable the by-pass route around Pukaskwa National Park and Michicopoten First Nations Reserve to be considered as a preferred alternative. Should The Applicant be designated, this alternative will be discussed in detail with the OEB</li> </ul>

### **3.6 PRELIMINARY PREFERRED ROUTE FINALIZATION**

Finalization of the Preliminary Preferred Route will be based on a review by The Applicant and Stantec at an increased level of detail following Designation by the OEB and consultation with stakeholders.

Double circuit steel H-frame, steel lattice towers and steel monopoles will be considered for this project. Monopole construction may be more cost effective in accessible areas, while other structures may be more cost effective in areas with limited accessibility. Longer spans may require lattice towers. Foundation design is also a critical cost consideration. The decision on the final Preferred Route will be subject to a thorough analysis of the entire Preferred Route alignment for constructability constraints. Route refinement areas may be identified in consultation with project stakeholders at the EA stage.

## **4.0 Closing**

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This Corridor Analysis and Critical Environmental Issues Assessment for the East-West Tie Project has been prepared by Stantec Consulting Ltd. for the sole benefit of The Applicant, and may not be used by any third party without the express written consent of The Applicant. The data presented in this report are in accordance with Stantec's understanding of the Project as it was presented at the time of reporting.

### **STANTEC CONSULTING LTD.**



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Environmental Services

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# **Appendix A**

## **Photographs**



Lakehead TS



Mackenzie Road (looking east)



Near Loon Lake (looking west)



Greenwich Gentie





Valley Road (looking east)



Fish Hatchery Road (looking east)



Nipigon River Crossing (looking east)



Kama Cliffs (looking east)





Near Santoy Lake (looking east)



Pic River Crossing



Highway 627



East of Pukaskwa National Park



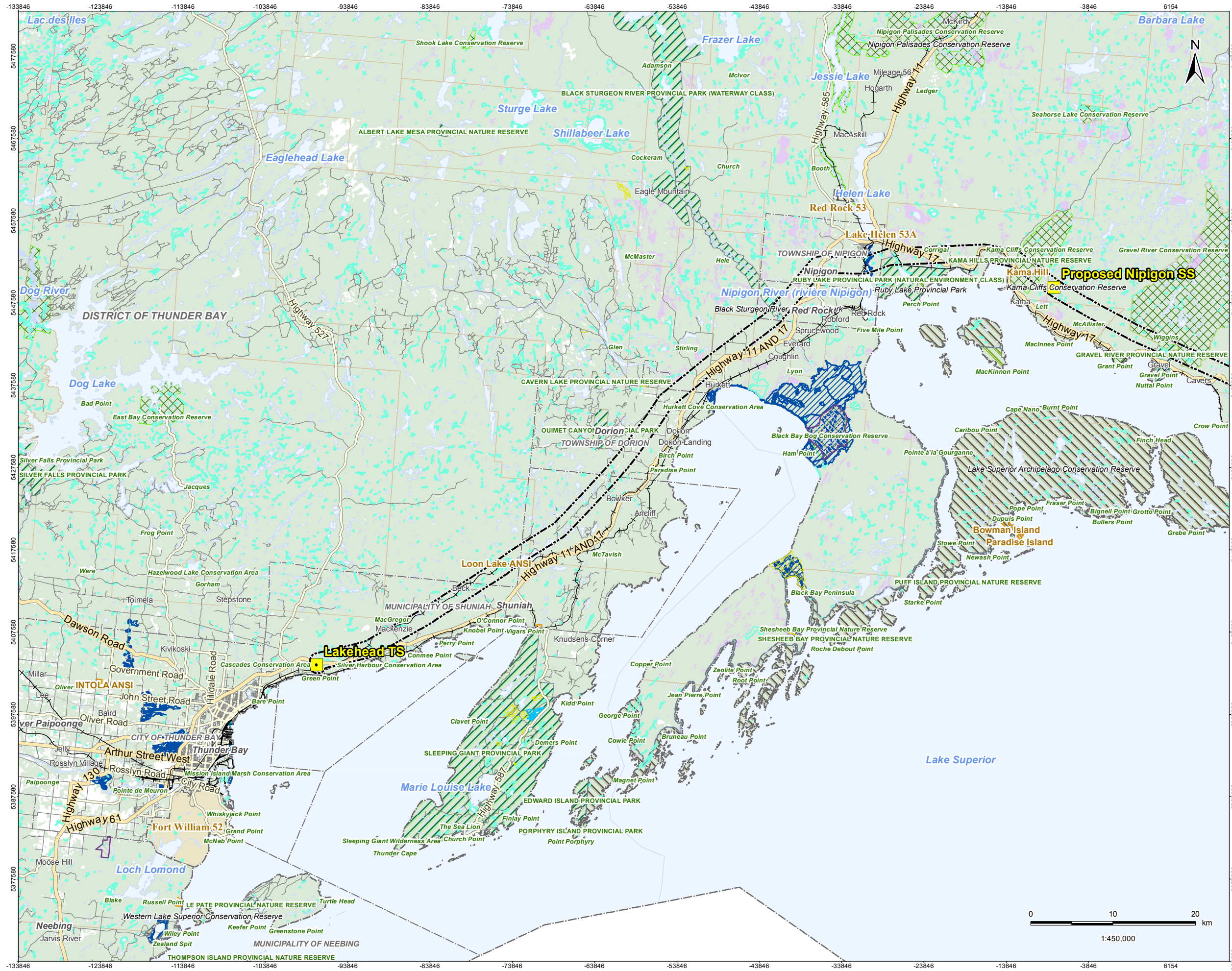
# **Appendix B**

## **Figures**

## **Appendix B1**

### **Existing Environment**





## Legend

### Study Area

- Proposed Study Area Corridor
- Pukaskwa National Park Alternative
- Highway 17 Parallel Route Alternative
- Station
- Railway, Active
- Railway, Abandoned
- Highway
- Major Road
- Local Road
- Watercourse
- Indian Reserve
- Municipal Boundary
- Waterbody

- ANSI, Earth Science
- ANSI, Life Science
- Candidate ANSI, Earth Science
- Candidate ANSI, Life Science
- Bear Management Area
- Caribou Wintering Area
- Moose Wintering Area
- Conservation Area
- Conservation Reserve
- Forest Reserve
- Provincial Park
- National Park
- Significant Ecological Area
- Wetland, Provincially Significant
- Wetland, Locally Significant
- Wetland, Unevaluated
- Wooded Area



## Notes

- Coordinate System: NAD 1983 UTM Zone 17N
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RES Canada Transmission LP  
East-West Tie Transmission Line

Figure No.

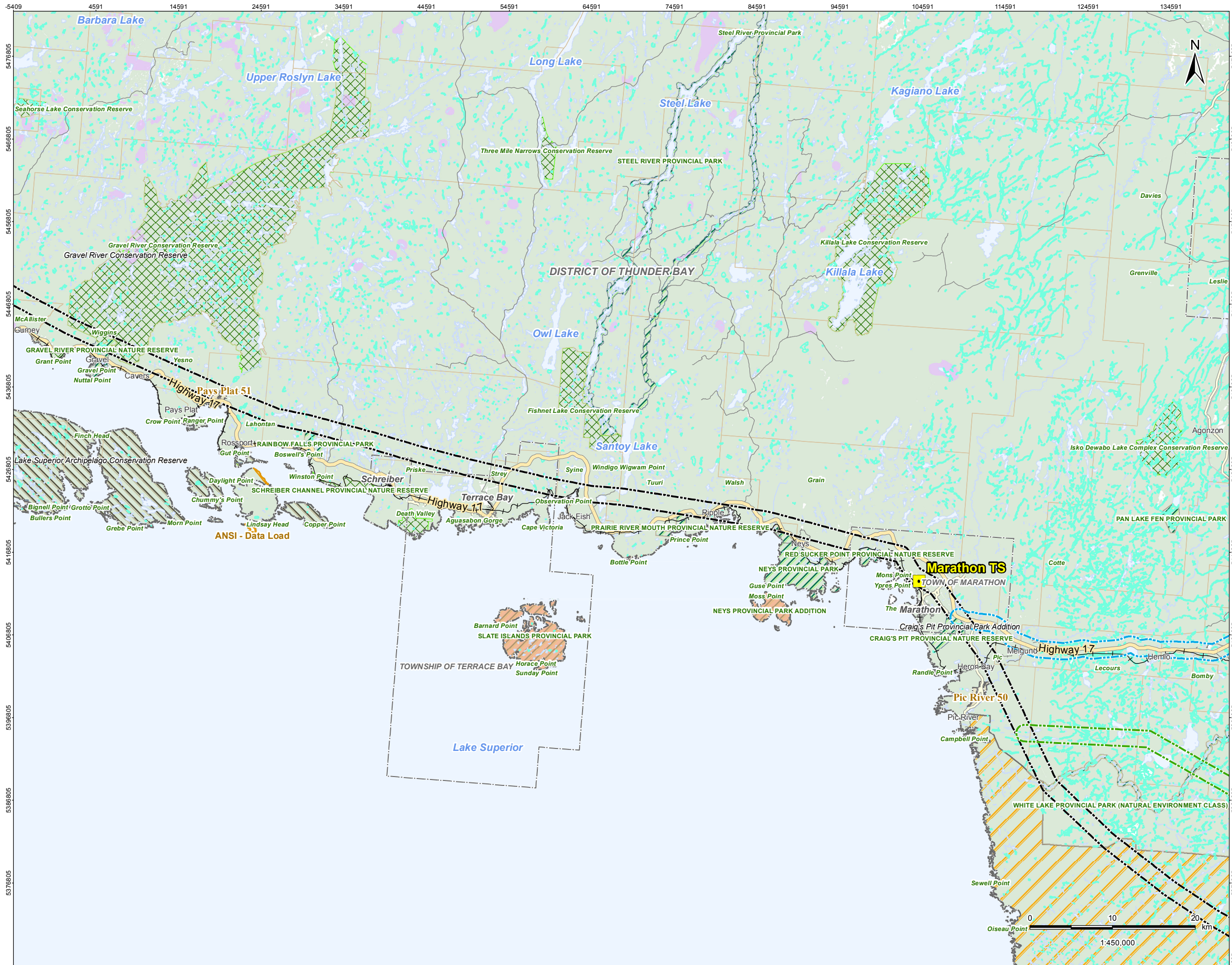
001

Title

Appendix A1  
Natural Environment

0 10 20 km  
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## Legend

### Study Area

- Proposed Study Area Corridor
- Pukaskwa National Park Alternative
- Highway 17 Parallel Route Alternative
- Station
- Railway, Active
- Railway, Abandoned
- Highway
- Major Road
- Local Road
- Watercourse
- Indian Reserve
- Municipal Boundary
- Waterbody
- ANSI, Earth Science
- ANSI, Life Science
- Candidate ANSI, Earth Science
- Candidate ANSI, Life Science
- Bear Management Area
- Caribou Wintering Area
- Moose Wintering Area
- Conservation Area
- Conservation Reserve
- Forest Reserve
- Provincial Park
- National Park
- Significant Ecological Area
- Wetland, Provincially Significant
- Wetland, Locally Significant
- Wetland, Unevaluated
- Wooded Area



## Notes

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East-West Tie Transmission Line

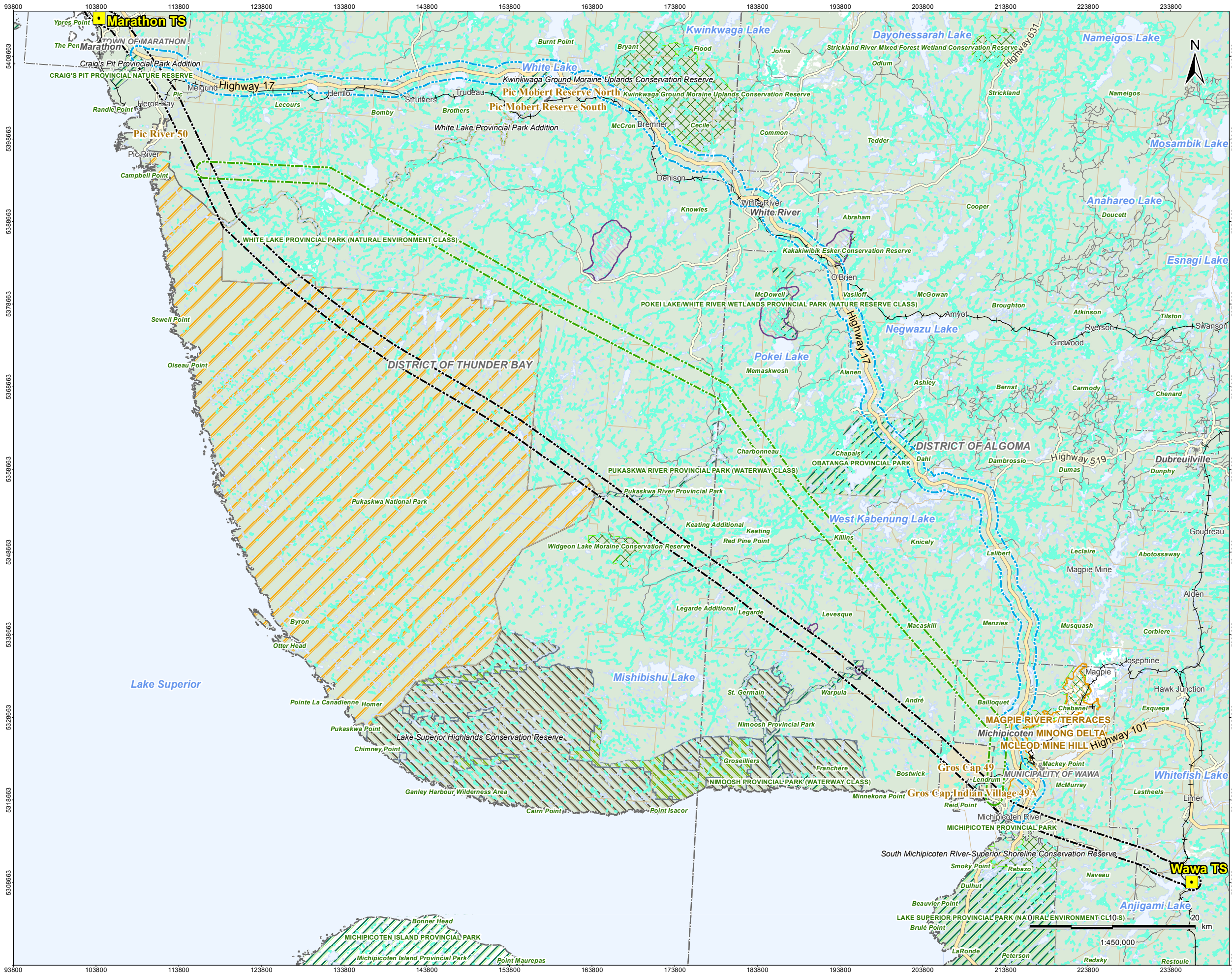
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002

Title

Appendix A1  
Natural Environment





## Legend

Study Area	
	Proposed Study Area Corridor
	Pukaskwa National Park Alternative
	Highway 17 Parallel Route Alternative
	Station
	Railway, Active
	Railway, Abandoned
	Highway
	Major Road
	Local Road
	Watercourse
	Indian Reserve
	Municipal Boundary
	Waterbody
	ANSI, Earth Science
	ANSI, Life Science
	Candidate ANSI, Earth Science
	Candidate ANSI, Life Science
	Bear Management Area
	Caribou Wintering Area
	Moose Wintering Area
	Conservation Area
	Conservation Reserve
	Forest Reserve
	Provincial Park
	National Park
	Significant Ecological Area
	Wetland, Provincially Significant
	Wetland, Locally Significant
	Wetland, Unevaluated
	Wooded Area



## Notes

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RES Canada Transmission LP  
East-West Tie Transmission Line

Figure No.

003

Title

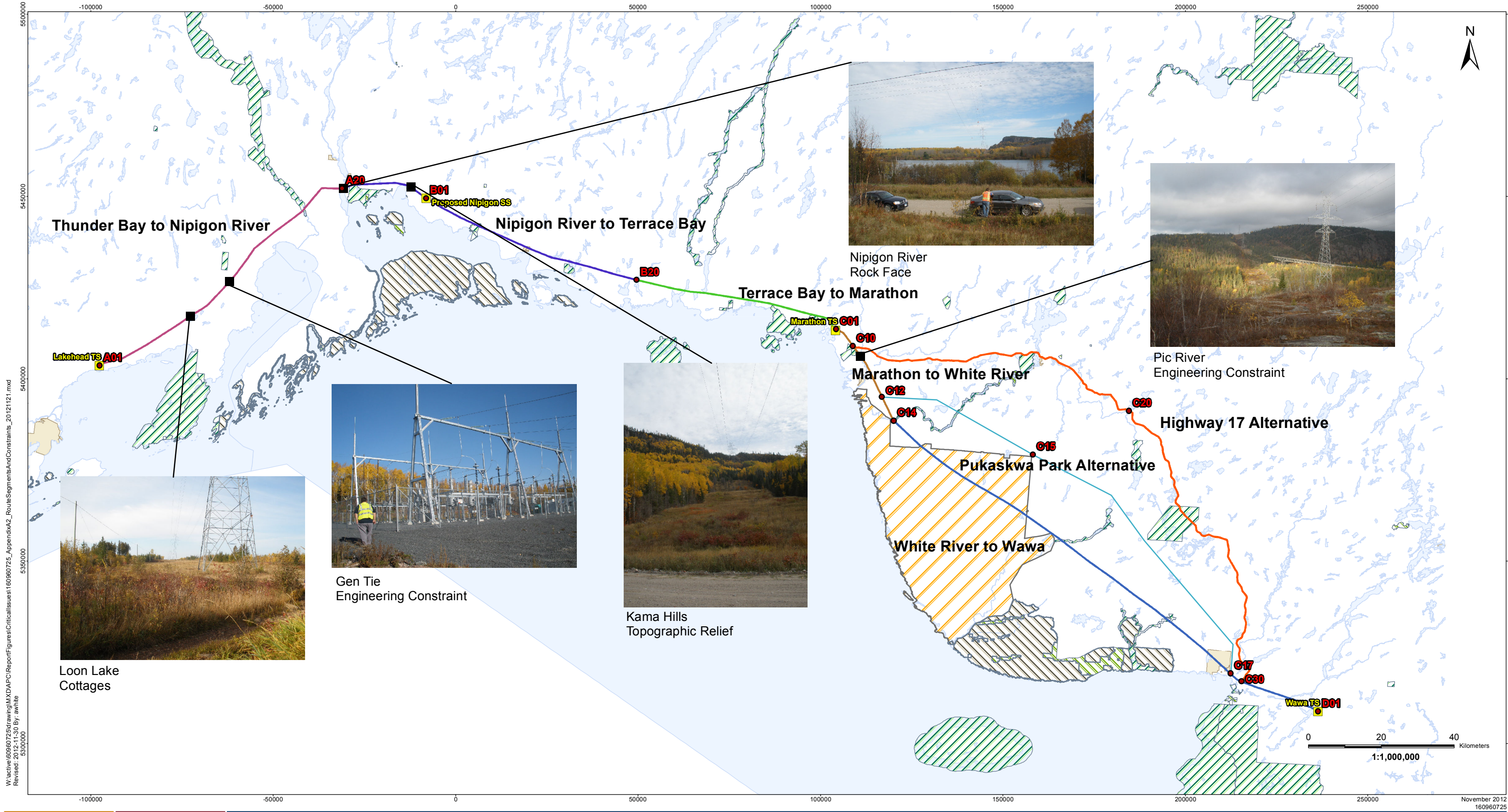
**Appendix A1  
Natural Environment**



## **Appendix B2**

### **Route Segments and Constraints**





Stantec

## Legend

- Route Marker
- Station
- Photo Location
- Thunder Bay to Nipigon River A01-A20
- Nipigon River to Terrace Bay A20-B20
- Terrace Bay to Marathon B20-C01
- Marathon to White River C01-C14
- White River to Wawa C14-C17-D01
- Pukaskwa Park Alternative C12-C15-C17
- Marathon TS to Wawa TS Highway C10-C20-C30

- Highway
- Major Road
- Local Road
- Indian Reserve
- Municipal Boundary
- Conservation Reserve
- Forest Reserve
- Provincial Park
- National Park
- Waterbody

## Notes

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RES Canada Transmission LP  
East-West Tie Transmission Line

Figure No.

1

Title

**Appendix A2  
Route Segments  
and Constraints**



## **Appendix C**

### **Metrics Evaluation Table**

Route ID -->			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Segment E					
			A01 - A20 (Thunder Bay to Nipigon)			A20 - B20 (Nipigon to Terrace Bay)			B20 - C01 (Terrace Bay to Marathon)			C01 - C14 (Marathon to White River)			C14 - D01 (White River to Wawa)								
			North	Reference	South	North	Reference	South	North	Reference	South	North	Reference	South	North	Reference	South	By-Pass	Reference	Highway			
Category	No.	Item	Units																				
Environmental			Most Preferred			Equal	Equal			Most Preferred			Most Preferred			Equal	Equal	Most Preferred					
	1	Watercourse Crossed (River / Creek)	#	73	56	61	57	49	65	30	29	31	21	23	22	92	95	96	88	95	75		
	2	Waterbody Crossed (Lake)	m	1,318	1,095	850	3,224	3,151	3,946	2,500	2,089	3,039	692	426	450	5,771	3,691	4,083	6,531	3,691	6,172		
	3	Wetlands - PSW Crossed	m	0	0	0	157	162	40	0	0	0	0	0	0	0	0	0	0	0	0		
	4	Wetlands - Other Crossed	m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	5	Forest Crossed	m	74,773	23	76,569	77,540	0	75,986	49,067	3,068	49,211	26,523	0	27,681	125,952	48	128,744	117,352	48	154,348		
	6	ANSI Crossed	m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	7	Candidate ANSI Crossed	m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3,459		
	8	National Park Crossed	m	0	0	0	0	0	0	0	0	0	0	0	0	34,535	34,639	34,848	0	34,639	0		
	9	Provincial Park Crossed	m	1,111	931	653	1,334	2,271	2,831	0	0	0	216	263	301	2,420	2,124	1,729	798	2,124	6,030		
	10	Conservation Area Crossed	m	0	0	0	12,139	8,547	8,620	0	0	0	0	0	0	0	0	0	0	0	1,120		
	11	Moose Wintering Area Crossed	m	1,718	0	701	1,675	0	952	0	0	0	0	0	0	0	0	0	0	0	0		
	12	Caribou Wintering Area Crossed	m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	13	Bear Management Area Crossed	m	56,905	56,298	55,701	67,781	71,376	71,401	38,172	38,448	38,018	7,085	6,549	6,013	96,429	94,481	96,006	125,498	94,481	167,686		
	14	Bedrock Crossed	m																				
	15A	Steep Slopes Crossed (0-5%)	m	61,184	60,003	60,496	55,210	53,643	50,564	33,295	34,476	34,201	21,239	21,182	20,499	74,458	74,545	74,020	79,830	74,545	147,677		
	15B	Steep Slopes Crossed (6-15%)	m	21,119	22,865	22,026	26,114	27,501	28,806	21,504	20,529	20,887	8,118	7,460	8,490	62,498	61,436	61,934	47,777	61,436	29,800		
	15C	Steep Slopes Crossed (16-35%)	m	2,595	2,135	2,070	4,946	5,151	6,929	2,418	2,186	2,074	692	1,380	1,010	5,079	4,099	5,992	2,839	4,099	2,657		
	15D	Steep Slopes Crossed (>35%)	m	0	0	0	138	64	43	0	0	0	0	0	0	0	65	59	0	65	0		
Social / Cultural			Most Preferred			Most Preferred			Most Preferred			Equal			Equal			Equal			Most Preferred		
	16	Cities / Towns / Villages Within 500 m	#																				
	17	Communication / Radio Towers Within 500 m	#																				
	18A	First Nation Reserves Crossed	#	0	0	0	1	1	1	0	0	0	0	0	0	1	1	1	0	1	0		
	18B	First Nation Reserves Crossed	m	0	0	0	1,495	1,593	1,571	0	0	0	0	0	0	6,842	6,468	6,233	0	6,468	0		
	19	Crown Land Crossed	m	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	168		
	20	Historic Resources Within 500 m	#																				
	21	Airports / Airstrips Within 500 m	#	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1		
	22	Oil / Gas Utilities Crossed (Pipelines)	#	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	23	Oil / Gas Wells Within 500 m	#	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
	24	Highways Crossed	#	2	2	2	3	3	3	7	7	7	4	5	7	7	5	5	0	5	11		
	25	Local Roads Crossed	#	17	44	31	4	4	4	2	3	6	0	0	0	3	5	4	2	5	10		
	26	Railway Crossed	#	4	2	2	5	5	5	6	6	6	1	1	1	2	1	2	1	1	3		
	27	Upper Tier Municipalities Crossed	#	1	1	1	1	1	1	2	2	2	1	1	1	2	2	2	2	2	2		
	28	Lower Tier Municipalities Crossed	#	4	4	4	1	1	1	2	3	3	1	1	1	1	1	1	1	1	3		
	29	Mining Claims Withint 500 m	#	70	52	37	18	18	19	142	129	115	132	128	120	64	64	69	40	64	372		
	30	Schools Within 500 m	#																				
	31	Hospitals Within 500 m	#																				
	32	Churches / Cemeteries Within 500 m	#																				
	33	Landfills Within 500 m	#	3	4	3	1	2	2	1	1	2	1	1	1	0	0	0	0	0	7		
	34	Recreational Features Crossed	#																				
	35	Military Facilities Within 500 m	#																				
Technical			Most Preferred			Most Preferred			Most Preferred			Most Preferred			Most Preferred			Most					
	36	Total ROW Length	m	84,898	85,002	84,593	86,426	86,380	86,341	57,217	57,191	57,161	30,049	30,022	29,999	142,034	140,169	142,004	130,446	140,169	180,134		
	37	Number of Existing Transmission Lines Crossed	#	9	7	7	2	2	4	7	3	3	1	3	4	6	5	6	2	5	3		
	38	Length of Existing Transmission Lines Paralleled	m	84,898	85,002	84,593	86,426	86,380	86,341	57,217	57,191	57,161	30,049	30,022	29,999	142,034	140,169	142,004	0	140,169	0		
	39	Preliminary Tower Counts (Classed by Angle, Tangents)	#																				
			Most Preferred																				
			Partially Preferred																				
			Least Preferred																				

**TAB L-4-1**

1                                    **Environmental Assessment Plan**

2    Confidentially Filed.

## **Renewable Energy Systems Americas Inc.**

### East-West Transmission Reinforcement Project Environmental Assessment Plan

Prepared by:

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January 2, 2013

File No. 160960725



**Stantec**

## Record of Revisions

Revision	Date	Description
0	November 2012	Draft submitted to RES for discussion (electronic version)
1	December 2012	Final submitted to RES

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## **1.0 INTRODUCTION**

The Ontario Energy Board has initiated a proceeding to designate an electricity transmitter to undertake development work for a new electricity transmission line between Northeast and Northwest Ontario: the East-West Tie line. The Board assigned File No. EB-2011-0140 to the designation proceeding. The Board's primary objective in this proceeding is to select the most qualified transmission company to develop, and to bring a leave to construct application for, the East-West Tie line.

This Environmental Assessment Plan (Plan) was developed as part of the planning process for the East-West Tie, from Lakehead TS to Wawa TS (the Project). This Plan has been produced for The Applicant in support of their application for designation, consistent with the Ontario Energy Board requirements outlined in the Phase 1 Decision and Order (July 12, 2012).

### **1.1 Background Information**

The Project is proposed to be located immediately adjacent to the existing double circuit Hydro One Wawa TS to Lakehead TS line (Reference Route). Routing a new transmission line adjacent to the Reference Route typically minimizes the negative effects, such as habitat loss/disturbance/fragmentation on environmental and socio economic routing criteria. For example, the existing land use already includes transmission facilities, the increase in Right of Way (ROW) width is typically less than the width of a new ROW and access roads can be shared where applicable, this assumes that the existing ROW and access can be shared.

It is of note that a 2km wide study area was identified within the CEIA Report which is centered on the existing Reference Route. All environmental/social features within this study area have been mapped using desktop information, and information obtained from a site reconnaissance field visit (October 1–3 2012). The CEIA also identified and evaluated route alternatives and identified a preliminary preferred route and potential route refinement areas which will be carried-forward into the ToR. Any proposed deviations from the Reference Route are documented in the CEIA.

The reconnaissance site visit confirmed that the existing Reference Route is relatively accessible using existing access roads between Lakehead and Marathon but fairly inaccessible using existing access roads between Marathon and Wawa. The Reference Route has been sub-divided by the Applicant (see below) based on existing access, constructability, geology/terrain and vegetation. This Plan addresses all Reference Route segments.

### **Thunder Bay to Nipigon River (85 km)**

Rolling terrain and moderate vegetation regrowth after logging.

- Fair to good access roads
- Nipigon River crossing
- New four-lane highway under development (Hwy 17)

### **Nipigon River to Terrace Bay-Aguabson River Crossing (86 km)**

- Fair access roads – several gated
- Hills and large rock outcrops
- Significant waterbodies

### **Terrace Bay to Marathon (60 km)**

- Steep terrain with significant vertical traverse
- Limited access
- Heavy vegetation
- Little Pic River crossing (largest span), railroad and highway crossings

### **Marathon to White River (28 km)**

- Steep terrain with significant vertical traverse
- Limited to no access from Highway
- Heavy vegetation regrowth after logging

### **White River to Wawa (140 km)**

- Low elevation
- Flat terrain with dense vegetation
- Muskeg bogs with significant standing water
- Very limited road access – water hazards

## **2.0 SCOPE OF WORK**

Stantec has developed a comprehensive Environmental Assessment (EA) Plan for the Project. The following is a summary of the Plan:

### **Terms of Reference**

- Data Collection (natural environment and agriculture) (data is presented in the CEIA – additional data collection will be undertaken for the ToR)
- Participation in consultation activities
- Coordination with other departments/agencies/First Nations to obtain information for the ToR
- Preparation of ToR documentation
- Review and revision of ToR documentation with The Applicant and MOE

### **Environmental Assessment**

- Natural environment inventory
- Participation in consultation activities
- Additional route refinements (if required as a result of consultation/fieldwork)
- Preparation of EA documentation
- Review and revision of draft EA documentation with The Applicant and MOE

### **General Support**

- Federal EA requirements
- OEB Application Support

## **2.1 Terms of Reference**

The Applicant must develop and obtain approval for a Terms of Reference (ToR) prior to commencing the EA. The ToR will identify the framework and scope that The Applicant must follow in completing the EA. Stantec will be responsible for activities necessary to complete the ToR, including data collection and consolidation of data from the rest of the study team into one cohesive report for presentation to the MOE. We will also participate as necessary in public and agency consultation activities, and ToR-related meetings with the MOE.

Consistent with the approach used for the Bruce to Milton Transmission Reinforcement Project, Stantec proposes that the ToR be completed in accordance with EAA subsections 6(2)(c) and 6.1(3), which allow “focusing” of the EA, thereby eliminating the requirement for a “need” and “alternatives to” assessment, plus limiting the ‘alternative methods’ analysis. Supporting documentation to the ToR will be developed to elaborate and further support this approach. The final preferred route will be agreed upon at the conclusion of the ToR process, and our work plans

for field programs will be revisited at that time to confirm appropriateness of our approach, schedule, and level of effort.

Two alternatives have been identified for most segments discussed in Section 1.1 (north and south of the Reference Route). Additional alternatives have been identified for Segment E. As this segment passes through the Pukaskwa National Parks, two additional alternatives have been evaluated. One is a greenfield route around the park (Alternative E3 - Pukaskwa National Park By-Pass) and the other alternative would generally run parallel to Highway 17 (Alternative E4 - Highway 17 Parallel). For additional information refer to the Critical Environmental Issues Analysis Report (CEIA).

At the level studied in the CEIA a northern route alignment is generally preferred, with a By-Pass around the Pukaskwa National Park. A northern route alignment also enables First Nation reserves along the proposed route to be By-Passed, if appropriate. Finalization of the preferred route will be completed during the EA process. Route refinement areas may be required in order to accommodate revisions related to terrestrial, archaeological, and aquatic fieldwork information as well as agency, aboriginal, public and landowner comments. A route refinement is a portion of the preferred route where a modification or realignment may have the potential to offer significant environmental or engineering advantages over the preliminary route, or as a result of landowner consultation.

A review of aerial photography and site visit conducted October 1-3 2012 revealed numerous lakes, large rivers, and bogs along the existing ROW between Wawa TS and Lakehead TS (these are discussed in detail in the CEIA). We anticipate that some areas of the Wawa-Marathon section of the Project will be inaccessible, particularly those areas within Pukaskwa National Park. These will not be accessible by foot or ATV due to features such as lakes, rivers, and waterbodies, which cannot be safely crossed. Stemming from this uncertainty is our proposed strategy to document environmental features from aerial photography and cover as much of the proposed corridor as possible through a combination of helicopter flights (terrestrial surveys) and field programs (terrestrial and aquatic), using ATVs, and on foot. Sensitive environmental areas identified in available information or through agency or stakeholder consultation will be addressed. A detailed reconnaissance fly-over (helicopter) will be required by field teams with the aim of refining site access requirements and determining an appropriate fieldwork strategy.

Stantec's consultation activities during the ToR phase will include preparation for and attendance at two Public Information Centres (PICs) announcing the draft ToR. We have assumed that PICs will be held in Thunder Bay and Wawa (4 PIC's total). We have also assumed 2 agency/interest group meetings/workshops will occur (one in Thunder Bay and one in Wawa). Agency/stakeholder mailings and newspaper ads will also be circulated.

At this stage, we will also work with the team to confirm the route selection (any deviations from the Reference Route) and evaluate the route refinement alternatives identified in the CEIA, including defining the refinement routes and selection criteria, the evaluation process and possible outcomes.

CEAA 2012 specifies that for projects on federal lands, it is the responsibility of federal authorities that have a decision in relation to the project to make the determination of whether the project is likely to cause significant adverse environmental effects. It is at the discretion of each federal authority on how to make the determination. However if the Minister of the Environment is satisfied that the substantive requirements of CEAA 2012 can be met by a provincial process, and if that province requests it, he or she must allow for the substitution of the federal environmental assessment process by the provincial process. The Minister of the Environment would make a decision about the project using the environmental assessment report prepared by the province. Stantec has assumed that the provincial process will address federal requirements. Any specific requirements will be determined at the ToR stage.

A “typical” table of contents for the ToR Report is outlined below:

- Introduction
  - Consultation with MOE
  - Consultation with Parks Canada/Aboriginal And Northern Development Canada
  - Purpose of Undertaking
- Environmental Assessment Framework
  - Outline EA Framework and Timelines
  - Identification of Other Permits/Approvals
- Overview of EA Requirements for Proposed Project
- Description of the Undertaking
  - Technical Overview
  - Description of the Study Area

- Existing Conditions
  - Background Data Review – Physical Characteristics (refer to CEIA)
  - Background Data Review – Significant Areas/Wildlife/Habitat (refer to CEIA)
  - Terrestrial Fieldwork Methodologies
  - Aquatic Fieldwork Methodologies
  - Socio-Economic Environment
  - Cultural Environment
- Alternative Methods
  - Evaluation of Methods
  - Route Refinement Evaluations
  - Effects Evaluation and Mitigation
- Commitments and Monitoring
  - Project Effects Monitoring
  - EA Process Monitoring
- Consultation
  - Stakeholder Consultation Plan
  - Public Consultation Plan
  - First Nation and Metis Consultation Plan (refer to stand alone document)
  - Agency Consultation Plan
  - Documentation/Tracking of Issues and Issues Resolution
  - Public Information Centres to Review and Comment on ToR
- Approval of ToR

## **2.2 Provincial Environmental Assessment**

As set out in subsection 6.1(1) of the EAA, an EA Report must be prepared in accordance with an approved ToR. Approval of the EA is required by the Minister and Cabinet prior to proceeding with a project. Submission of an EA must be accompanied by a summary, lists of studies and reports and maps as required by Section 2(1) of O. Reg. 334.

Key components of the EA include:

- consultation during the preparation and submission of the EA to the MOE with those government agencies, members of the public, municipalities, other stakeholders or First Nation/Métis communities which may be affected;
- the consideration of alternatives;

- and the mitigation and management of environmental effects.

Stantec will undertake the following tasks as part of the EA:

### **2.2.1 Desktop Review of Natural Environment Features and Functions**

The Study Area is located in the Superior section of the Boreal Forest Region. Topography is rugged and varied with highlands separated by wide river valleys with wetlands. The forests are characterized by a variety of mixed or coniferous assemblages. A preliminary review of the Ministry of Natural Resources (MNR) Natural Heritage Information Centre (NHIC) database was conducted in October 2012 using the smallest available one kilometre square NHIC units. Vegetation communities and wildlife species with Provincial S ranks of S1, S2, S3 or SX are termed provincially rare.

This review indicates that 2 provincially rare vegetation communities are known to occur within and surrounding the proposed reference corridor. These communities are generally associated with the Lake Superior shoreline or cliff and talus physiographic features. Many of the rare species documented in and near the Study Area are plants associated with these communities, or with wetlands.

Considering the size of the Study Area, relatively few provincially rare wildlife species at risk have been recorded. A total of 35 rare species of plants, 12 rare species of terrestrial wildlife (including birds, mollusks, mammals, and insects), and 3 rare species of fish and aquatic wildlife have been documented in the NHIC database.

One of the potentially most sensitive natural features is habitat for woodland caribou, a Threatened species. The Study Area is located in the "Lake Superior Coast Caribou Recovery Zone". The MNR's Caribou Conservation Plan indicates that woodland caribou has a discontinuous distribution in the vicinity of the Project, including a stable population in Pukaskwa National Park, and the East-West Tie crosses a portion of identified woodland caribou wintering area. The Recovery Strategy for the Woodland Caribou identifies some potential effects of transmission lines at the landscape level, including fragmentation, and changes in caribou mortality. Preliminary mapping indicates that the reference route does not pass directly through any Caribou Wintering Areas.

It is of note that an ecosite inventory of Pukaskwa National Park has been completed using the Northwestern Ontario Forested and Wetland Ecosite Classification. Sampling primarily occurred in portions of the park which were accessible to float equipped aircraft. ESG International Inc. (now Stantec) was retained to undertake the inventory (1997). The most common wetland was found to be a Meadow Marsh and the most common hardwood community was trembling aspen. Pukaskwa

Pits were also observed (in cobblestone beaches), these are small holes dug in the ground by ancestors of the Ojibwa.

It is estimated that approximately 300 watercourses (rivers/creeks), 12,000 waterbodies (lakes), and 150 wetland pockets occur along the proposed corridor, from Wawa TS to Lakehead TS, all of which have the potential to support fisheries habitat.

The following tasks will be required for collection of natural sciences data along the proposed route. Some preliminary background data has been reviewed and has been summarised in the CEIA:

### ***Background Data Collection***

- Collect information (official plans, GIS data, etc.) from Municipalities, Local Roads Boards, Local Services Boards, Provincial and Federal Agencies, and First Nation/Métis communities, as appropriate;
- Refine mapping of environmental features within the study area (refer to CEIA);
- Review federal and provincial databases to identify locations of terrestrial and aquatic Species at Risk;
- Review federal and provincial documentation and mapping for geology, mining claims, forestry management plans, species management plans, physiography, soils and Canada Land Inventory (CLI) for soils;
- Review federal and provincial databases for water resources related information/data, including water quality, fisheries, and hydrology; and,
- Review MNR fisheries management plans, where they relate to the proposed route and to proposed water crossings for road access points.

In addition to the review undertaken during the CEIA, Stantec will also contact relevant agencies, such as the MNR, Parks Canada and DFO to known locations of significant features and functions in the landscape and to confirm the methods to be used to identify probable locations of any additional significant features and functions.

### **2.2.2 Natural Environment Field Inventory**

Three seasons of terrestrial field data collection are proposed, including winter wildlife and spring and summer botanical inventories. Woodland Caribou will be a major focus of the wildlife surveys. In addition, during all three seasons incidental sightings of all wildlife including mammals, amphibians, reptiles and breeding birds, will be recorded. The aerial and botanical surveys will include field-checking the Forest Ecosystem Classification (FEC) of vegetation communities within the proposed corridor. The study area for field work activities will be determined in consultation with



MNR, however costing as assumed only a typical right of way width (approximately 45 m) will be studied.

Aquatic field studies will involve fisheries collections and habitat assessments within the preferred alignment. Surveys will be conducted at watercourses and waterbodies, and will include a general habitat assessment, fisheries inventory (where agency data are not available), and confirmation of mapped characteristics required for the EA (e.g., salmonid spawning areas and migration routes).

### ***Field Data Collection***

Field data collection will be achieved through a combination of helicopter and field sampling in representative portions of the Study Area. Field studies will include:

- Background data collection and aerial photo interpretation and mapping;
- Spring and Summer botanical inventories,
- Forest Ecosystem Classification (FEC);
- Winter wildlife field surveys;
- Breeding Bird surveys;
- Fisheries and aquatic habitat assessments; and,
- Agriculture field inventory.

As stated above, the field work study area will generally be based on this typical ROW width. We anticipate that a staked, ROW will be delineated prior to the start of field programs. Where landscape features and functions such as watercourses, wetlands and steep slopes warrant; the study area may be expanded beyond the 45 m ROW to properly assess potential impacts.

The natural environment field inventory will be comprised of the following:

- Reconnaissance level survey for terrestrial and aquatic environments;
- Summer fisheries and aquatic habitat assessments at watercourses and wetland pockets, focusing on sensitive fish species and habitat areas (spawning, nursery and feeding areas; migration routes);
- Winter wildlife surveys for caribou and moose wintering areas (this will be completed from aircraft, as recommended in MNR's Significant Wildlife Habitat Technical Guide, if recent MNR survey data for the area are unavailable);
- Spring botanical inventories, field truthing of FEC of vegetation communities, and habitat assessment for and incidental diurnal observations of amphibians and reptiles;
- Summer botanical inventories, field truthing of FEC of vegetation communities;
- Late summer botanical inventories, field truthing of FEC of vegetation communities;
- Incidental sightings of mammals, amphibians, reptiles, and breeding birds.

Where appropriate, field guides will be used from First Nations communities. Communities may also wish to provide staff to assist with the terrestrial and aquatic survey efforts.

The majority of watercourses can be spanned by the Project, however crossings will be required for construction and maintenance activities.

On-the-ground inventories will include general aquatic habitat assessments and qualitative fisheries collections. Field surveys will identify any habitat for species at risk or species of interest (e.g., salmonids, walleye, pike), and any watercourses that are considered to be critical migration routes or that provide critical (spawning) habitat.

### **2.2.3 Agriculture and Socio-Economic**

The EA must also provide a description of the agricultural environment and how potential impacts are to be mitigated. Due to poor soils conditions, agriculture is not a strong factor in the local economy. To confirm this, and to identify any areas that do have agricultural potential, background data will be collected including active agricultural operations, soil types, CLI soil capability, locations of artificial drainage (if present) and pertinent agricultural data from Statistics Canada. In addition, it is recommended that an agricultural land use survey be undertaken along the proposed corridor to identify agricultural infrastructure, as well as crop types and areas of organic crops (if present).

The agricultural field inventory will examine the following:

- Crops;
- Land-use;
- Agricultural operations;
- Non-agricultural buildings on farms (residential and commercial);
- Farms and residences outside municipal boundaries; and,
- Crop use by car and aerial photo interpretation.

While agriculture is not a major resource in the area, resource extraction activities, including mining, forestry and commercial fishing occur in the vicinity of the proposed corridor. Other economic activities include tourism (mostly snowmobiling, hunting, fishing, and camping), administration and other services. Hunting and fishing in the area are common as subsistence, recreational and commercial activities, and local First Nations may engage in traditional subsistence and trapping activities in the vicinity of the proposed corridor. All of these uses will be considered in the agricultural and socio-economic assessments. Information on the resource bases of uses other than agriculture will be provided by the natural environment study.

Other data collected and assessed during the EA will also be considered during the agricultural assessment:

- Municipal, Regional and Aboriginal community boundaries;
- Existing Land Use and Approved Developments;
- Commercial Activities;
- Community Profile/Human Settlements (study area demographics, household characteristics, dwelling types, etc., as defined by the Census Sub-division data);
- Community Services (such as parks, trails and/or tourism features) crossed or in the vicinity of the proposed corridor;
- Community and Regional Infrastructure;
- First Nations and Métis Traditional Land Use and Approved Developments;
- Cultural Environment (heritage resources and archaeology) to be collected by others; and,
- Traditional Ecological Knowledge Reports.

A chapter of the EA will be prepared following data collection, identification of potential impacts, and determination of potential mitigation measures to reduce or eliminate potential effects to agricultural resources. We also anticipate working to include those reports provided for: 1) visual and landscape assessment; 2) archaeology, built heritage and cultural landscape; and 3) tourism and recreation assessments. We will then work with the study team and The Applicant to identify effects on these features, identify potential mitigation measures, and assess the significance of any remaining residual effects.

#### **2.2.4 Timber Evaluation**

The overall context for forest management in Ontario is the Policy Framework for Sustainable Forests which was approved by the Government in 1993. The framework sets broad direction for forest policy and makes forest sustainability the primary objective of forest management. Its legislative authority is found in the *Crown Forest Sustainability Act (CFSA)*.

The CFSA is enabling legislation and provides for the regulation of forest planning, information, operations, licensing, trust funds, processing facilities, remedies and enforcement, and transitional provisions. The CFSA is designed to allow for the management of all forest based values.

The CFSA requires the provision of four manuals to guide various aspects of forest management in Ontario. These manuals are authorized by Section (68) of the Act and form part of the regulations as per Section (69(29)).

The manuals are:

- The *Forest Management Planning Manual*(2009)
- The *Forest Information Manual* (2009)
- The *Forest Operations and Silviculture Manual*(2000)
- The *Scaling Manual* (2007)

The *Forest Management Planning Manual* is the pivotal document which provides direction for all aspects of forest management on Crown lands in Ontario. Forest management plans provide the authority to carry out activities including road construction, timber harvesting, forest renewal and protection treatments, wildlife habitat management, sensitive values protection, surveys and evaluations.

The *Forest Operations and Silviculture Manual* is a compendium of guidance and direction for the conduct of operations authorized by approved forest management plans. This Manual provides for the qualification of persons engaged in forest operations as well as measures for assessing the performance of forest operations.

The *Scaling Manual* provides direction for the measurement of Crown forest resources in Ontario. This measurement provides the means through which Ontario collects revenue from the disposition of Crown forest resources.

The *Forest Information Manual* provides guidance for information management that supports forest management planning and operations. Much of its content has been set by planning and operational information requirements.

Approximately 9 Forest Management Units are located along the Reference Route (MNR, Management Units of Ontario, April 2012). Management Units include:

- 796 – Lakehead Forest
- 35 – Black Spruce Forest
- 815 – Lake Nipigon Forest
- 350 – Kenogami Forest
- 851 – Pic River Obijway Forest
- 67 – Big Pic Forest
- 370 – Black River Forest
- 60 – White River Forest
- 615 – Algoma Forest

Timber evaluations will be undertaken along the route using a local registered professional forester. The Forest Resource Inventory (FRI) will be obtained from MNR and will be verified. A basic ‘loss of use’ valuation will be undertaken using a variety of benchmarks. All work will be undertaken under the supervision of MNR.

### 2.2.5 Archaeology/Cultural Heritage

A Stage 1 archaeological assessment will be undertaken. The objectives of the Stage 1 assessment are to gather information about the study area’s geography, history, current land conditions and any previous archaeological research within the vicinity. This assessment will provide a description of all features of archaeological potential noted for the study area and a detailed evaluation of the archaeological potential.

The Stage 1 archaeological assessment of the study area will follow the 2011 *Standards and Guidelines for Consultant Archaeologists*, as follows:

- Review of relevant archaeological, historic and environmental literature pertaining to the study area;
- Review of a listing of archaeological sites from the Ontario Ministry of Tourism, Culture and Sport (MTCS);
- Consultation with individuals knowledgeable about the study area;
- Review of historic maps of the study area; and
- GIS mapping of the study area to assist in determining archaeological potential.

The GIS mapping will assist in determining the archaeological potential along the study corridor. According to the 2011 *Standards and Guidelines for Consultant Archaeologists*, in Northern Ontario on the Canadian Shield, archaeological potential is usually evaluated as being present:

- within 50 metres of a modern water source; or
- within 150 metres of other identified features such as:
  - historic water sources (e.g. glacial shorelines);
  - resource areas (e.g. food or medicinal plants, scarce raw materials, early Euro-Canadian industry);
  - pockets of well-drained soil within areas otherwise identified as being of low archaeological potential;
  - distinctive land formations of special or spiritual purpose (usually described by local informants);
  - areas of early Euro-Canadian settlement;

- early historical transportation routes (e.g. portage route);
- or properties designated as a federal, provincial, or municipal historic landmark or site.

The GIS mapping produced will identify all such areas of archaeological potential to be recommended for further archaeological study. Similarly, all other areas that are identified as being of areas of low or negligible archaeological will also be mapped and not recommended for further archaeological study.

### **2.2.6 Hydrogeology**

A Modified Phase I Environmental Site Assessment (ESA) will be undertaken to evaluate the environmental liabilities of the lands being acquired along the proposed route. Given the size of the area encompassed by the route the Modified Phase I ESA will focus on areas in close proximity to the highway and developed transfer stations. For the purposes of this document, Stantec has assumed that the Modified Phase I ESA will include a windshield survey of accessible areas of the route between the Lakehead TS and the Marathon TS (*i.e.*, review of areas visible along Highways 11 and 17) as well as the specific areas located at the intersection of Highways 101 and 17 (in the vicinity of route marker C17) and the termination of the route (in the vicinity of route marker D01). For the purposes of this proposal Stantec has assumed that these areas can be made accessible for the site visit and that the field work portion can be completed over the course of one week.

Stantec will also request and review a completed environmental database report from EcoLog ERIS pertaining to the proposed route between Lakehead TS and Marathon TS (and a 200 m buffer from the route) as well as pertaining to a 3 km section of the route south of Wawa. A review of recently available satellite imagery of the route, as well as one set of historical aerial photographs (e.g., flight lines from 1976 covering the route) and topographic maps will be reviewed for the proposed route.

The windshield survey, site visits, EcoLog ERIS report review, and aerial photography and topographic map review will be completed to attempt to identify potentially contaminating activities that may have occurred on or adjacent to the route which could represent areas of potential environmental concern on the route.

A report will be provided summarizing the findings and potential environmental concerns identified in the study area that may be contributing to areas of potential environmental concern on the route and will include recommendations for further assessment where required.

Additional assessment (e.g., a complete Phase I ESA or subsequent intrusive testing through a Limited Phase II ESA) may be required based on the findings of the Modified Phase I ESA. The work will be completed in general accordance with Ontario Regulation 153/04, as amended, with

the limitations described above and will not follow the detailed reporting or research requirements of the regulation.

If there are water wells (O.Reg 903) or buildings (Occupational Health and Safety Act) within the ROW they will need to be decommissioned in accordance with the regulations.

### **2.2.7 Route Refinements**

In addition to the route refinement areas that will be evaluated at the ToR stage, it is possible that minor route refinements may be required along portions of the Project where additional issues (environmental, technical, stakeholder, etc.) are identified. These issues may be brought to the attention of The Applicant following detailed stakeholder consultation and/o field survey results. We will work with The Applicant to identify and assess these relatively minor deviations where necessary, and include this assessment (and supporting documentation) in the EA report. Any related agency meetings will also be arranged and attended by Stantec staff.

We have assumed that approximately 5 route refinement areas will be required; this assumption is based on one refinement area within each of the line sections identified by the Applicant (refer to Section 1).

### **2.2.8 Landowner, Municipal and Community Consultation**

Consultation activities during the EA will include three sets of PICs, mailings/newspaper ads/newsletter, agency/interest group/landowner meetings, and workshops with the municipal and agency advisory group (in addition to the consultation undertaken during the ToR).

The consultation program will dovetail with the communications and media relations programs developed and implemented by The Applicant. We will provide the following services:

- PICs (3 rounds in 4 locations – assume Thunder Bay, Nipigon, Marathon and Wawa = 12 total)
  - Preparation and printing of materials (panels, questionnaire, sign-in sheets)
  - Logistics (The Applicant to pay rental costs)
  - Ads (The Applicant to pay for ad placement)
  - Attendance (assumes 4 nights hotel and food for 4 people, rental vehicle, panel production, The Applicant to pay for logistics, Stantec to organize)
  - Summary of all comments and questions received, and draft responses for The Applicants signature

- Agency/Interest Group/Landowner meetings (assume 10 meetings)
  - Identifying relevant federal, provincial and municipal contacts
  - Logistics
  - Meeting minutes and follow-up
- Workshops (2) (The Applicant to pay rental costs)
  - Route Refinement
  - EA Update, effects and mitigation
- Publications
  - Notice of Commencement - letters to all landowners along the proposed route, agency and First Nations/Metis letters, contact lists, media releases (assume The Applicants letterhead, Stantec print and mail)
  - Three rounds of Notice of Public Information Centre - letters to all landowners along the proposed route, agency and First Nations/Metis letters, contact lists, media releases (assume The Applicants letterhead, Stantec print and mail)
  - Notice of draft EA release for review - letters to all landowners along the proposed route, agency and First Nations/Metis letters, contact lists, media releases (assume The Applicants letterhead, Stantec print and mail)
  - Newsletters (4)

All consultation activities and contacts will be detailed and collated in the Record of Consultation (ROC) database to be included in the consultation appendix for the EA submission to the MOE.

Activities under this task will include:

- Record keeping
  - Maintaining contact lists;
  - Preparation and maintenance of Consultation Manager database;
  - Managing all correspondence received; and,
  - Preparation of Consultation materials appendix.

For additional detail with regard to consultation activities, please refer to the Landowner, Municipal and Community Consultation Plan, provided as a separate document.

### **2.2.9 First Nation and Metis Consultation**

With specific reference to the EA process the following meetings have been assumed:

- First Nation and Métis Meetings (assume 8)
  - Fort William First Nation
  - Pic Mobert First Nation



- Ojibways of Pic River (Heron Bay First Nation)
- Red Rock Indian Band
- Michipicoten First Nation
- Pays Plat First Nation
- The Métis Nation of Ontario (MNO) – this includes MNO local Councils.
- Red Sky Métis Independent Nation (Red Sky)

For additional detail with regard to First Nation and Metis Consultation, please refer to the First Nation and Metis Consultation Plan and the First Nation and Metis Participation Plan, provided as a separate document.

#### **2.2.10 Environmental Assessment Report (EA Report)**

The draft and final EA Report will be written and presented in a manner that allows for easy digestion by all stakeholders, including the public and agency representatives. The report will communicate pertinent information concisely without sacrificing important detail. Background and technical data will be referenced within the main body of the report and presented in technical appendices. Where appropriate, high quality graphics will be used to communicate information. The report will be written collaboratively with The Applicant and the study team in approved format and consistent writing style. The document will be closely vetted to ensure consistent language and appropriate grammar and spelling. Any conclusions and recommendations made throughout the EA process will be discussed with The Applicant prior to becoming part of the EA report.

Stantec will also participate in biweekly team calls/in-person meetings (approximately 50 over two years), and will prepare monthly progress reports for inclusion with invoices for approval by The Applicant.

A “typical” table of contents for the EA is provided below:

- Introduction
- Description of the Undertaking
- Description of Federal EA Requirements
- Description of the Existing Environment
  - Air Photo Interpretation/LiDAR/Topographic Survey/Base Plans
  - Description of Atmospheric/Geology/Physiographic/Soils/Surface Water/Groundwater Hydrology
  - Vegetation Assessment

- Timber Evaluation
- Environmental Significant Areas
- Wildlife and Habitat
- Aquatic Assessment
- Socio-Economic Assessment
- Archaeology and Cultural Assessment
- Visual Landscape Character
- First Nation and Metis Traditional Use
- Alternative Methods
- Effects Evaluation and Mitigation
  - Construction Effects/Mitigation
  - Operation Effects/Mitigation
- Cumulative Effects
- Environmental Management and Monitoring
- Other Permits and Approvals
- First Nation and Metis Consultation and Engagement
- Community and Stakeholder Consultation
- Draft EA Preparation/Review/Submission

### **2.3 Federal Environmental Assessment Requirements**

Under CEAA 2012, the Regulations Designated Physical Activities prescribe the physical activities which, if carried out individually or in combination, constitute a “Designated Project” that will or may be subject to the EA requirements of the new Act. The Act requires proponents of a designated project to submit a description of the project to the Canadian Environmental Assessment Agency. For project that are regulated by the Canadian Nuclear Safety Commission or the National Energy Board those agencies will be responsible for conducting the EA. The Prescribed Information for a Description of a Designated Project Regulations set out the information that the proponent must include. It is our understanding that the Project would not be considered a Designated Physical Activity, as the Project does not have a voltage of 345 kV or more.

It should also be of note that Bill C-38 also makes amendments to the Fisheries Act, the Canadian Environmental Protection Act, the Species At Risk Act and the National Energy Board Act.

For projects on federal lands, it is the responsibility of federal authorities that have a decision in relation to the project to make the determination of whether the project is likely to cause significant adverse environmental effects. The CEAA Agency is not involved in this. It is at the discretion of each federal authority on how to make the determination.

As this Project will cross numerous First Nation Reserves and may cross a National Park, both Aboriginal and Northern Development Canada (AANDC) and Parks Canada (PC) would need to advise on this component of the Project. If the Minister of the Environment is satisfied that the substantive requirements of CEAA 2012 can be met by a provincial process, and if that province requests it, he or she must allow for the substitution of the federal environmental assessment process by the provincial process. The Minister of the Environment would make a decision about the project using the environmental assessment report prepared by the province. Our pricing assumes that the Federal Minister will be satisfied that Ontario's EA meets substance of CEAA.

#### **2.4 Ontario Energy Board (OEB) Applications**

Stantec will provide support for the OEB Section 92 Leave to Construct Application and Section 98 (Early Access) Application, if required, including project description, routing rationale, responses to interrogatories and miscellaneous assistance, as required. We will also provide support in responding to any interrogatories that may arise from public and agency review of the application package.

### 3.0 ASSUMPTIONS

#### Terrestrial and Aquatic Field Programs

- The cost to conduct the natural environment (terrestrial and aquatic) field inventory does not include additional field surveys that may be requested during agency and stakeholder review of the ToR. The cost does not include field surveys specific to the Endangered Species Act or permitting process, as the field protocols must be developed in consultation with the MNR on a case-by-case basis. Therefore no specific bird, bat, amphibian or caribou tracking surveys have been assumed at this time;
- Aquatic field effort and reporting is focused on EA-related field surveys along the proposed corridor. Additional field requirements associated with permitting for the preferred route (e.g., spawning surveys, cross-sectional profiles of watercourses) are not included in this cost estimate;
- A reconnaissance visit will be required during the ToR stage to confirm access and make sure our assumptions on the line are correct and accurate. This will need to be completed prior to finalization of work plans with regulatory agencies. We propose a one-day fixed-wing aircraft flight of the line, in addition to an on-the-ground review/confirmation of proposed access points;
- It is assumed that towers will not be located within open water or large water bodies – detailed aquatic habitat assessments associated with the placement of these structures, which would trigger the need for *Fisheries Act* Authorization and fish habitat compensation planning, are not included in this cost estimate;
- Field programs are based on 12-hour days, in crews of two Stantec staff (these crews may be supplemented with First Nations members, as appropriate). Field expenses include travel time, accommodations, field equipment, vehicles, etc. for Stantec staff;
- This cost estimate assumes all property access is secured prior to initiation of field work, that a preferred route has been established prior to the initiation of field surveys, and that a surveyed cut line has been prepared in advance of field crews entering the area. Accessing only portions of the Study Area at a time will be a less efficient method of field data collection and will require additional travel and site mobilization, thereby resulting in increased total fees.
- The cost for retaining a helicopter or fixed wing aircraft has not been included

#### Other

- A precautionary review of all water supply wells will be required within 500 m of any significant blasting activities during construction and has not been included in this proposed scope of work.

- Spill response and environmental impacts may be identified during construction. Provision of services associated with these activities has not been included.
- Visual landscape assessments have not been included in the scope of work
- Stage 2-3 archaeological assessment have not be included in the scope of work
- Costs associated with the TOR/EA/Consultation do not include the costs of the acquisition of land use rights.
- EA costs do not include EA-related work for the proposed Nipigon SS;
- ToR Reporting includes estimated expenses for production of 75 hard copies of draft and final report;
- EA Reporting includes estimated expenses for production of 75 hard copies and 100 CD copies of draft and final report;
- We have assumed that our proposed approach will be acceptable to regulatory agencies and other stakeholders, and will be confirmed through the ToR process;
- Costs have been provided to determine federal EA requirements, it has been assumed that one provincial EA report will be produced for the Project which will include any federal requirements;
- Five potential route refinements have been assumed during the EA process.
- Travel costs for PICs includes travel time, air travel, car rental/gas, and accommodations. Each round of PIC's will be held during one trip.
- Budget assumes First Nation Communities will undertake their own Traditional Ecological Knowledge (TEK) studies
- The budget does not include costs for translating any documentation.
- Environmental site inspection and post construction environmental monitoring has not been included in the fee matrix
- Any weather delays would be address using the contingency allowance.

## **4.0 CLOSING**

This Plan for the East-West Tie Project has been prepared by Stantec Consulting Ltd. for the sole benefit of The Applicant, and may not be used by any third party without the express written consent of The Applicant. The data presented in this report are in accordance with Stantec's understanding of the Project as it was presented at the time of reporting.

Should you have any questions or concerns please do not hesitate to contact the undersigned.

Respectfully submitted,  
**STANTEC CONSULTING LTD.**

Written by:



**Fiona Christiansen, M.Sc**  
Senior Project Manager

Reviewed/Approved by:



**Peter Prier**  
Senior Principal, Energy & Environment,  
Environmental Services