

September 2011



# **NORTHLAND POWER**

## **McLean's Mountain Wind Farm**

*Project Description Report - Final*



*Submitted by:*



**McLean's Mountain Wind Farm -  
Renewable Energy Approval (REA)  
Application Submission**

*FINAL SUBMISSION*

**Project Description Report**

*September 2011*

**McLean's Mountain Wind Limited  
Partnership**

09-1983

Submitted by

**Dillon Consulting  
Limited**

## **Executive Summary**

Northland Power Inc. (NPI) and Mnídoo Mnising Power (MMP) together form McLean's Mountain Wind Limited Partnership (MMWLP). MMWLP proposes to develop the McLean's Mountain Wind Farm (MMWF), located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland, and the geographic Township of Bidwell in the District of Manitoulin, Ontario and falls within the traditional lands of the Anishnabee of Mnídoo Mnising. The selection of the project's location was based primarily on the wind resource, access to the Provincial transmission system, environmental constraints and local landowner support.

The proposed wind farm (the "project") will consist of 24, 2.5 MW wind turbines with a nameplate capacity of 60 MW. The electricity generated from the wind turbines will be collected through a network of collection grid lines to the on-site transformer. The transformer will step-up the voltage to 115 kV. A 10.3 kilometre transmission line will be installed to connect the project to the Provincial Grid on Goat Island. A section of the transmission line will involve a submarine cable to cross the North Channel to access Goat Island. Each wind turbine will be accessed by a short access road.

The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. Based on the REA Regulations, this project is a "Class 4" wind facility. This *Project Description Report* is one component of the REA Application for the Project, and has been written in accordance with Ontario Regulation 359/09, the Ontario Ministry of Natural Resources' (MNR) Approval and Permitting Requirements Document for Renewable Energy Projects (September 2009) and MOE's draft Technical Bulletin One: Guidance for preparing the Project Description Report (March 2010).

The *Project Description Report* describes the nameplate capacity and classification of the project, the land ownership of properties under option to lease and the legal descriptions of those properties, and the project components and activities. This report also gives a general overview of the environmental effects associated with the project.

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## 1. INTRODUCTION

Northland Power Inc. (NPI) and Mnídoo Mnísing Power (MMP) together form McLean's Mountain Wind Limited Partnership (MMWLP). MMWLP proposes to develop the McLean's Mountain Wind Farm (MMWF). The wind farm (the "project") will consist of twenty-four (24) wind turbines that will generate sixty (60) megawatts (MW) of electricity. Twenty-nine (29) potential turbines sites have been identified but, upon approval, only 24 turbines will be constructed. The additional 5 turbine sites will only be implemented, should any of the preferred 24 sites become unsuitable for development. Permit approvals are being sought for all 29 potential sites.

The proposed project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. Based on the REA Regulations, this project is a "Class 4" wind facility and this *Project Description Report* (PDR) is written in accordance with Ontario Regulation 359/09. This PDR provides an overall description of the project, its potential environmental effects, and NPI's mitigation commitments.

The McLean's Mountain Wind Farm Environmental Study Report (ESR) document was released in July 2009 for a 30-day public review, as part of the former Environmental Assessment process. The ESR document is consistent with the former Environmental Screening provisions of Ontario Regulation 116/01 for a Category B project and with the requirements of the *Canadian Environmental Assessment Act*. The ESR document was developed to assist in the determination of potential environmental effects, including both the social and natural environment, which could result from the proposed project. The ESR document contains additional information that is not required under the REA legislation and can be referred to when more information is required. The ESR document will be available on the proponent's website for download and review.

The REA approval process replaces approvals formerly required under the *Environmental Assessment Act*, *Planning Act*, and *Environmental Protection Act*. The project is being developed under the Ontario Green Energy Act (GEA) Feed-In-Tariff (FIT) program.

This PDR provides an overview of the proposed project including location, components, activities and potential negative environmental effects. The PDR will be posted on the project website and is being submitted to the Ministry of Environment (MOE) as required under the REA process. It is also being made available for public viewing via the Municipality of Northeastern Manitoulin and the Islands. Other reports included in the submission package and available for public review and comment include:

- Construction Plan Report;
- Design and Operations Report;
- Noise Study Report;

- Natural Heritage Assessment Reports (Records Review, Site Investigation, Evaluation of Significance, and Environmental Impact Statement (EIS));
- Water Bodies Assessment Summary Report;
- Archaeological Assessment Reports (Stage 1 and 2) ;
- Cultural Heritage Self-Assessment Report;
- Decommissioning Report;
- Consultation Report;
- Property Line Setback Report;
- Wind Turbine Specification Report;
- Environmental Management and Protection Plan (EMPP);
- Post-Construction Monitoring Plan (PCMP); and
- Supporting Documents.

## **2. THE PROPONENT**

Northland Power Inc. (NPI) is a developer, owner and operator of power generation facilities. In February 2011, Mnidoo Mnising Power (MMP), a company formed by the United Chiefs and Councils of Mnidoo Mnising (UCCMM), entered into a 50/50 partnership with Northland Power Inc. to form the McLean's Mountain Wind Limited Partnership to develop, own and operate the McLean's Mountain 60 MW Wind Farm project.

NPI's development activities include building, owning and operating wind energy facilities. In the course of developing its wind energy projects, NPI satisfies various environmental approval requirements and obtains regulatory approvals that vary depending on the jurisdiction, project capacity and site location.

The MMP company was formed to lead renewable energy projects on Manitoulin Island in order to protect First Nations' rights, heritage and ensure the future for First Nations' youth.

MMWFLP is the primary contact for this project. The MMWFLP contact information is as follows:

<b>Full Name of Company:</b>	<u><i>McLean's Mountain Wind Limited Partnership</i></u>
<b>Address:</b>	<u><i>30 St. Clair Avenue West, 17th Floor</i></u> <u><i>Toronto, Ontario M4V 3A1</i></u> <u><i>Canada</i></u>
<b>Telephone:</b>	<u><i>Local office: (705)-368-0303</i></u> <u><i>mobile: (705)-271-5358</i></u>
<b>Prime Contact:</b>	<u><i>Rick Martin, Project Manager</i></u>
<b>Email:</b>	<u><i>rickmartin@northlandpower.ca</i></u>

Dillon Consulting Limited is the prime consultant for the preparation of this Project Description Report. The Dillon contact information is as follows:

**Full Name of Company:**

*Dillon Consulting Limited*

**Address:**

*235 Yorkland Boulevard, Suite 800,  
Toronto, Ontario M2J 4Y8*

**Telephone:**

*Office: (416)-229-4646 ext 2335*

**Prime Contact:**

*Don McKinnon, REA Project Manager*

**Email:**

*dpmckinnon@dillon.ca*

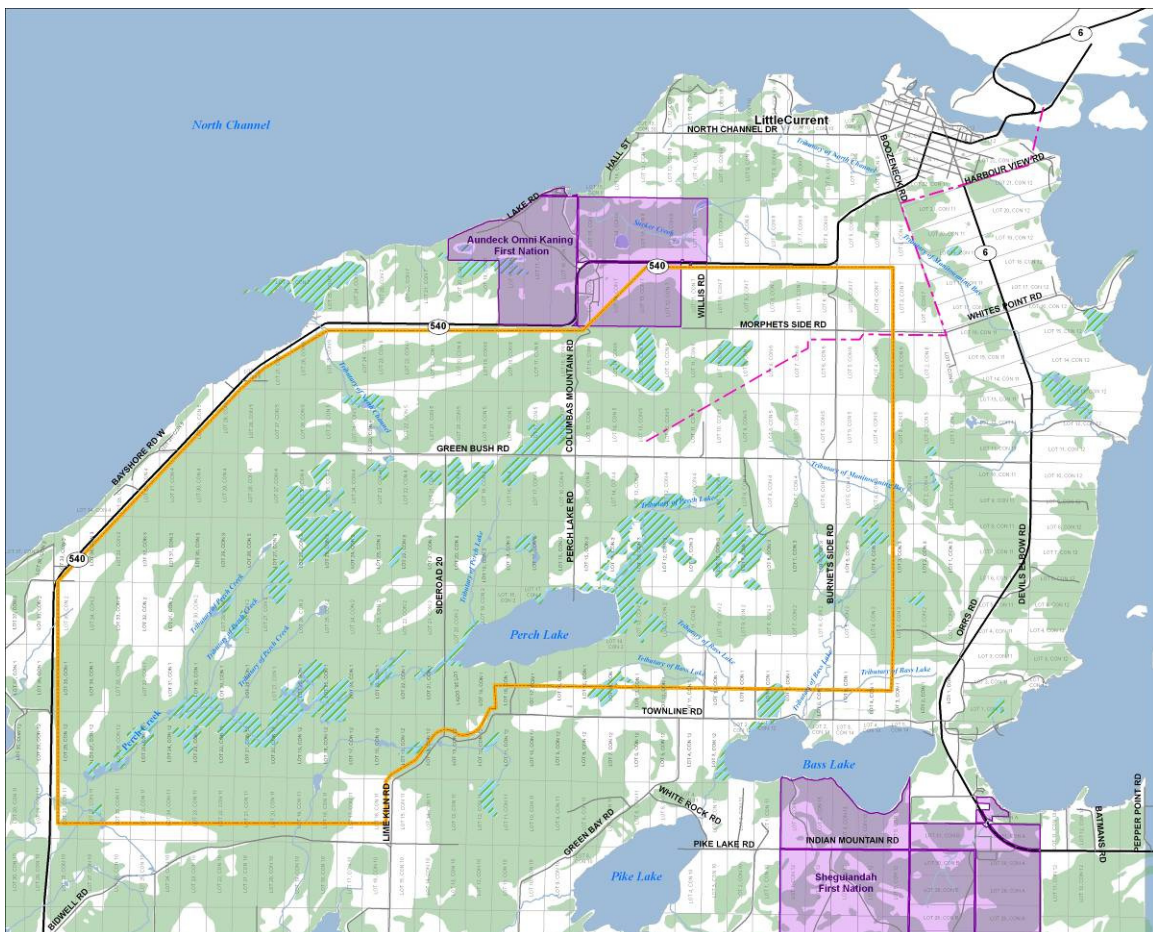
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### 3. PROPOSED PROJECT LOCATION

The project study area is located entirely in the Municipality of Northeastern Manitoulin and the Islands; geographic Township of Howland and the geographic Township of Bidwell, in the District of Manitoulin and falls within the traditional lands of the Anishnabee of Mnidoo Mnising. The project location is about 5 kilometers from the Town of Little Current. Within this broader project study area is the project site area, where the wind turbines, associated wind farm infrastructure and transition yard will be located (excluding a portion of the transmission line and the connection yard at the Hydro One grid which is located on the adjacent Goat Island). **Figure 3-1** presents the location of the project area.

**Figure 3-1: Project Area**



The selection of the project's location was based primarily on the wind resource assessment results, access to the local electrical transmission system, environmental constraints and local landowner support.



#### 4. AUTHORIZATIONS REQUIRED

**Table 4-1** provides a list of governmental authorizations (applicable permits, agreements, licenses and approvals) that MMWLP expects to be required, in addition to the REA (which includes the formerly required MOE C of A), prior to construction of the proposed McLean's Mountain Wind Farm. It is noted that the project is not within the jurisdiction of a Conservation Authority.

**Table 4-1: Expected Authorizations for the Project**

<i>Authority</i>	<i>Requirement</i>
<b>Department of Fisheries and Oceans</b>	✓ <i>Fisheries Act</i> subsection 35(2) Authorization for watercourse crossings (or Letter of Advice)
<b>Environment Canada</b>	✓ Permit under <i>Migratory Bird Conservation Act</i> to collect bird carcasses
<b>Nav Canada</b>	✓ Aviation Safety Land Use Proposal (NavCan)
<b>Transport Canada</b>	✓ <i>Navigable Waters Protection Act</i> (underground cable) ✓ Aeronautical Obstruction Clearance Permit (TransCan) ✓ Navigational Clearances ( <i>Navigable Water Protection Act</i> )
<b>CBC NRCan</b>	✓ CBC Radio Communications Interference Approval
<b>Ministry of Government Services</b>	✓ Emergency Radio System
<b>Ministry of Natural Resources</b>	✓ Approval and Permitting Requirements under REA (Clearance Letter) ✓ Water Crossings Work Permit under Regulation 453/96 of the <i>Lakes and Rivers Improvement Act</i> ✓ Work Permit for Watercourse Crossings under The <i>Public Lands Act</i> . ✓ Species at Risk Permit (if designated species habitat is impacted – to be confirmed through further review with the MNR) ✓ Permit under <i>Fish and Wildlife Conservation Act</i> to collect bat/bird carcasses
<b>Ministry of Culture</b>	✓ Clearance under the <i>Heritage Act</i>
<b>Ministry of Transportation</b>	✓ Compliance with <i>Highway Traffic Act</i> and Road Safety Regulations - Highway Entrance Permit, Transportation Permits (e.g. Oversize, Overweight Permit or Special Vehicle Configuration Permit)
<b>Ontario Energy Board</b>	✓ License to Generate under Section 57 of the <i>OEB Act</i> ✓ Leave to Construct Transmission Facilities under Section 92 of the <i>OEC Act</i>
<b>Hydro One</b>	✓ Customer Impact Assessment -Integration of project within Hydro One and effects to customers ✓ Construction Cost Recovery Agreement
<b>Independent Electricity Market Operator</b>	✓ Authorization as Market Participant ✓ Registration of Facility ✓ Registration of Metering Service ✓ System Impact Study - Integration of project with Hydro One's transmission and distribution infrastructure
<b>Electrical Safety Authority</b>	✓ Connection Assessment Approval (CAA)
<b>Municipality of Northeastern Manitoulin and the Islands</b>	✓ Connection Authorization ✓ Building Permit ✓ Road User Agreement/Consent for Lease Agreements

## **5. PROJECT INFORMATION**

### **5.1 Nameplate Capacity and Classification**

The McLean's Mountain Wind Farm is designed to generate a maximum of 60 MW of electricity. According to Part II, Section 4 of O. Reg 359/09, the project is a Class 4 Wind Facility. The characteristics of a Class 4 Wind Facility, as described in the regulation, are as follows:

- at a location where no part of a wind turbine is located in direct contact with surface water other than in a wetland;
- the nameplate capacity of the facility is greater than 50 kW; and
- the greatest sound power level is greater than 102 dBA.

### **5.2 Land Ownership**

The study area includes approximately 8,200 hectares of land located south of the community of Little Current, in the Municipality of Northeastern Manitoulin and the Islands (NEMI); geographic Township of Howland and the geographic Township of Bidwell in the District of Manitoulin, Ontario and falls within the traditional lands of the Anishnabee of Mnidoo Mnising. A map showing the project location and the land within 300 meters of the project is attached as **Appendix A**.

The wind turbines will be located entirely on private land. Some sections of the electrical system will be contained within municipal rights-of-way. MMWLP currently holds land lease "options" for the private properties where project components are to be located, including 29 potential wind turbine sites (24 preferred sites and 5 sites held in reserve in the event a preferred site can not be developed). Land option agreements have been established with the owners of the private lands. The legal descriptions of the lands under option to leave are provided in **Appendix B**.

### **5.3 Energy Sources**

The primary source of energy that will be used to generate electricity will be wind turbines that convert kinetic energy in the wind into mechanical power and then into electricity. Direct current (DC) electricity that is generated from the wind turbines will be collected and converted into alternating current (AC) electricity by inverters within the nacelle of the wind turbines. From the inverters, the electricity will be collected through the feeder lines to the transformer substation. From the transformer a 115 kV single-circuit transmission line will be constructed to connect the project to the existing Hydro One transmission circuit located on Goat Island. Prior to the construction of the wind farm, local electricity from the grid may be used to operate construction equipment and gasoline or diesel may be used to power vehicles transporting the wind turbine equipment. After construction periodic maintenance may require use of the same in smaller quantities. There are no required supplementary fuel sources to generate energy for this project.

## 5.4 Project Components

The major components of the project are as follows:

- Twenty-four (24) wind turbines;
- 690V /34.5 kV step up transformers (located in the base of each turbine);
- 34 kV collection system to link the wind turbines to the substation;
- Transformer/substation (34 kV to 115 kV);
- A 10.3 km, 115 kV single circuit transmission line;
- A connection station at the point of connection with the provincial grid;
- Wind turbine access roads;
- Transition yard;
- Four (4) meteorological towers (which are already installed and operating); and
- Staging areas for assembly and erection of the wind turbines, only during construction.

### Wind Turbines

The project includes twenty-four (24) GE 2.5 MW wind turbine generators with a total installed nameplate capacity of 60 MW. The turbine towers will be 98.3 metres in height and the blade diameter will be 103 metres across. The nacelle, located at the top of each turbine tower, houses the generator, inverter, gearbox, bearings, couplings, rotor and auxiliary equipment. The nacelle is constructed of fiberglass, lined with sound insulating foam, and has lighting and ventilation to allow work to be conducted inside. The turbine blades are mounted on a hub and shaft that are connected to the nacelle. Each turbine tower consists of several stacked segments which are mounted on a concrete foundation. Specifications of the turbines can be found in the *Wind Turbine Specifications Report*.

The wind farm layout was developed taking into consideration the following:

- a) results from wind profile studies and anemometer data;
- b) site access;
- c) existing land use;
- d) environmental and socio-economic information;
- e) results from the sound assessment;
- f) interconnection economics;
- g) comments received from the public and agencies; and
- h) REA setback requirements.

### Step-up Transformers & Collection System

A small “step-up” transformer will be located in the base of each turbine to transform the electricity from 690 V to 34.5 kV for transmission through the collection system. The collection system will be composed of a combination of underground and overhead lines all connecting to the substation. The feeder lines will be buried and generally follow the

turbine access roads, although in some cases, to reduce the distance of the lines, the lines may divert from the roads. Overhead lines would only be used for small lengths to avoid environmentally sensitive features. It is expected that the above ground sections of the overhead lines would be supported by single poles although in some cases, double poles could be required (due to soil conditions, angles in the line, etc.). Some lines will be installed using directional drilling. For the layout of the access lines, please refer to the mapping in **Appendix A**.

#### Transformer/Sub-Station

A single walled transformer will be required to increase the voltage of the electricity from 34.5 kV to 115 kV. The higher voltage is required to allow connection with the provincial grid. While the final design of the sub-station is to be confirmed, it would consist of an open-air design facility with one transformer unit. The sub-station would be surrounded by a security fence and would have security lighting. The sub-station would require an area of 50 metres x 80 metres of land (see **Appendix A** for mapping of the proposed location).

A concrete containment system would be installed to capture any leaks from the transformer. The containment system would be sized so that it would contain all of the oil in the transformer should there be a complete failure of the unit (which would be a rare and unexpected event). The containment system will be approximately 5 metres x 6 metres in size. Water in the containment system would be visually inspected for any evidence of oil (as oil would float to the top). If oil is present, a tank truck would be brought to site to pump the water/oil mix into it. The water/oil mix will then be disposed of off-site at a licensed facility. If no oil is detected in the water, the water would be pumped out to an adjacent swale and then allowed to infiltrate into the ground. Given the small size of the containment system, the volume of water collected would be very small.

#### High Voltage Transmission Line

From the step-up transformer, a 115 kV single-circuit transmission line will be constructed to connect the project to the existing Hydro One transmission system circuit S2B that is located on Goat Island (see **Appendix A** for the proposed route). This connection is facilitated in the Transition Yard where the overhead transmission line goes underground to cross under the channel to Goat Island. The 115 kV transmission line will be supported through either single or double poles. The transmission line is largely contained within municipal road rights-of-way but some private property will be crossed and MMWLP has acquired easements through the affected parcels of private land. The maximum width of the right-of-way (RoW) will be 8-10 metres depending on the distance of poles and conductor swing. There will be the need to cross the North Channel to Goat Island with a submarine cable (500 metres of submarine cable). The cable will lie on the bed of the channel but be trenched in at both shorelines. Once on Goat Island, the cable will run underground for 300 metres to connect to the provincial transmission line at Hwy 6.

### Connection/Switching Station

A connection/switching station would be required at the point of connection with the provincial grid on Goat Island. Breaker/disconnect switches would be installed to allow the flow of electricity from the project to be turned off/on.

### Turbine Access Roads

No permanent paved roads will need to be constructed for the turbines. Access roads are required in order to deliver the wind turbine components as well as allow operation and maintenance vehicles access to the wind turbines. The central and eastern areas of the project will be accessed via Highway 6 and Green Bush and Townline Roads, while the western area of the project will be accessed via Highway 540.

To meet the wind turbine manufacturer, *GE's Site Roads and Crane Pad Specification Report* for the GE 2.5MW wind turbine generator, Green Bush Road will have to be improved in two locations. Additional stone base may be added for strengthening as required. The width may be increased (to 5.5 metres). The intersection at Hwy 6 would be temporarily widened and the road grade and vertical curves would be adjusted to comply with the specifications report. Extensions of existing culverts (2) are expected to be required. (See *Water Assessment Report*) Please see **Appendix D** of the *Construction Plan Report* for the Preliminary Road Design.

Typical entrances and any culverts would remain in place after construction.

There is the potential that the intersection of Green Bush Road and McLean's Mountain Road will require widening of the turning radius. A 38.1 metre turning radius is required for the delivery of the wind turbine components. Widening of the turning radius would involve the placement of granular material to create a widened roadbed. The road grade and vertical curves may have to be adjusted to comply with the *General Electric Specification Report - Site Roads and Crane Pad*. See Appendix D of the *Construction Plan Report* for the GE Specification Report. The widened intersections would be removed after component delivery but the entrances and any culverts would remain.

Access roads will be constructed to access each turbine site from existing public roads during both the construction and operation phases of the project (see **Appendix A** for the routing of the access roads). The access roads will be excavated and constructed, to be 5 metres wide for both the construction and operation phases, with no ditches and be composed of a gravel base. Where turning is required the width of the road may be wider. One watercourse crossing of a tributary to Bass Lake will be required and the crossing would be facilitated through the use of culverts to allow stream flow to continue.

### Staging Areas

Turbine staging areas are located at each turbine site. The turbine staging area is comprised of:

- A 200 m<sup>2</sup> crane pad in the area needed to support the crane used for construction;
- and

- A staging and equipment storage area for the erection of the towers and the lift and securing of the nacelle and blades.

A total leveled surface of 0.3 hectares will be required at each turbine. A 360 degree radius around the base of the turbine to a distance of 50 metres at a 5% grade is also needed for the assembly and erection of the turbines. The land for the staging area will be restored to as close to an original state as possible after the construction period.

A concrete batch plant will not be required for this project. As such, the project will not require the extraction of surface or groundwater within the project boundaries for concrete production. Concrete will be sourced from local suppliers.

#### Storage Infrastructure

A temporary construction area will be created. It will be used for construction trailers; vehicle parking and equipment lay-down. Temporary construction fencing will be installed around the perimeter of the construction site, including the temporary construction support area. The temporary construction lay-down area will be approximately 92 metres by 183 metres and located on Lot 6, Concession 5, Township of Howland.

At each wind turbine location a lay-down area will be provided adjacent to the access road of sufficient area to permit any turbine equipment being delivered to the crane pad to be offloaded and stored pending erecting and installation of the turbine. Vegetation from this area will be cut short and a graded working area will be provided with a 50 metre radius from centre of each turbine foundation with berms removed. All wind turbines will be assembled in the temporary work area around each turbine area. Post-installation the land will be returned to pre-construction conditions.

#### Wind Farm Operations Building

An operations building will be constructed on-site next to the sub-station location. The footprint of the operations building will be 450 m<sup>2</sup> in size. It will provide office space and for the storage and maintenance of equipment. Potable water will be supplied through a well. A septic bed will be constructed for the disposal of sewage. Both will be constructed in accordance with applicable municipal and provincial standards. Holding tanks will be used for potable water and for the disposal of grey and brown water. Tanker trucks would come to the site to pump all waste water for disposal offsite at a licensed facility.

The activities associated with the development and operations are described in detail in *Section 5.4 Project Activities* of this report.

### **5.5 Project Activities**

**Table 5-1** provides a summary of proposed project activities. The main phases of the project are construction, operation and decommissioning.



As outlined in the *Design and Operations Report*, the timing of project construction is as follows:

- Site Preparation and Clearing – Spring 2012
- North Channel Cable Crossing – July-August 2012
- Access Road Construction – May – June 2012
- Foundation Construction – May – July 2012
- Transmission Line construction – June – September 2012
- Electrical interconnection – October 2012
- Commissioning – November 2012
- Site rehabilitation – Spring 2013

### Emissions

During construction, both noise and dust is expected to be generated. Mitigation measures to reduce these effects are outlined in the Environmental Management and Protection Plan (EMPP) in Appendix C of the *Design and Operations Report*.

During operations, noise will be generated by the turbines. Noise levels at all identified receptors will not exceed the MOE 40 dBA limit. The noise assessment report is appended to the *Design and Operations Report, Appendix A*.

Decommissioning is expected to generate similar air and noise emissions as for the construction phase. See the *Decommissioning Plan Report* for further details.

**Table 5-1 - Summary of Project Activities**

*Project Activities*

<b>Construction Activities</b>	<ul style="list-style-type: none"> <li>➤ Turbine Sites:               <ul style="list-style-type: none"> <li>• Site clearing and grading</li> <li>• Construction of access roads/improvements to local roads &amp; intersections</li> <li>• Delineation of temporary work areas</li> <li>• Completion of necessary site grading</li> <li>• Installation of crane pads</li> <li>• Installation of tower foundations</li> <li>• Tower/turbine erection</li> <li>• Connection of wind turbine to electrical collection system</li> <li>• Remediation of temporary work areas</li> <li>• Completion of permanent access roads</li> <li>• Site landscaping (final grading, topsoil replacement, fence installation, etc.)</li> </ul> </li> <li>➤ Collection System:               <ul style="list-style-type: none"> <li>• RoW clearing as required</li> <li>• Installation of single poles</li> <li>• Installation of 34.5 kV overhead lines on leased lands and within municipal road rights-of-way</li> <li>• Construction of step-up transformer substation</li> </ul> </li> <li>➤ Transmission Line and Interconnection:               <ul style="list-style-type: none"> <li>• 8-10 metre RoW clearing as required</li> <li>• Installation of primarily single poles</li> <li>• Installation of transmission line conductors</li> <li>• Installation of a 500 metre submerged line</li> <li>• Installation of switch gear at connection point with Hydro One transmission line (Provincial grid)</li> <li>• Commissioning of the Project</li> </ul> </li> </ul>
<b>Operation and Maintenance Phase Activities</b>	<ul style="list-style-type: none"> <li>➤ Turbine Sites:               <ul style="list-style-type: none"> <li>• Periodic vehicle access for maintenance</li> <li>• Remote condition monitoring and meter calibrations</li> <li>• Grounds keeping</li> </ul> </li> <li>➤ Overhead Collection System:               <ul style="list-style-type: none"> <li>• Testing and maintenance of electrical equipment</li> </ul> </li> </ul>
<b>Decommissioning Phase Activities</b>	<ul style="list-style-type: none"> <li>➤ Turbine Sites:               <ul style="list-style-type: none"> <li>• Removal of tower and turbine infrastructure.</li> <li>• Removal of foundation to not less than 1 metre below grade or to bedrock depth</li> <li>• Turbine site grading and rehabilitation (dependent upon new proposed use)</li> <li>• Removal of all waste from the site</li> </ul> </li> <li>➤ Access roads               <ul style="list-style-type: none"> <li>• Access roads will be left at landowner's requests or graded to restore terrain profiles (as much as possible), and vegetated</li> </ul> </li> <li>➤ Collection Lines:               <ul style="list-style-type: none"> <li>• Removal of overhead collection line conductors and poles</li> </ul> </li> <li>➤ Transmission Line and Substation:               <ul style="list-style-type: none"> <li>• Removal of transmission line above-ground conductors</li> <li>• Removal of sub-station components</li> <li>• Removal of poles</li> <li>• Removal of all waste from the site</li> </ul> </li> </ul>

### Waste and Waste Management

The project will result in the creation of some solid waste materials such as packaging and other constructed related materials and used lubricants. The project owner will contract a licensed commercial waste collection and disposal company(s) and develop a disposal plan that includes the use of a landfill that has a Certificate of Approval to take waste from the project area. The requirements of the licensed operator and the associated operational regulations will determine how they will handle disposal. During operations there is the potential for the generation of some additional solid wastes (e.g. office waste, packaging, used oils and lubricants, etc.). These wastes will be recycled/disposed of at a licensed facility. Similarly, during the decommissioning phase, wastes would be hauled off site and either reused/recycled or disposed of at a licensed facility.

Hazardous materials such as oils, fuels and paints will be required. Fuel will be delivered to the site by tanker with temporary fuel storage at the project construction site. Although the quantity of materials to be used is of low volume, there is the potential for some spills during the construction period. Spills will be managed in accordance with provincial legislation and the EMPP (included as part of this REA submission package) that was developed for this project.

MMWLP will submit a Generator's Registration Report for each waste generated by the wind farm and its ancillary facilities, according to O.Reg 347 of the *Environmental Protection Act*. Section 4.0 of the EMPP provides further details on the waste management strategy for the project.

### Sewage and Stormwater Management

A septic bed will be constructed for the disposal of sewage. Details of the septic bed are outlined in the *Construction Plan Report* and the *Design and Operations Report*. During construction, several stormwater management measures will be implemented to avoid/minimize erosion and sedimentation in local watercourses. The EMPP describes the measures to be put in place. During operations, the only stormwater management facility that may be required is the sub-station transformer oil containment system that has been previously described in this PDR.

### Water Takings

A well will be drilled for potable water use within the Operations and Maintenance Building. Water taking is expected to be well below 50,000 L per year. As previously noted, concrete required for the construction of the project can be sourced from local licensed suppliers. Therefore the project will not require the extraction of surface or groundwater within the project boundaries for concrete production.

Further to the above, as part of the construction program for the proposed project, good site practices and procedures will be implemented to limit and/or reduce the potential environmental effects of the project. These practices will include specifications regarding disposal of excavated materials, sediment and erosion control, and soil compaction control and mitigation. All staff and contractors involved in the project will be made

aware of the environmental commitments contained within the REA package and in the EMPP that has been developed as part of the *Design and Operations Report*. The EMPP outlines the required protection measures for activities associated with the construction, operation and maintenance of the proposed McLean's Mountain Wind Farm.

## **6. ENVIRONMENTAL EFFECTS**

The effects of constructing, operating, and maintaining a wind farm are well understood and can be typically mitigated through well known and accepted techniques and practices. For example, siting wind turbines outside of wetlands and away from residential (noise) receptors reduces the potential for negative environmental effects.

The *Construction Plan Report* and the *Design and Operations Report* summarizes the potential effects of constructing, operating and maintaining the wind farm. Based on the screening of environmental features in these reports and through the Environmental Screening Process, the following is a summary of the environmental effects of the project:

### ***Construction (short-term)***

- Potential for soil/water contamination (surface & ground) from spills of fuel and oil;
- Erosion/storm runoff could affect water quality (due to increased sediment loads) of local streams;
- Decrease in land available for harvesting;
- Increase in particular matter (dust) in the local area – will be mitigated with dust control program;
- Noise effects from the operation of construction machinery and transport of materials into the project area;
- Loss of vegetation/terrestrial habitat through project construction (wind turbines, access roads and electrical lines);
- Disturbance of wildlife in adjacent habitat from construction noise and human presence;
- Public safety effects from operation of heavy equipment; and
- Potential for effects on Aboriginal areas of interest (will continue to be confirmed through discussion with applicable communities).

### ***Operation Period (long-term)***

- Noise from operating wind turbines (all turbines will meet the 40 dBA limit for receptors);
- Visual impact of turbines; and
- Potential for bird and bat kills.

A Post-Construction Monitoring program has also been prepared as outlined in the EMPP.

Further, to address the *MOE Technical Bulletin One – Guidance for Preparing the PDR (Draft - March 2010)*, the following provides a summary of the project effects on specific components of the environment:

### **6.1 Heritage and Archaeological Resources**

There are no known built heritage features or designated landscapes that will be affected by the project. A Cultural Heritage Self Assessment/Screening has been prepared and submitted to the Ministry of Tourism and Culture.

Stage 1 and 2 Archaeological assessments have been completed. The Ministry of Tourism and Culture has signed off on the Stage 1 and Stage 2 Reports. There are no known cultural sites (reported sites) on or within 250 metres of the MacLean's Mountain Wind Farm and the proposed project turbine locations. The majority of the project area has low archaeological potential, is well removed above most permanent water, is mostly high plateau with near surface bedrock, has no evidence of eskers or similar features, and the vast majority of the area does not contain useable toolstone. The areas that were identified as having archaeological potential include the stream areas draining Perch Lake to Honora Bay, and the transmission line crossing east of Little Current. No cultural materials were located during the Stage 2 Assessment. Please see the *Cultural Heritage Assessment Report* that describes the potential for effects to natural heritage features.

### **6.2 Natural Heritage Resources**

An extensive program of natural heritage studies has been conducted for this project since 2004 including avian and bat survey programs. This past work exceeds what is now generally required by the MNR for REA approval of wind energy projects. Section 6.0 of the ESR provides a detailed description of the natural environmental features in the study area and the potential for effects on these features. There are no designated natural features that will be affected by the project. Project effects include the loss of some wildlife habitat (forest and pasture lands), temporary wildlife disturbance during construction, and the potential for bird/bat kills during operation. Consultation with the MNR and Environmental Canada has occurred in the assessment of project effects. In addition to the environmental commitments in the *Natural Heritage Environmental Impact Statement Report*, an *Environmental Management and Protection Plan (EMPP)* and *Post Construction Monitoring Plan (PCMP)* have been completed and will be followed by the project owners and its constructor.

The project meets the REA set back requirements for natural heritage features. Please refer to the *Environmental Study Report*, *Environmental Impact Statement* and *Natural Heritage Assessment Report* for more detailed information.

### **6.3 Water Bodies**

The project area includes some small watercourses that act as tributaries to Perch Lake (a small lake in the southern portion of the project) and other Lakes outside the study area boundary. These water bodies and the aquatic habitat they contain are described in the Water Assessment Report. Aquatic surveys (to support DFO approvals) were undertaken in early May 2010. Mitigation measures to minimize effects are described in the above noted ESR sections and in the EMPP (See Section 3.1- Erosion Control) as well as in the *Construction Design Report* and the *Design and Operations Report*.

### **6.4 Air, Odour and Dust**

The project has the potential to generate air emissions from construction equipment engines and dust from vehicle movement and excavation activities. Air quality effects and mitigation measures are described in the *Construction Plan Report*. Also, Section 6.5 of the ESR describes the potential for air quality effects and lists mitigation measures. Section 3.2 of the *EMPP* provides further details regarding air quality mitigation measures to be implemented.

### **6.5 Noise**

The project has the potential to generate noise emissions from construction equipment and from the operation of the turbines. The *Construction Plan Report* and section 6.12 of the ESR describes the potential for noise effects and mitigation to be implemented. A noise assessment for the updated project layout has been prepared and is appended to the *Design and Operations Report*. The project meets the MOE 40 dBA noise limit at the identified receptor points.

### **6.6 Land Use and Resources**

The project is located on agricultural land (cattle pasture) and there are some forested areas within the study area boundary. All of the land is privately held with the exception of parts of the transmission line route, which is located within the municipal road RoW. Section 6.16 of the ESR describes recreation activity in the project area. Hunting is identified as one of the main recreation uses of the area. While construction activity could disrupt hunting on some adjacent lands during the fall 2012 hunting season, there are no long term effects on hunting expected from the project. Game species are expected to return to the area once the project is operational. The public has expressed that tourism and recreation activities would decline because of views of the turbines in the larger area. There is no evidence to support that this would occur based on past case studies on this issue. The most visible turbine sites that were originally located at the north end of the study area have been removed from the project.

Comments from the MOE, landowners and Aboriginal communities have all been incorporated into the final REA submission package. Please see the Consultation Report



for details of the changes that were made to the project layout and the REA submission package based on comments received.

MMWLP has provided responses to community concerns relating to impacts on recreation and tourism in the Public Comment-Response Table that has been included as part of the REA Submission Package. This table is appended to the *Consultation Report*.

## **6.7 Provincial and Local Infrastructure**

Regarding provincial infrastructure, there may be the need to improve the intersection of Hwy 6 and Green Bush Road. MTO will be consulted with regarding this improvement.

The only municipal infrastructure required for the project are local roads for access to the project and the use of rights-of-way for the power lines. MMWLP has signed a Roads Users Agreement with NEMI for the use of its roadways/unopened road allowances.

## **6.8 Public and Health and Safety**

Negative effects on public health and safety are described in Section 6.18 of the ESR. All the turbines are located on private lands and are well set back from the residents in the area. Public safety during the construction period is recognized by the project owner to be a critical issue. The project owner will ensure that its contractor constructs the project in a manner that does not create undue safety risk to the public (particularly when moving construction vehicles and equipment along public roads) and conforms to all the principles set out in the *EMPP*.

## **6.9 Areas Protected under Provincial Plans and Policies**

The project is not located in an area governed by a provincial plan.

## **6.10 Aboriginal Communities and Treaty Rights**

MMWLP has been consulting various Aboriginal communities since the project inception. MMWLP has used various means of consultation and the MOE's direction with whom to consult. Details of the Aboriginal consultation program are detailed at length in the *Consultation Report*.

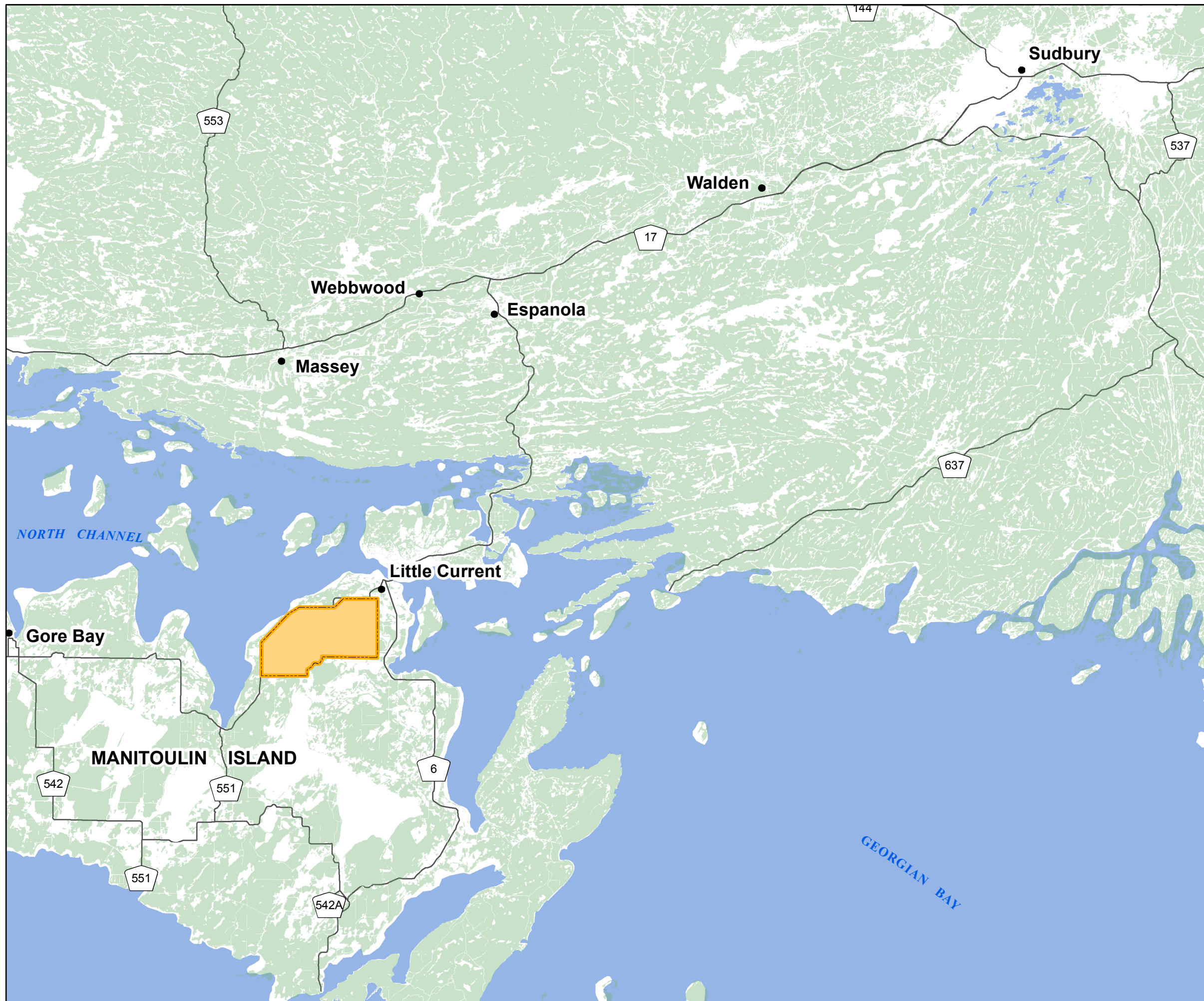
In February 2011, after years of consultation, the United Chiefs and Councils of Mnidoo Mnising (UCCMM) formed the Mnidoo Mnising Power Company and entered into a 50/50 partnership with NPI to form the McLean's Mountain Wind Limited Partnership to own and operate the McLean's Mountain Wind Farm project.

Membership of UCCMM include M'Chigeeng First Nation; Sheguiandah First Nation; Sheshegwaning First Nation; Aundeck-Omni-Kaning First Nation; Whitefish River First Nation; and Zhiibaahaasing First Nation.

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**APPENDIX A**  
Mapping

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**NORTHLAND  
POWER**

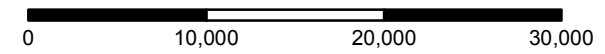
**Mclean's Mountain Wind Farm  
Figure A-1: General Location  
of Project**

**Legend**

- Communities
- Highway
- ▭ Project Area
- Waterbody
- Woodlots



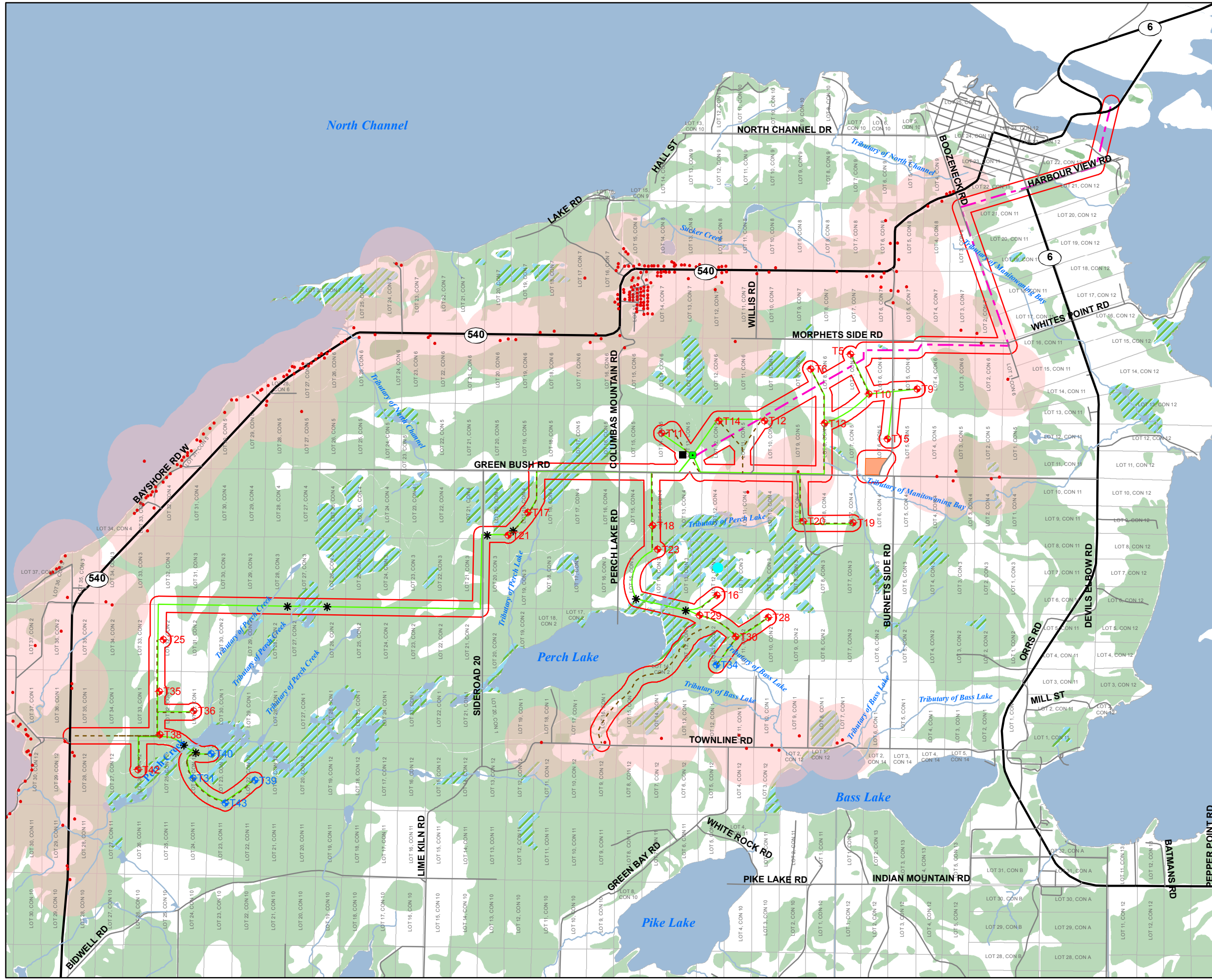
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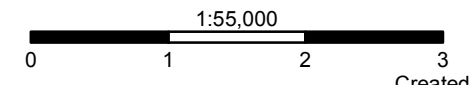
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 Mapping\Figure 4-1 General Site Plan.mxd



## McLean's Mountain Wind Farm Figure A-2: Project Components Site Plan



- Legend**
- Noise Receptor
  - Local Roads
  - Highway
  - 120 m Project Component Setback
  - Lots/Concessions
  - Water Body
  - Watercourse
  - Woodland
  - ▨ Unevaluated Wetland
  - 550m Noise Receptor Setback
- Project Components**
- 24 Wind Turbine Locations
  - Five Extra Permitted Sites
  - Substation
  - Operations Building
  - \* Horizontal Directional Drilling Access/Exit Pit
  - Access Road
  - Feeder Lines
  - Transmission Line
  - Construction Staging Area



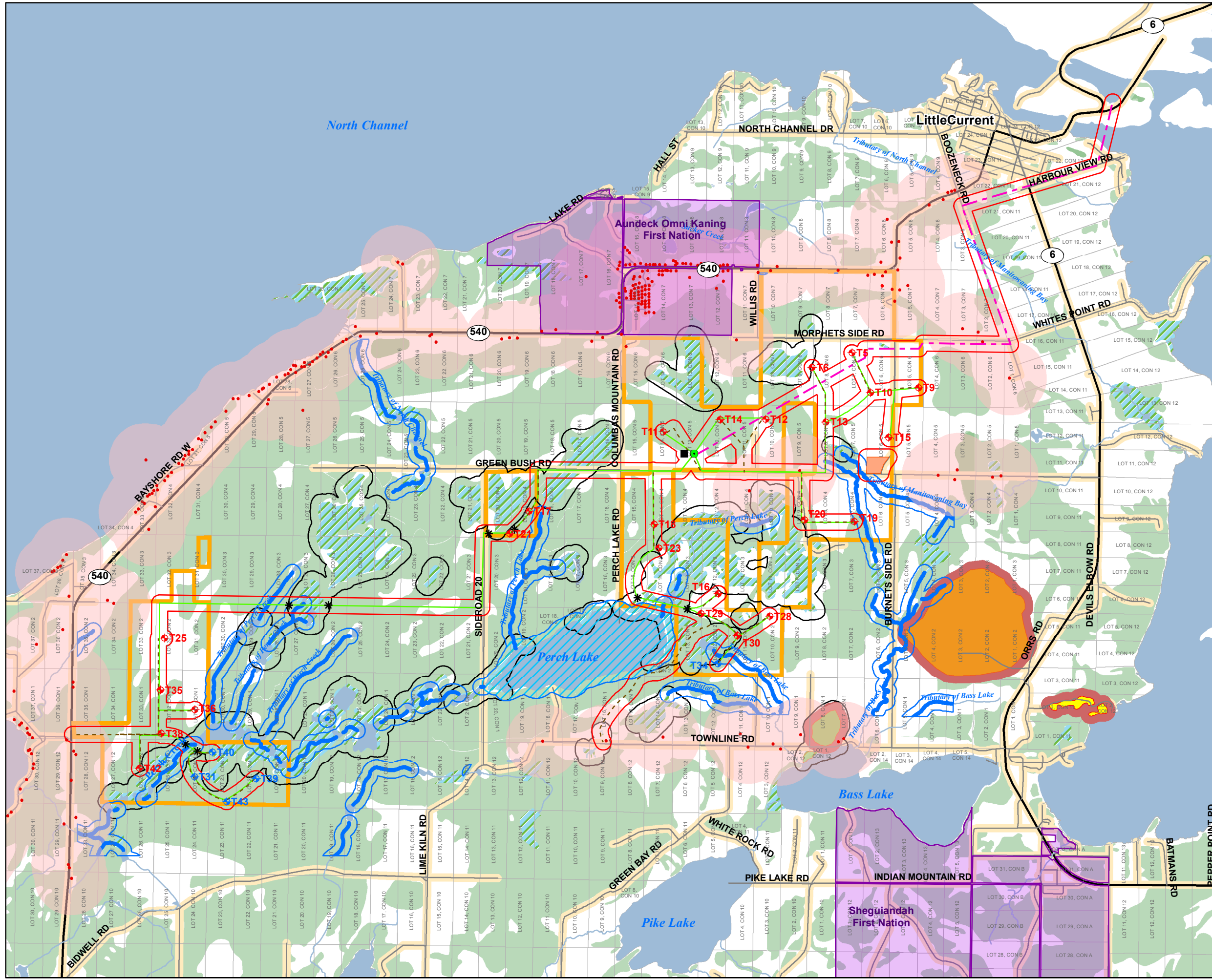
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 Figure 4-2 Project Components Site Plan .mxd





**NORTHLAND  
POWER**

### McLean's Mountain Wind Farm Figure 2: REA Setbacks Map



**Legend**

- Residence
- Local Roads
- Highway
- Lots/Concessions
- Water Body
- Watercourse
- First Nation Reserve
- Woodland
- Wetlands

**Area of Natural and Scientific Interest, Life Science**

- Sheguiandah Hill
- Sheguiandah Quartzite Quarry
- Bass Lake Marsh/Swamp

**Project Components**

- 24 Wind Turbine Locations
- Five Extra Permitted Sites
- Substation
- Operations Building
- Horizontal Directional Drilling Access/Exit Pit
- Access Road
- Feeder Lines
- Transmission Line
- Construction Staging Area

**REA Constraints**

- 30m Watercourse Setback
- 120m River/Stream Setback
- 61.5m Non Participating Lot Setback
- 61.5m Road Setback
- Perch Lake Setback
- 120m Wetlands Setback
- 120m Life Science Area of Natural and Scientific Interest (ANSI) Setback
- 550m Noise Receptor Setback



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**APPENDIX B**  
Legal Property Descriptions of Lands under Option to Lease

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**Optioned properties include:**

**Township of Howland: Concession 1, Lots 15, 16, 17, 31, 32, 33, south part of Lots 34 and 35 (25 acres of each lot); Concession 2, Lots 10, 11, 12, 13, 14, and Lots 21-42; Concession 3, Lots 12, 13, 14, 15 and Lots 21-32; Concession 4, Lots 7, 8, 9, 14, 19, and 20; Concession 5, Lots 6, 7, 8, 10, 11, 12, 13, 14 ;Concession 6, Lots 5, 6, 7, 8, 9, 10; Concession 12, Part Lot 21.**

**Township of Bidwell: Concession 12, Lots 22 - 28.**