NORTHLAND POWER

Northland Power Inc.
McLean's Mountain Wind Farm
Renewable Energy Approval (REA)
Draft Submission Package

January, 2010

Submitted by

Dillon Consulting Limited

DILLON CONSULTING

January 18th, 2010

Dear Sir/Madam;

Re: Northland Power Inc., McLean's Mountain Wind Project
Renewable Energy Approval (REA) Draft Submission Package

Northland Power Inc. (NPI) 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. This wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity.

It is NPI's intention to obtain a contract for the sale of electricity with the Ontario Power Authority (OPA) through the Province's Feed-in-Tarriff (FIT) program. The project will require approval under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. The REA process replaces the previous process that required several separate approvals including for example, the *Environmental Assessment Act, Planning Act and Environmental Protection Act*. As specified in the REA regulations (Section 16), a project proponent is required to:

- Notify the local community of the proponent's intent to develop the project (accomplished through this letter);
- Provide paper copies of the drafts of all documents as required by the REA Regulations (accomplished through this submission); and,
- Provide electronic copies of the drafts of all documents as required by the REA Regulations on the Project website (available via www.northlandpower.ca *click tab for Development Projects*)

This Renewable Energy Approval (REA) Draft submission package has been released as of January 18th, 2010 for a 60-day review period and includes the following sections:

Section 1: Concordance Table

NPI is relying on the previously completed Environmental Study Report to fulfill much of the REA reporting requirements. The MOE advised that this is an acceptable approach for this project. The Concordance Table document outlines the NPI's fulfillment of the REA requirements for a Class 4 Wind Facility. The Concordance Table summarizes the REA requirements and illustrates how these requirements were fulfilled through the McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) released in July 2009. The McLean's Mountain Wind Farm 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. 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 concordance table also references any supplementary information that was provided as part of the REA Draft submission package.

Please note that the wind farm layout presented in the ESR is to be considered as draft subject to revisions based on the input received from government agencies, aboriginal communities, the public and landowners through the REA consultation process.

Section 2: The McLean's Mountain Wind Farm ESR/EIS (ESR), July 2009 Comment/Response Table

A comment-response table that documents NPI's responses to the comments received during the 30-day review period the ESR document was developed.

Section 3: Supplementary REA Reports

NPI is obligated to provide the required documentation to support its REA application. NPI intends to rely on the ESR that was released in July 2009 to fulfill, at least partially, the necessary documentation. The following supplementary documents, which were not required for the ESR process, are included in this REA Draft submission package:

- ✓ Project Description Report
- ✓ McLean's Mountain Wind Farm Environmental Management and Protection Plan - Supplementary Information for the Design and Operations Report
- ✓ Community Response Plan - Supplementary Information for the Design and Operations Report
- ✓ Construction Schedule - Supplementary Information for Construction Plan Report
- ✓ Decommissioning Plan Report

A Comprehensive Consultation Report will be prepared once the REA consultation process is completed. The Consultation Report will be prepared to reflect REA requirements and will document the consultation program that will be conducted under the REA process. The Consultation Report will include a summary of communication and consultation activities conducted with the public, government agencies and Aboriginal communities and will include responses to comments received. NPI has met the REA requirements for the first Public Information Centre under the former Environmental Screening process.

Section 4: Supplementary Mapping

A map depicting the REA wind farm setback requirements is enclosed. This map depicts all applicable REA setbacks that have been met for the draft wind farm project layout. The setbacks include the distances from the proposed wind turbines to the important features within the project area boundary such as residences and natural features

Comments on the draft REA reports are to be submitted in writing (see below for contact information) by **March 18th, 2010**.

NPI is pleased to continue its communications with members of your community with respect to this project. The proposed project and findings of the REA process will be presented at a future Public Information Centre (PIC) that is planned for March 22, 2010. Notice of this future PIC will be released in your community close to the date of the planned PIC.

If you have questions about the project please do not hesitate to contact me at:

- McLean's Mountain Wind Farm Project, P.O. Box 73, Little Current ON, P0P 1K0
- Phone (mobile: (705)-271-5358, project office: (705)-368-0303); or
- E-mail: *rickmartin@northlandpower.ca.*

Yours truly,

Rick Martin
Project Manager
Northland Power Inc.

Section 1

CONCORDANCE TABLE

NPI – MCLEAN'S MOUNTAIN WIND FARM (MMWF)
DRAFT CONCORDANCE TABLE OUTLINING FULFILMENT OF RENEWABLE ENERGY APPROVAL REQUIRMENTS

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
Table 1 Item 1. **Construction Plan Report**	Set out a description of the following in respect of the renewable energy project:		
	• Details of any construction or installation activities	The ESR includes a description of construction activities to be undertaken. See ESR Table 2-2 (pg. 18)	No additional documentation required.
	• The location and timing of any construction or installation activities for the duration of the construction or installation.	Same as above. Figure 2-1 presents the project location/location of proposed construction activities.	Please see the Supplementary Information for **Construction Plan Report** under **Section 3** - **Supplementary REA Reports.**
	• Any negative environmental effects that may result from construction or installation activities within a 300 metre radius of the activities.	Potential negative environmental effects that may result from construction or installation activities (within a 300 meter radius) of the activities were assessed and documented in the ESR. Mitigation measures to address the potential negative environmental effects are described. See ESR Section 6 - "Effects Assessment and Mitigation". Subsections 6.1 through 6.9	No additional documentation required to describe negative environmental effects.
	• Mitigation measures in respect of any negative environmental effects that may result from construction or installation activities within a 300 metre radius of the activities.	Same as above.	The supplementary McLean's Mountain Wind Farm Environmental Management and Protection Plan (part of the Design and Operations Report) includes additional construction and mitigation measures.
REA Sections 26 through 28 ***Natural Heritage Features Summary Report for MNR Clearance as per Section 28***	A Natural Heritage Summary report is required to obtain MNR "clearance" as specified in Section 28 of the regulations. Will need to demonstrate that set backs from applicable natural features have been met. Specified Natural Features Setbacks • 120 meters of a provincially significant northern wetland • 120 meters of a provincially significant coastal wetland • 50 m of an ANSI (earth sciences) • 120 m of an ANSI (life sciences) • 120 m of a significant valley land, significant woodlot or significant	There are no provincially significant wetlands, ANSI (life science), significant valley land, significant woodlot, provincial park or conservation reserve in the project area. Natural heritage conditions and the description of effects on those features are described in the ESR in the following sections: 6.1 Physiography/Topography 6.2 Surface Water Quality and Soil Erosion 6.6 Birds	Recommended follow up is provided in the Environmental Management Plan, Section 6. Please see the Setbacks Map in Supplementary Information **Section 4** – **Supplementary Mapping.**

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
	wildlife habitat • 120 m of a provincial park • 120 m of a conservation reserve	6.7 Bats 6.8 Wildlife and Wildlife Habitat 6.9 Threatened and Rare Species Further details are provided in the following appendices to the ESR: C - "Natural Environment Report" D – "Bird Study Report" E - "Bat Study Report" Significant wildlife habitat for species of conservation concern occurs in the project area, including Houghton's goldenrod, Blanding's turtle, massasauga rattlesnake, Canada warbler, common nighthawk, loggerhead shrike, short-eared owl, and several BCR 13 priority bird species. In some instances turbine locations may occur in or near potential significant wildlife habitat. Potential effects and mitigation measures to address these effects on significant wildlife habitat are described in post construction monitoring and environmental management plans as well as ESR sections 6.6, 6.8 and 6.9.	
REA Sections 29 through 31 and 37 through 40 ***Water Assessment Summary Report as per Section 30***	Requires a records review as set out in Section 30(2) and a site investigation as per Section 31. A summary report is to be prepared that documents the results of the site visit and records review and demonstrates that appropriate setbacks have been met including: • 30 m of the average annual high water mark of a lake (or within 120 m subject to an effects assessment) • 30 m of the average annual high water mark of a permanent or intermittent stream (or within 120 m subject to an effects assessment) • 30 m of a seepage area (or within 120 m subject to an effects assessment) • 300 m of the average annual high water mark of a lake trout lake	A records review and site investigations have been completed. The location of aquatic bodies are shown in Figure 6-1 of the ESR. Please see the Setbacks Map in Supplementary Information **Section 4** – **Supplementary Mapping.**. There are no known "seepage areas" in the project area. There are no lake trout lakes in the project area. No turbines are placed within 30 of a permanent or intermittent stream. Two turbines are located within approximately 120 m of a permanent or intermittent stream (turbine #19 (located approximately 121 m from stream features) and turbine #27(located approximately 62 m from stream feature). As such, it is necessary as per REA Reg. Section 40, to identify and assess any negative environmental effects of the project on such water bodies. ESR Sections 6.2 and 6.3 provide a description of potential effects on water bodies.	See **Section 6 – Supplementary Mapping** of the Draft REA submission package.

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
Table 1 Item 2. **Consultation Report**	Set out a description of the following in respect of the renewable energy project: A summary of communication with any members of the public, aboriginal communities, municipalities, local roads boards and Local Services Boards regarding the project. • Comments from members of the public, aboriginal communities, municipalities, local roads boards and Local Services Boards were considered by the person who is engaging in the project • Evidence that the information required to be distributed to aboriginal communities • Any information provided by an aboriginal community in response to a request made • Evidence that a consultation form was distributed • The consultation form distributed under subsection 18 (1), if any part of it has been completed by a municipality, local roads board or Local Services Board. • The documents that were made available were amended after the final public meeting was held • The proposal to engage in the project was altered in response to comments received from members of the public, aboriginal communities, municipalities, local roads boards and Local Services Boards	A summary of the community consultation activities conducted to date are included in Section 4 – Stakeholder Consultation of the MMWF ESR/EIS.	Please see the Supplementary Information for the **Consultation Report** under **Section 2** – **The McLean's Mountain Wind Farm EIS/ESR, July 2009 Comment/Response Table.** Please note that Consultation Report will be prepared once the REA consultation process is completed. The Consultation Report will be prepared to reflect REA requirements and will document the consultation program that will be conducted under the REA process. The Consultation Report will include summary of communication and consultation activities conducted with the public, government agencies and Aboriginal communities and will include responses to concerns. NPI has met the REA requirements for the first Public Information Centre under the former Environmental Assessment process. The consultation report will be included with the Final REA Submission Package to the MOE.
REA Notice	• Notice of Proposal to engage in Project	Project notices were released in June 2004, August 2005 (Commencement of an Environmental Screening) and June 2009 (Notice of Study Restart) Project notices were placed in the local newspaper and distributed through Canada Post Ad Mail See ESR Section 4.2 and Appendix B	No additional action required. Please note that the need for a Notice of Project to be distributed in Aboriginal Community Newspapers will be discussed with applicable FNs.
	• Copy of notice to every land owner within 120 meter of project location	Notices were not sent directly to all landowner as this was not required under the previous process.	Landowners within 120 meters of the project location were notified of the release of this Draft REA Submission Package via direct mailing.
PIC Requirements	• Notices of minimum 2 PICs	Previous PIC notices were placed in the local newspaper in June 2004, June 2005 and June 2009 See ESR Section 4.2 and Appendix B Final PIC to be held. Appropriate public notices will be released.	Notice of the final PIC will be released including direct mailings to landowners within 120 meters of the project location.

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
Project Description	• Minimum 2 PICs PIC1 – copies of draft project description	PICs were held in June 2004, June 2005 and June 2009. See ESR Sections: 4.6.2, 4.6.3 and 4.6.4 Final PIC will be held	Copies of the Draft Project Description will be posted available at the last public meeting (PIC).
	• Draft project description to be posted on proponent's website after the Director's decision	The ESR was placed on NPI's website which includes a description of the project. A Project Description has been submitted to the MOE.	No additional action required.
Release of Draft REA Reports	• 60 days before final public meeting, drafts of all documents required under REA application with exception of consultation report to be available to the public in paper copy	Needs to be undertaken.	Hard copies of this Draft REA Submission Package were made available at the local municipality and the project office. Electronic copies were also posted on Project website.
Aboriginal Consultation	• Any information provided by an aboriginal community in response to a written request made by the proponent. • Evidence that the information required to be distributed to aboriginal communities was distributed.	Information obtained from aboriginal communities received to date is contained within the ESR – See Section 4.3 Documentation to reflect input from additional consultation with Aboriginal communities to be prepared.	Documentation to reflect input from additional consultation with Aboriginal communities will be prepared as part to the Consultation Record.
	• Obtain list of Aboriginal Communities from the Director	Aboriginal communities were identified through consultation with INAC and OMAA. See ESR Section 4.3 "Aboriginal Consultation". A request to confirm the list of communities to consult with has been sent to the MNR.	List of aboriginal communities identified to date will be updated (if required by the MOE) once the MOE comments are received.
	• Notice to every aboriginal community as per Director's list	All aboriginal communities that were identified through the above agencies were sent a project notice.	As requested by the MOE, a list of First Nation and Métis communities organizations previously contacted for the MMWF project was sent to the MOE on November 11, 2009. On December 11th, 2009 NPI sent letters to the local identified First Nation communities advising of the proposed project as well as of the new approval process under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. This letter provided a summary of each of the "REA Reports" that are to be released and requested that the identified First Nation communities provide in writing any information available to their communities that in their opinion, should be considered in preparing the "REA Reports" and in particular, any information their communities may have about the adverse impacts that the project may have on constitutionally protected aboriginal or treaty rights and any measures for mitigating those adverse impacts.
	• As per REA Reg. Section 17, before drafts of the REA documents are	The identified aboriginal communities were sent notice of the release of the ESR including information on how to receive the	Hard copies of this Draft REA Submission Package were made available to the identified local Aboriginal communities. Electronic

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
	submitted to the general public, submit the following to the Aboriginal communities: - Draft of project description - Any information on adverse impacts of the project on the aboriginal or treaty rights and mitigation measures - Summary of all reports as required under Part V of REA - Request that the aboriginal communities provide in writing any information available to the community that in its opinion should be considered including any adverse impacts that the project may have on constitutionally protected aboriginal or treaty rights and measures for mitigating those adverse impacts	report if they were interested in reviewing it. The closest four (4) First Nation communities to the project were also sent copies of the ESR for their review. NPI has been in contact with several First Nation communities regarding the project since 2004. As noted above, First Nation communities were sent letters regarding the availability of the ESR for their review. See ESR Section 4.3 "Aboriginal Consultation" and Appendix J "Aboriginal Consultation Summary"	copies were also posted on Project website. NPI continues to provides the offer for communication and consultation activities with Aboriginal communities.
	• Written request to the aboriginal community to provide information to assist in development of Project Description	NPI has been in contact with several First Nation communities regarding the project since 2004. As noted above, First Nation communities were sent letters regarding the availability of the ESR for their review. See ESR Section 4.3 "Aboriginal Consultation"	On December 11th, 2009 NPI sent letters to the local identified First Nation communities advising of the proposed project as well as of the new approval process under Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. This letter provided a summary of each of the "REA Reports" that are to be released and requested that the identified First Nation communities provide in writing any information available to their communities that in their opinion, should be considered in preparing the "REA Reports" and in particular, any information their communities may have about the adverse impacts that the project may have on constitutionally protected aboriginal or treaty rights and any measures for mitigating those adverse impacts.
	• 60 days before final public meeting drafts of all documents required under REA application with exception of consultation report to be available in paper copy	Notices to all First Nation communities were sent advising them of the release of the ESR. Copies of the ESR were sent to the closest communities to the project. No comments were received.	Hard copies of this Draft REA Submission Package were made available to the identified local Aboriginal communities. Electronic copies were also posted on Project website.
Municipal Consultation	• The consultation form distributed at least 90 days before the final public meeting to the local municipalities and local authorities including: • Clerks of local and upper tier municipalities • Secretary treasurer of local roads • Secretary of Local Services Board	No consultation form was distributed as it was not required under the previous process. Notice of the project was provided to the local municipality on several occasions throughout the environmental screening process. The ESR was submitted to the local municipality for review and responses were generated to the comments received and were submitted to the MOE.	A consultation form was released to the Municipality in accordance with REA requirements on December 16th, 2009.
Table 1 Item 3. **Decommissioning Plan Report**	Set out a description of plans for the decommissioning of the renewable energy generation facility, including the following:		

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
	• Procedures for dismantling or demolishing the facility.	The ESR includes a general description of decommissioning activities. It is indicated in the ESR that a decommissioning plan will be prepared in accordance with provincial legislation and guidelines that exist at the time of decommissioning.	A Decommissioning Plan Report was prepared and is included under **Section 3** - **Supplementary REA Reports** of this package.
	• Activities related to the restoration of any land and water negatively affected by the facility.	Same as above.	See above.
	A. Procedures for managing excess materials and waste.	The ESR that was completed for the project includes a description of decommissioning activities. The proponent will prepare a Generator Waste Registration Report for each waste that will be generated on site as per O.Reg. 347 of the EPA. See ESR section 6.11 – Disposal of Waste Materials	See above.
Table 1 Item 4. **Design and Operations Report**	**1.** Set out a site plan of the project location at which the renewable energy project will be engaged in, including, i. description, maps or diagrams of,		
	A. all buildings, structures, roads, utility corridors, rights of way and easements required in respect of the renewable energy generation facility and situated within 300 metres of the facility	Maps included in the MMWF ESR/EIS include: buildings, roads, utility corridors, rights of way required in respect of the renewable energy generation facility and situated within 300 metres of the facility. See Figures: Figure 1-1: Project Location Figure 2-1: Wind Farm Layout and Infrastructure Figure 6-3: Landuse Map	Please see the Supplementary Information **Section 4** – **Supplementary Mapping.**
	B. any ground water and surface water supplies used at the facility	No surface water will be required for the project.	No additional documentation required.
	C. any things from which contaminants are discharged into the air	The only air contamination resulting form the proposed project would occur during the construction phase and would be limited. Description provided in Table 5-1 Provincial Screening Checklist, Air and Noise.	No additional documentation required
	D. n/a	n/a	n/a
	E. n/a	n/a	n/a
	F. the project location in relation to any of the following within 125 metres: properties described under Ontario Heritage Act, heritage resources and archaeological resources, and	A Stage 1 Archaeological Assessment was conducted as required by the Ontario Ministry of Culture. See ESR Sections: 6.20 – Historical and Archaeological Resources, 6.15 – Traditional Land Use by Aboriginal Peoples Appendix F – Archaeology Report,	No additional documentation required.
	G. any noise receptors that may be negatively affected by the use or operation of the facility	The MMWF turbine layout meets the REA setback requirements for noise receptors, lot lines and roadways.	No additional documentation required

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
	• 550meter noise receptor setback • Noise study for roadway noise exceeding 40 dBA • All wind turbines over 50kW set back height of tower from non-participating lots • Must be set back a distance equal to blade length + 10 meters from the right of way for roads and railways	✓ All wind turbines are set 550 meters from any noise receptor ✓ All turbines are set back the distance of a height of tower from non-participating lots ✓ All turbines are set back a distance equal to blade length + 10 meters from the right of way for roads ✓ There are no railways in the project area ✓ A noise study has been completed. The predicted noise levels for receptors meet the 40 dBA requirement See ESR Sections: 6.12 – Environmental Noise Figure 6-4: Noise Receptor Locations and Contour Appendix G Noise Analysis Report	
	2. n/a	n/a	n/a
	3. n/a	n/a	n/a
	4. Include an environmental effects monitoring plan in respect of any negative environmental effects that may result from engaging in the renewable energy project, setting out	Subsections 7.1 and 7.2 if the MMWF ESR/EIS address actions to be taken as part of the environmental effects monitoring plan in respect of any negative environmental effects that may result from the proposed project. See Section 7 – Project Follow-Up Measures and Monitoring	Please see the Supplementary Information for the **Design and Operations Report** under **Section 3** – **Supplementary REA Reports (**McLean's Mountain Wind Farm Environmental Management and Protection Plan – this includes Species at Risk Interaction Plan and Avian Monitoring Plan)
	i. performance objectives in respect of the negative environmental effects	Same as above.	Same as above.
	ii. mitigation measures to assist in achieving the performance objectives in respect of the negative environmental effects	Same as above.	Same as above.
	iii. a program for monitoring negative environmental effects for the duration of the time that the project is engaged in, including a contingency plan to be implemented if any mitigation measures fail	ESR Section 7 includes commitments to prepare monitoring plans	Please see the Supplementary Information for the **Design and Operations Report** under **Section 3** – **Supplementary REA Reports (**McLean's Mountain Wind Farm Environmental Management and Protection Plan)
	5. Include a response plan setting out a description of the actions to be taken while engaging in the renewable energy project to inform the public, aboriginal communities and municipalities, local roads boards and Local Services Boards with respect to the project, including • measures to provide information regarding the activities occurring at the project location, including emergencies • means by which persons responsible for engaging in the project may be contacted • means by which correspondence directed to the persons	The MMWF ESR/EIS provides a description of the actions to be taken while engaging in the renewable energy project to inform the public and aboriginal communities. See Section 7 – Project Follow-Up Measures and Monitoring, Subsections 7.3 and 7.4	Please see the Supplementary Information for the **Design and Operations Report** under **Section 3** – **Community Response Plan**

REA REQUIREMENTS FOR CLASS 4 WIND FACILITY (>50MW)		SUPPLEMENTARY DOCUMENTATION AS PER REA REQUIREMENTS	
REA Section	**Summary of Requirement**	**Summary of Fulfilment Through the MMWF ESR/EIS**	**Additional Documentation/Action Required under REA**
	responsible for engaging in the project will be recorded and addressed		
Table 1 Item 8. **Noise Study Report**	Report to be prepared in accordance with Appendix A of the publication of the Ministry of the Environment entitled, "Basic Comprehensive Certificates of Approval (Air) – User Guide", dated April 2004, as amended from time to time and available from the Ministry.	A Noise Analysis Report was prepared in accordance with the Ontario Ministry of Environment guidelines. The predicted noise levels for receptors meet the 40 dBA requirement Appendix G "Noise Analysis Report" See ESR Section 6 "Effects Assessment and Mitigation" - Figure 6-4: Noise Receptor Locations and Contour	No additional documentation required.
Table 1 Item 10. **Project Description Report**	Set out a description of the following in respect of the renewable energy project: • Any energy sources to be used to generate electricity at the renewable energy generation facility. • The facilities, equipment or technology that will be used to convert the renewable energy source or any other energy source to electricity. • If applicable, the class of the renewable energy generation facility. • The activities that will be engaged in as part of the renewable energy project. • The name plate capacity of the renewable energy generation facility. • The ownership of the land on which the project location is to be situated • Any negative environmental effects that may result from engaging in the project. • An unbound, well marked, legible and reproducible map that is an appropriate size to fit on a 215 millimetre by 280 millimetre page, showing the project location and the land within 300 metres of the project location.	The ESR includes a project description. A Project Description that follows the REA requirements was sent to the MOE on November 19, 2009.	None required
Table 1 Item 13. **Wind Turbine Specifications Report**	Provide specifications of each wind turbine, including make, model, name plate capacity, hub height above grade, rotational speeds and acoustic emissions data, including the sound power level and frequency spectrum, in terms of octave-band sound power levels.	Information regarding the wind turbine specifications is provided in the MMWF ESR/EIS in Section 2.1.1 "Wind Turbines" including Table 2-1	No additional documentation required.

Section 2

The McLean's Mountain Wind Farm ESR/EIS July 2009 Comment/Response Table

TABLE A

PROPONENT RESPONSE TO COMMENTS RECEIVED DURING THE 30-DAY CELANDAR REVIEW PERIOD (July 24th, 2009 – August 24, 2009) ON THE ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL SCREENING REPORT (EIS/ESR) FOR THE MCLEAN'S MOUNTAIN WIND FARM

PROPONENT:	**Northland Power Inc (NPI)**
PROJECT TITLE:	**McLean's Mountain Wind Farm**
PROJECT LOCATION:	**Municipality of North Eastern Manitoulin and The Islands (NEMI), Manitoulin Island, Ontario**
PREPARED BY:	**Don McKinnon, Dillon Consulting Limited**
PHONE # and E-MAIL:	**416-229-4647 Ext: 2355 dpmckinnon@dillon.ca**

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
HUMAN HELATH		
Ares, Paul Member of General Public August 20th, 2009 **B. Louis**	Request that the proposed project be elevated to an individual environmental assessment based on the following: The McLean's Wind Farm project Environmental Review Report does not properly address the effects on humans who will be living near the turbine complex. Evidence form around the world	There is no scientific evidence of direct health effects resulting from noise at the level of noise generated by wind turbines. It has been repeatedly shown by measurements of wind turbine noise undertaken in the UK, Denmark, Germany and the USA over the past decade, and accepted by experienced noise professionals, that the levels of infrasonic noise and vibration radiated from modern, upwind configuration wind turbines are at a very low level; so low that they lie below the typical human threshold of perception. Potential health concerns/impacts

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 22nd, 2009 **Bickell, Gord** Member of General Public August 13th and 19th, 2009 **Biugamak, Veronika** Member of General Public August 20th, 2009 **Bond-Beaudry, Patti A** Member of General Public August 24th, 2009 **Bond, Brad** Member of General Public August 24th, 2009 **Champoux – Ares, Linda** Member of General Public August 20th, 2009 **Cormier, Chris** Member of General Public August 24th, 2009	strongly suggests that industrial wind developments can have a very negative effect on human health and quality of life. A proper health study is required to prove that the project can be constructed and operated without harming the local residents. A recent (released July 23, 2009) community-based self-reporting health survey conducted in areas with operational industrial wind turbines has found that 70% of the respondent reported a significant increase in the frequency of at least one health problem (the average was five health problems), or the onset of new health issues since the turbines began functioning near them. The health issues reported are serious and include: sleep deprivation - which leads to serious health problems (this is the number one problem); headaches; tinnitus (ringing in ears); cognitive dysfunction; and some serious cardiac effects such as irregular heart rhythm, palpitations and high blood pressure. Reports of adverse effects continue to come into light. Some victims have been forced to move from their homes. Dr. Robert McMurty, M.D.,F.R.C.S (C), F.A.C.S stated that enough evidence of adverse health effects exists in wind turbine complexes to demand an epidemiological study before any more turbines are installed. Dr. McMurty has made a deputation to a standing committee on General Government. Dr. McMurty's deputation discusses the inadequacy of the dBA scale for measuring noise form wind turbines because it does not take into account low frequencies. Todd et. al. have published research that proves the human inner ear is extremely sensitive to low frequency noise. It also point points out a similarity between the health effects being reported in Ontario and those reported by Dr. Nina Pierpoint (New York) and Dr. Amanda Harry (U.K.).	as a result of the wind turbines was considered as part of the environmental screening. There are very few residences in the vicinity of the turbines. All wind turbines have been sited a minimum of 550 meters for receptors. Furthermore, at present there are well over 10,000 wind turbines installed and operating in North America, and tens of thousands of people who live and work in proximity to these wind turbines. Of these individuals, a very small number have claimed that their health has been negatively impacted by wind turbines. However, surveys of peer-reviewed scientific literature have consistently found no evidence linking wind turbines to human health concerns. Although some studies have claimed that more research is needed. Certain individuals contend that wind turbines can adversely impact the health of individuals living in proximity to wind turbines. A prominent advocate of this view is Dr. Nina Pierpont of Malone, New York who claims that people living in proximity to wind farms may suffer from "Wind Turbine Syndrome". This view, however, has not been supported by scientists who specialize in acoustics, low frequency sound and related human health impacts. It is important to point out that none of the work by Dr. Pierpont - or others claiming similar impacts – has been published in peer-reviewed journals. The following is a concise summary of articles and publications on the subject from reputable sources in Europe and North America: • *"Infrasound from Wind Turbines – Fact, Fiction or Deception?"* by Geoff Leventhall in Vol. 34 No.2 (2006) of the peer-reviewed journal Canadian Acoustics. This paper looks at the question of whether or not wind turbines produce infrasound at levels that can impact humans. It directly addresses assertions frequently made by Dr. Nina Pierpont, author of a book entitled "Wind Turbine Syndrome". "In the USA, a high profile objector (Nina Pierpont of Malone NY) placed an advertisement in a local paper, consisting entirely of selected quotations from a previously published technical paper by Van den Berg (Van den Berg 2004). However the comment "[i.e. infrasonic]" was added in the first line of the first quotation in a manner which might mislead naive readers into believing that it

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Cormier, Kathy Member of General Public August 24th, 2009 **Dervis, Shiela** August 21st, 2009 **Gannon, Lynda and Logan** Member of General Public August 22nd, 2009 **G, Ron** Member of General Public August 22nd, 2009 **Hall, Jeffery** Member of General Public August 23rd, 2009 **Haney, Ron** Member of General Public August 24th, 2009 **Haney, Monica**	Dr. Michael Nissenbaum (Maine) has recently conducted medical interviews with residents of a wind complex in Maine. Dr. Nissenbaum presented his preliminary findings before the Maine Medical Association. He described the results as alarming. The residents are experiencing serious health problems related to shadow flicker and noise emissions from the turbines near their homes. The onset of symptoms including sleep disturbance, headaches, dizziness, weight changes, possible increases in blood pressure as well as increased prescription medication use, all coincide with he time of turbine commissioning. Shadow flicker and noise pollution are not the only sources of problems for residences near turbine complexes. Improper electrical integration of the turbines into the grid and lack of proper filters can expose residents to high frequency electrical pollution that can cause electromagnetic sensitivity. The symptoms associated with electrical pollution include: ringing in ears, headaches, sleeplessness, dangerously elevated blood pressure, heart palpitations, itching in the ears, eye watering, earaches, bleeding noses and pressure on chest causing difficulty breathing. There are many unanswered questions about the long term impacts regarding the elderly, infants, children and the unborn that are exposed during mother's pregnancy, and workers such as farmers and technicians who work near wind turbines. Some wind complex residents are being approached to participate in long-term health studies. Rural residents should not be taking the place of laboratory specimen.	was part of the original. The van den Berg paper was based on A-weighted measurements and had no connection with infrasound. So, not only is the advertisement displaying the advertiser's self deception, but this has also been propagated to others who have read it. […] Claims of infrasound are irrelevant and possibly harmful, should they lead to unnecessary fears." www.wind.appstate.edu/reports/06-06Leventhall-Infras-WT-CanAcoustics2.pdf • *"Context and Opinion Related to the Health Effects of Noise Generated by Wind Turbines"*, Agence Française de Sécurité Sanitaire de l'Environnement et du Travail (Affset), 2006. Afsset was mandated by the Ministries responsible for health and the environment to conduct a critical analysis of a report issued by the *Académie nationale de medicine* that advocated the use of a minimum 1,500 meter setback distance for 2.5 MW wind turbines or more. The Affset report concluded that "It appears that the noise emitted by wind turbines is not sufficient to result in direct health consequences as far as auditory effects are concerned. [...] A review of the data on noise measured in proximity to wind turbines, sound propagation simulations and field surveys demonstrates that a permanent definition of a minimum 1,500 m setback distance from homes, even when limited to windmills of more than 2.5 MW, does not reflect the reality of exposure to noise and does not seem relevant." http://www.afsse.fr/index.php?pageid=1862&parentid=523 (in French only – please contact CanWEA for an English translation of this text). • Summary of research on wind turbines, noise and possible health effects, commissioned by the UK Government's Department for Business, Enterprise & Regulatory Reform: (a) In 2006 the UK Government published a study by Hayes McKenzie which investigated claims that infrasound or low frequency noise emitted by wind turbine generators was causing health effects. The report concluded that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines. The report went on to note that a phenomenon known as Aerodynamic Modulation (AM) may be the cause of these complaints. (www.dti.gov.uk/energy/sources/renewables/publications/page31267.html) (b) The

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 24th, 2009 **Hare, Marilou** Member of General Public August 24th, 2009 **Hare, D.** Member of General Public August 24th, 2009 **Hart, Suzan** Member of General Public August 20th, 2009 **Jansen, Barbara** Member of General Public August 24th, 2009 **Jewell, Sandra** Member of General Public August 20th, 2009	Ontario has approximately 585 operating wind turbines, currently 86 victims have reported problems. Such a high incidence of injury is criminal. The Ministry of the Environment has overseen the development of these existing turbine complexes and issued their certificates of complaints yet people through the province are suffering sever health effects. The current guidelines indicate are clearly inadequate. Ontario citizens must be properly protected. A proper epidemiological study must be performed before the McLean's Mountain Wind Farm is developed. Many are asking for a public inquiry. *(50)- This comment submitted as a template.*	Government then commissioned experts at Salford University to investigate Aerodynamic Modulation and the broader issue of noise from wind turbines. The Salford research looked at 133 wind farms and concluded that "... in terms of the number of people affected, wind farm noise is a small-scale problem compared with other types of noise; for example the number of complaints about industrial noise exceeds those about windfarms by around three orders of magnitude" and that "The low incidence of AM and the low numbers of people adversely affected make it difficult to justify further research funding in preference to other more widespread noise issues." http://usir.salford.ac.uk/1554/1/Salford_Uni_Report_Turbine_Sound.pdf . (c) Based on these findings, the U.K. Government published a statement indicating that "Government does not consider there to be a compelling case for further work into AM and will not carry out any further research at this time." http://www.berr.gov.uk/files/file40571.pdf • *"Health impact of wind turbines"*, prepared by the Municipality of Chatham-Kent Health & Family Services Public Health Unit. This is a comprehensive review of available literature on the subject. This paper concludes and concurs with the original quote from Chatham-Kent's Acting Medical Officer of Health, Dr. David Colby: "In summary, as long as the Ministry of Environment Guidelines for location criteria of wind farms is followed, it is my opinion that there will be negligible adverse health impacts on Chatham-Kent citizens. Although opposition to wind farms on aesthetic grounds is a legitimate point of view, opposition to wind farms on the basis of potential adverse health consequences is not justified by the evidence." http://www.chathamkent. ca/NR/rdonlyres/CA6E8804-D6FF-42A5-B93B-5229FA127875/7046/5a.pdf • *"Wind Turbine Acoustic Noise"*, A White Paper by Dr. Anthony Rodgers at the University of Massachusetts at Amherst. This paper looked into the issue of both sound and infrasound (low frequency sound) and concluded "There is no reliable evidence that infrasound below the perception threshold produces physiological or psychological effects."

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
J.E. Member of General Public August 20th, 2009 **Kameoka, Terry.T (Dr.)** August 23rd, 2009 **Kerr, Dawn L.** August 23rd, 2009 **Kerr, Hugh** August 23rd, 2009 **Kerr, Hugh A.** August 23rd, 2009 **Kerr, Jennifer** August 23rd, 2009 **Labelle, Carole** Member of General Public August 20th, 2009 **Labelle, Maurice** Member of General Public August 20th, 2009 **Laberge, Cory**		http://www.ceere.org/rerl/publications/whitepapers/Wind_Turbine_Acoustic_Noise_Rev 2006.pdf • *"Recent Studies of Infrasound from Industrial Sources"* by William Gastmeier and Brian Howe, presented at the Canadian Acoustical Association, October 2008. The authors "conducted several infrasound studies using refined measurement methods to isolate the infrasound energy produced by industrial sources from naturally occurring infrasound in the environment." The results conclude "that infrasound from wind turbine generators is well below any realistic human perception limits." Available from the Canadian Acoustical Association, www.caa-aca.ca • *"Electricity generation and health"* in the peer-reviewed journal The Lancet. The paper concludes that "Forms of renewable energy generation are still in the early phases of their technological development, but most seem to be associated with few adverse effects on health" http://www.ncbi.nlm.nih.gov/pubmed/17876910 • *"Energy, sustainable development and health"*, World Health Organization, June 2004. The study finds that "Renewable sources, such as photovoltaic and wind energy, are associated with fewer health effects. [...] The increased use of renewable energy, especially wind, solar and photovoltaic energy, will have positive health benefits, some of which have been estimated." There is also a table on page 79 showing the relative health effects of nearly all sources of energy, which clearly shows wind as negligible. http://www.euro.who.int/document/eehc/ebakdoc08.pdf . The above findings clearly show that there is no peer-reviewed scientific evidence indicating that wind turbines have an adverse impact on human health (Canwea 2009).

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 24th, 2009 **Laberge Family** Members of General Public August 24th, 2009 **Martin, Marisa** Member of General Public August 20th, 2009 **McAllister , Tom and Michelle** Members of General Public August 24th, 2009 **McCauley Jennifer** Member of General Public August 24th, 2009 **McCauley Jessie** Member of General Public August 24th, 2009 **Medwig, Jonathan** Member of General Public		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Medwig, Lucia Member of General Public August 21st, 2009 **Murray, Marian** Member of General Public August 20th, 2009 **Opoiko, Rachel** Directing Manager August 24th, 2009 **Pascos, Harry and Betty** Members of General Public August 22nd, 2009 **Perreault, Orlando and Anne** Members of General Public August 22nd, 2009 **Rapski, Al** Member of General Public August 24th, 2009		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Shortt, Julia Member of General Public August 19th, 2009 **Stewart, Jane** Member of General Public August 23rd, 2009 **Sunday, Lori** Member of General Public August 24th, 2009 **Taliotis, Gloria** Member of General Public August 23rd, 2009 **Tilson, Kerrene** Member of General Public August 19th, 2009 **Watson, Boo** Member of General Public August 23rd, 2009 **Weber, Elaine**		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 21st, 2009 **William, Martin** Member of General Public August 20th, 2009		
Dedman, Randy Member of General Public August 12th , 2009	Concerned about harmful effects of noise.	A Noise and Acoustics Assessment was conducted in accordance with the Ontario Ministry of the Environment guidelines. This document can be found in Appendix G of the Environmental Screening Report. Wind turbines generate some sound. The noise from a wind turbine is caused by the passing of the blade through the air, and is similar to white noise from wind, or waves. But even when the turbine is turning you can carry on a conversation at its base. The sound is a "swish" like the waves on a beach. Wind turbines produce noise only when the wind is blowing, although background ambient noise from the blowing wind also increases. Other sources of background noise for the area includes traffic on the nearby Highway 6 and/or Highway 540. There is no scientific evidence of direct health effects resulting from noise at the level of noise generated by wind turbines. It has been repeatedly shown by measurements of wind turbine noise undertaken in the UK, Denmark, Germany and the USA over the past decade, and accepted by experienced noise professionals, that the levels of infrasonic noise and vibration radiated from modern, upwind configuration wind turbines are at a very low level; so low that they lie below the threshold of typical human perception, Potential health concerns/impacts as a result of the wind turbines was considered as part of the environmental screening. There are very few residences in the vicinity of the turbines. All wind turbines have been sited a minimum of 550 meters from receptors.
Ferrie, Helke Member of General Public August 18th, 2009	Concerned with adverse human health effects of wind farms.	Please refer to responses provided above.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Wellman, W.J & A Members of General Public July 20th, 2009	Concerned with adverse human health effects of wind farms.	Please refer to responses provided above.
NATURAL ENVIRONMENT		
Arp, Melissa Member of General Public Little Current, Ontario August 21st, 2009	Requests that the proposed project be elevated to an individual environmental assessment based on the following: 1. Moved from Toronto to Little Current in May to study organic and biodynamic farming and the development of bees in the area. Has learnt that there are at least ten windmills to be built within few kilometers of her residence. 2. Lack of notice and public consultation and new studies coming form Europe regarding the effects of wind turbines on the weather, health and natural habitat.	1. The proposed McLean's Mountain Wind Farm will consist of 43 wind turbines. All of the proposed wind turbines will be sited at least 550 meters away from any residence in the study area. 2. The proposed project has been in the formal planning stages since the spring of 2004. Since that time, various forms of consultation have taken place. For more information on consultation activities undertaken to date please refer to *Section 4* of the Environmental Screening Report. NPI continues an open public consultation process regarding the proposed project. NPI will also continue its stakeholder consultation and communications through project construction and implementation phases. An environmental screening process to assess the potential impacts of wind turbines on ecosystems and human health was undertaken for the proposed project. The completed studies have been documented in the McLean's Mountain Wind Farm Environmental Screening Report (ESR).
Beaudry, Raymond Member of General Public August 21st, 2009	Expresses concerns regarding: impacts to vegetation, wildlife and bird impacts and soils.	The project components have been sited to avoid the most sensitive habitat in the study area. Some vegetation disturbance and removal will occur during the construction phase of the wind farm. NPI will ensure to minimize the removal of vegetation and where required, replant areas with native vegetation to maintain biodiversity. An Assessment of Avifauna and wildlife in the project area was conducted in accordance with Ministry of Natural Resources and

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
		Environment Canada guidelines. The assessment concludes that the potential effects of the proposed project in the avian and other wildlife populations are minimal. NPI will provide source controls and adverse impacts on soils mitigation will be incorporated into an environmental management plan. The results of all the biological assessments and future related commitments are documented in the Environmental Screening Report (ESR).
Bell, Chris and Joan Members of General Public August 24th, 2009	1. The 43 wind turbines will be aesthetically unpleasant. Their position on top of height ground makes them very visible. 2. More of the Niagara Escarpment, which is not protected on Manitoulin will be quarried. 3. More studies on birds are required	1. Perceptions regarding the visibility of wind turbines are subjective . NPI in the siting of the tubines has attempted to balance the visibility of the turbines with maximizing the output of the tubines. Visual simulations have been prepared as part of the Environmental Screening process. The machines used for this project will blend in well with the surrounding area. 2. No response required. 3. The avian assessment for the proposed project was conducted in accordance with guidelines provided by Ministry of Natural Resources and Environment Canada. Additional post construction avian monitoring work is to be conducted. The program for this additional work is being determined in consultation with the Ontario MNR and EC.
Bickell, Gord Member of General Public August 13th, 2009	Expresses concerns regarding immense land clearing required	For some turbine sites, natural vegetation will need to be cleared for the turbines, collector lines and access roads. Further, some vegetation may need to be cleared for the transmission line right-of-way. All project components have been located to minimize if not avoid effects on the most sensitive features in the area (e.g. wetlands). An area of approximately 1ha will be required for each turbine location for assembly of the turbine rotor before being erected onto the turbine tower. Of the total number of tubines, only about 8 are located in interior forest habitat. The rest are located either in open pasture land or on the edge of forested areas.
Carson, Ann Elizabeth Member of General Public	Inadequate bat population study research	The bat monitoring for the proposed project was conducted in accordance with guidelines provided by the Ministry of Natural Resources. As requested by the MNR additional bat monitoring is being undertaken as a post ESR submission activity (August-Sept 2009). The

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
August 27th, 2009		findings of this additional survey work will be made available for the MNR to review. Adjustments will be made to the project as a result of these studies if warranted.
Dedman, Randy Member of General Public August 12th , 2009	Indicated that: "Manitoulin Island is very pristine and holds thousands of acres of unspoiled beauty and wildlife (…) and countless species of birds and plant life. Concerned that "on the neighbouring lot where turbine #3 is proposed there is a large swamp and duck pond (…)	As part of the environental screening that was conducted, a Natural Environment Review was conducted for this project in accordance with MNR and EC guidelines. The turbines have been appropriately setback from critical wilidlife areas.
Ares, Paul Member of General Public August 20th, 2009 **B. Louis** Member of General Public August 22nd, 2009 **Beaudry, Raymond** Member of General Public Manitoulin Island, Ontario August 19th, 2009 **Champoux – Ares, Linda** Member of General Public August 20th, 2009	Requests that the proposed project be elevated to an individual environmental assessment based on the following: Impacts of the proposed wind farm on the bat populations have not been adequately studied. It is impossible to study the impact of the wind turbines on bats without knowing the number and location of the wind turbines. NPI should be required by the MNR to do a bat study in May since the Ministry of Natural Resources (MNR) suggested that it is likely that it is a migratory route for bats". MNR recommended that bat studies be conducted in August and the NPI's sub-contracted Natural Resources Solutions Inc (NRSI) reported on their studies in July. NPI has acquired the University of Waterloo to monitor bat activity which they did on August 17, 2009, without the final locations of wind turbines approved. The public cannot comment on the study as the deadline for the ESR would be past.	The bat monitoring for the proposed project was conducted in accordance with guidelines provided by the Ministry of Natural Resources. As requested by the MNR, additional monitoring is being undertaken as a post EA submission activity (August-Sept 2009). The findings of this additional survey work will be made available for the MNR to review. Adjustments will be made to the project as a result of these studies if warranted. Bat monitoring in May is not warranted on the McLean's Mountain particularly since the project site sensitivity is rated as 'High' and not "Very High" (a rating of Very High" would require May monitoring) . The July and September results of bat monitoring do not indicate that the proposed project is located in a migratory path. The species data also does not reflect high numbers of migrating bats. Only one migratory bat species was recorded. The bat monitoring has been conducted with the general layout knowledge of the wind farm project. It is typical for wind farm layouts to change after the environmental studies have been completed (to reflect the results of the studies). Bat survey work has been conducted by the consulting firm NRSI – not the University of Waterloo.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Cormier, Chris Member of General Public August 24th, 2009 **Dervis, Shiela** August 21st, 2009 **Gannon, Lynda and Logan** Member of General Public August 22nd, 2009 **G, Ron** Member of General Public August 22nd, 2009 **Haney, Ron** Member of General Public August 24th, 2009 **Haney, Monica** Member of General Public August 24th, 2009	Fifty percent of wind turbines are in wooded areas known to support bats as well as other wildlife. This does not address tree removal of the 10 kilometers for a 115,00 volt transmission line. *(39) –This comment submitted as a template.*	

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
Hare, Marilou Member of General Public August 24th, 2009 **Hare, D.** Member of General Public August 24th, 2009 **Hart, Suzan** Member of General Public August 20th, 2009 **Jansen, Barbara** Member of General Public August 24th, 2009 **Jewell, Sandra** Member of General Public August 20th, 2009 **J.E.** Member of General Public August 20th, 2009 **Labelle, Carole** Member of General Public		

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
75 Honora Lakeshore, Little Current, P0P 1K0 Ontario August 20th, 2009 **Labelle, Maurice** Member of General Public August 20th, 2009 **Laberge, C.** Member of General Public August 24th, 2009 **Laberge Family** Members of General Public August 24th, 2009 **Martin, Marisa** Member of General Public August 20th, 2009 **McAllister , Tom and Michelle** Members of General Public August 24th, 2009		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
McCauley Jennifer Member of General Public August 24th, 2009 **McCauley Jessie** Member of General Public August 24th, 2009 **Medwig, Jonathan** Member of General Public 2009 **Medwig, Lucia** Member of General Public August 21st, 2009 **Murray, Marian** Member of General Public August 20th, 2009 **Opoiko, Rachel** Directing Manager August 24th, 2009 **Pascos, Harry and Betty** Members of General Public		

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
August 22nd, 2009 **Perreault, Orlando and Anne** Members of General Public August 22nd, 2009 **Rapski, Al** Member of General Public August 24th, 2009 **Shortt, Julia** Member of General Public August 19th, 2009 **Stewart, Jane** Member of General Public August 23rd, 2009 **Sunday, Lori** Member of General Public August 24th, 2009 **Taliotis, Gloria** August 23rd, 2009 **Tilson, Kerrene**		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 19th, 2009 **Weber, Elaine** Member of General Public August 21st, 2009 **William, Martin** Member of General Public August 20th, 2009		
PROPERTY VALUES		
Bell, Chris and Joan Members of General Public August 24th, 2009	Those adjacent to proposed wind turbines and those in sight of turbines will have property values reduced and homes will be very hard to sell.	Based on the consultations undertaken with the local residents, NPI is aware of the public concerns over the loss of property values due to the proposed development of the McLean's' Mountain Wind Farm. The vast majority of evidence on the impact of wind farms on land values comes from Europe, Australia and United States of America (USA). The studies conducted in these countries indicate wind farms have no material effect on property values. Data from Ontario is beginning to emerge as more wind farms are constructed, and the experience from those projects also suggests that wind farms do not decrease property values. A 2006 study conducted by Blake, Matlock and Marshal Ltd. for Windrush Energy suggests that wind farms have not negatively affected property values. *"Property Value Study: the Relationship of Windmill Development and Market Prices"* aimed to determine if the development of wind farms in the Melancthon area has had any impact on the growth of property values in the Township. Property values before and after wind farm development in the Township of

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
		Melancthon where compared to values in East Luther Grand Valley Township, a neighbouring and similar township except for its lack of wind farms. Property values in Melancthon were also compared to those in Dufferin County. The analysis showed that property values in the Township of Melancthon grew similarly to the rest of the County, and increased more than East Luther Grand Valley Township. Wind farm development was not found to have diminished property values. The Canadian Hydro Developers Inc. also compared housing price ranges on Wolfe Island and Simcoe Island in Ontario, before and after the development of the wind farm (http://www.shearwind.com/glen_dhu_community/fact_sheet.html). Findings indicate that Township of Melancthon experienced a stronger growth rate in sales price per property, than the adjoining East Luther Grand Valley Township. The findings of this particular research indicate that the presence of the Wind Farm in Melancthon Township has not had an adverse impact on values within that municipality. A study conducted by the Renewable Energy Policy Project (REPP) *"The Effect of Wind Development on Local Property Values"* (May 2003) presents data to counter the threat of decreased property values. The REPP study is the first study to systematically analyze property values data in order to examine the charge often voiced by wind farm opponents that wind development will lower the value of property within view of the turbines. The REPP study looked at wind development projects with a generating capacity of 10 MW or more that were installed in the U.S. from 1998 to 2001. The REPP study also used much larger wind farms (up to 80 wind turbines per site) than the proposed McLean's' Mountain Farm (43 wind turbines). The REPP study found no evidence that property values decreased as a result of wind farms. Quite the contrary, for the great majority of projects the property values in the view shed of the wind farm increased at a higher rate than they did in the comparable community. Experience in other countries indicates no evidence supporting the claim that views of wind farms decrease property values:

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
		• USA - Research in 2002 by ECONorthWest backed-up by a May 2003 Analytic Report for the REPP involving the review of over 25,000 records of property sales within a distance of 8km of wind farms and interviews with property tax assessors. The report found that property values increased a t a higher rate within the view-shed of the wind farm than in comparable locations away from wind farms. • Denmark - A report by the Institute of Local Government Studies (AKF) found that "the economic expenses in connection with noise and visual effects from wind mills are minimal". • United Kingdom – The Royal Institute of Chartered Surveyors (RICS) released a study in 2005 that found that of 405 surveyors surveyed, 63% felt wind farm developments had no impact on the value of agricultural lands. The surveyors involved in the study all had experience with transactions affected by wind farms.
Ares, Paul Member of General Public August 20th, 2009 **B. Louis** Member of General Public August 22nd, 2009 **Bickell, Gord** Member of General Public August 19th, 2009 **Biugamak, Veronika**	Request that the proposed project be elevated to an individual environmental assessment based on the following: Setbacks, distances from a wind turbine to a house, that NPI proposes are not adequate to protect property value in the area. The large lots on McLean's Mountain are privately owned, many have no "Dwellings": homes, cottages or hunt cabins. A few lots have dwellings that are not identified in the ESR noise study. The company has arranged its setbacks as per MOE guidelines so that no current dwellings will receive more than 40 decibels of noise. This does not address the vacant land issue for future use as MOE does not have an interpretation for seasonal residences who determine such.	Please refer to response provided above.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 20th, 2009 **Bond-Beaudry, Patti A** Member of General Public Manitoulin Island, Ontario August 24th, 2009 **Bond, Brad** Member of General Public August 24th, 2009 **Champoux – Ares, Linda** Member of General Public August 20th, 2009 **Cormier, Chris** Member of General Public August 24th, 2009 **Cormier, Kathy** Member of General Public August 24th, 2009	There are many farms on Manitoulin with large acreage and one or no dwellings but have the potential to build. If a farmer wants to finance retirement by severing or selling a lot he will be out of luck once this project goes away through. If a farmer or resident wants to move because of the industrial farm, his land will be so reduced in value that he might not be able to afford to move. The land on McLeans' Mountain is privately owned and the needs and rights of the landowners must be respected. Many of the existing farms have been passed on for generations. This company form Toronto should not be allowed to ignore and devalue the years of hard work that have gone into owning, maintaining and paying taxes on these lands. *(42)- Comment submitted as a template.*	

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
Dervis, Shiela August 21st, 2009 **Gannon, Lynda and Logan** Member of General Public **G, Ron** Member of General Public August 22nd, 2009 **Haney, Ron** Member of General Public August 24th, 2009 **Haney, Monica** Member of General Public August 24th, 2009 **Hare, Marilou** Member of General Public August 24th, 2009 **Hare, D.** Member of General Public August 24th, 2009 **Hart, Suzan**		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 20th, 2009		
J.E. Member of General Public August 20th, 2009		
Jansen, Barbara Member of General Public August 24th, 2009		
Jewell, Sandra Member of General Public August 20th, 2009		
Labelle, Carole Member of General Public August 20th, 2009		
Labelle, Maurice Member of General Public August 20th, 2009		
Laberge, Cory		

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
Member of General Public August 24th, 2009 **Laberge Family** Members of General Public August 24th, 2009 **Martin, Marisa** Member of General Public August 20th, 2009 **McAllister , Tom and Michelle** Members of General Public August 24th, 2009 **McCauley Jennifer** Member of General Public August 24th, 2009 **McCauley Jessie** Member of General Public August 24th, 2009 **Medwig, Jonathan** Member of General Public		

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
2009 **Medwig, Lucia** Member of General Public August 21st, 2009 **Murray, Marian** Member of General Public August 20th, 2009 **Opoiko, Rachel** Directing Manager August 24th, 2009 **Pascos, Harry and Betty** Members of General Public August 22nd, 2009 **Perreault, Orlando and Anne** Members of General Public August 22nd, 2009 **Rapski, Al** Member of General Public August 24th, 2009		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Shortt, Julia Member of General Public August 19th, 2009 **Stewart, Jane** Member of General Public August 23rd, 2009 **Sunday, Lori** Member of General Public August 24th, 2009 **Taliotis, Gloria** Member of General Public August 23rd, 2009 **Tilson, Kerrene** Member of General Public August 19th, 2009 **Weber, Elaine** Member of General Public August 21st, 2009 **William, Martin**		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 20th, 2009		
SETBACKS FROM RESIDENCES		
Courtin, Gerard Member of General Public August 24th, 2009	Distance to their home Setback from private property	All wind turbines have been sited a minimum of 550 meters from sensitive noise receptors in the area. Noise levels cannot exceed 40 dBA as per MOE requirements. Non participating residences will not be significantly affected by the proposed project.
Dedman, Randy Member of General Public August 12th, 2009	Inadequate setbacks	Please see response provided above.
Roy, Jeffery Member of General Public August 12, 2009	Turbine setbacks	Please see response provided above.
Mayhew, Randy Member of General Public August 23rd, 2009	Setbacks concerns	Please see response provided above.
McCallister, Tom Member of General Public August 24th , 2009	Setback limits	Please see response provided above.
Morphet, Blair Member of General Public August 23rd , 2009	Concerned about setback from their property	Please see response provided above.
Wellman, W J Member of General Public July 20th, 2009	Concerned about setbacks	Please see response provided above.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
CONSULTATION PROCESS		
Beaudry, Raymond Member of General Public Manitoulin Island, Ontario August 21, 2009	Wrong date on flyer for open house Delivery of notice to only a few homes	The proposed project has been in the formal planning stages since the spring of 2004. Since that time, various forms of consultation have taken place. For more information on consultation activities untertaken to date please refer to *Section 4* of the Environmental Screening Report. The Notice of Project Restart and PIC appeared in the Manitoulin Expositor for two consecutive weeks prior to the scheduled meeting on June 25th, 2009. While the numerical date for the PIC on the notice was off by a day – the day of the week was correct. Several calls were made to NPI and people were advised of the correct date. NPI received no information indicating that someone had missed the PIC because of the incorrect date on the notice. Flyers were distributed throughout the study area by Canada Post Ad Mail. NPI continues an open public consultation process reagrding the proposed project. NPI will also continue its stakeholder consultation and communications through project construction and implementation phases.
Corbiere, Lynn (Patrick Wedaseh Madahbee) Anishnabek August 25th, 2009	Lack of consultation – informal discussion occurred at the least Requests that full consultation be pursued with the Nation False allegation that offers were made to seek support – informal discussion at the least	Please see response provided above. Consultation with First Nation communities has been ongoing for several years. NPI has received letters from the UCCM regarding their concerns. NPI intends to continue consultations with First Nation communities as the project continues.
Wellman, W.J & A Members of General Public July 20th, 2009	Indicated that all landowners in the project area should have been contacted about the possible siting of wind turbines.	Please see response provided above.
OTHER		
Ares, A Georges	Request that the proposed project be elevated to an individual	Since 2004, NPI has had discussions with members of the local community regarding the

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Member of General Public August 20th, 2009 **Ares, Paul** Member of General Public August 20th, 2009 **B. Louis** Member of General Public August 22nd, 2009 **Beaudry, Raymond** Member of General Public Manitoulin Island, Ontario August 19th, 2009 **Bickel, Gord** Member of General Public August 13th, 2009 **Biugamak, Veronika** Member of General Public August 20th, 2009 **Bond-Beaudry, Patti A**	environmental assessment based on the following: • Failure to inform or consult with local residents. • Changes in scale of the proposed project from a 54MW. (30 wind turbines) wind farm as presented by Northland Power Inc (NPI) in 2004 to a 100 MW (60 wind turbines) wind farm as proposed by NPI in 2005 to a 77MW (43 wind turbines) wind farm as proposed by NPI in 2009. • The increase of project land base since the initial start of the project with an additional land use of 1400 to 1600 acres in the past two years. • The wind turbine sites are proposed and sites have not been secured and the existing dwellings in the project area have not been identified. • Future dwelling in the project area are planned as building permits are being acquired with the township. • The company has been negotiating leases with landowners for at least 6 years. June 25, 2009 was the first time the community heard about the 43 wind turbines and a submarine cable under the North Channel as well as transformer station, switching station and a transmission line which all have their impacts. • This is not a fair process and does not meet the public consultation requirements of a Class Environmental Assessment. • Urge to require NPI to properly consult with the local community. *(42)- Comment submitted as a template.*	project. Notices of Project Commencement, subsequent Public Information Centres and Notice of Completion were published in the *Manitoulin Expositor* over the course of the last five years. Notification of these project milestones was also provided the residents in the study area through Canada Post Ad Mail. The changes to the number of turbines for the project have been based on available property, turbine size/type availability and the opportunities to secure a contract to sell power to the Province. These changes have been considered in the preparation of the environmental screening. It is very typical for wind projects to adjust the layout/number of turbines as a project is developed. It is noted that the number of turbines in the final layout are fewer than what was proposed in 2005, where a 60 turbine, 100 MW project was being considered. The vast majority of the required properties for the project have been secured by NPI through a lease arrangement. There was only a couple of property leases still required at the time the ESR was issued. NPI made efforts to identify all potential receptors in the study area. In the event that any receptors were missed, required changes to the layout will be made to maintain a minimum 550 m setback and meet applicable MOE noise guidelines.

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
Member of General Public Manitoulin Island, Ontario August 24th, 2009 **Bond, Brad** Member of General Public August 24th, 2009 **Champoux – Ares, Linda** Member of General Public August 20th, 2009 **Cormier, Chris** Member of General Public August 24th, 2009 **Cormier, Kathy** Member of General Public August 24th, 2009 **Dervis, Shiela** August 21st, 2009 **Ferrie, Helke**		

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
Member of General Public August 18th, 2009 **Gannon, Lynda and Logan** Member of General Public August 22nd, 2009 **G, Ron** Member of General Public August 22nd, 2009 **Haney, Ron** Member of General Public August 24th, 2009 **Haney, Monica** Member of General Public August 24th, 2009 **Hare, Marilou** Member of General Public August 24th, 2009 **Hare, D.** Member of General Public		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
August 24th, 2009 **Hart, Suzan** Member of General Public August 20th, 2009 **Jewell, Sandra** Member of General Public August 20th, 2009 **J.E.** Member of General Public August 20th, 2009 **Jansen, Barbara** Member of General Public August 24th, 2009 **Labelle, Carole** Member of General Public August 20th, 2009		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Labelle, Maurice Member of General Public August 20th, 2009 **Laberge, Cory** Member of General Public August 24th, 2009 **Laberge Family** Members of General Public August 24th, 2009 **Martin, Marisa** Member of General Public August 20th, 2009 **McAllister , Tom and Michelle** Members of General Public August 24th, 2009 **McCauley Jennifer** Member of General Public August 24th, 2009		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
McCauley Jessie Member of General Public August 24th, 2009 **Medwig, Jonathan** Member of General Public 2009 **Medwig, Lucia** Member of General Public August 21st, 2009 **Murray, Marian** Member of General Public August 20th, 2009 **Opoiko, Rachel** Directing Manager August 24th, 2009 **Pascos, Harry and Betty** Members of General Public August 22nd, 2009 **Perreault, Orlando and**		

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
Anne Members of General Public August 22nd, 2009 **Rapski, Al** Member of General Public August 24th, 2009 **Shortt, Julia** Member of General Public August 19th, 2009 **Stewart, Jane** Member of General Public August 23rd, 2009 **Sunday, Lori** Member of General Public August 24th, 2009 **Taliotis, Gloria** Member of General Public August 23rd, 2009 **Tilson, Kerrene** Member of General Public		

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
August 19th, 2009 **Weber, Elaine** Member of General Public August 21st, 2009 **Wellman, Angela (and John)** Professor Emeritus August 18, 2009 **William, Martin** Member of General Public August 20th, 2009		
Beaudry, Raymond Member of General Public Manitoulin Island, Ontario July 28th, 2009	1. One megawatt supplies about 350 homes. Over the last two months Manitoulin peak usage was 16 MW. Average was 12 MW. Northland Power McLean's Mountain project is proposed 77MW. Wind farms are on average 25% efficient due to Hydro having to keep the power produced from other sources available for supply when the wind stops in that area. Approximately 30 MW from Sudbury including line loss. If the provincial grid goes down Manitoulin will still not have power due to being non utility generator. Hydro One still maintains control authority for safety.	1. A modern wind turbine produces electricity 70-85% of the time, but it generates different outputs dependent on wind speed. Over the course of a year, it will generate about 30% of the theoretical maximum output. This is known as its load factor. The load factor of conventional power stations is on average 50%. A modern wind turbine will generate enough to meet the electricity demands of more than a thousand homes over the course of a year. Furthermore a wind turbine produces enough clean electricity in 3 to 5 months to offset all of the greenhouse gas emissions emitted in its manufacture – and it will produce clean electricity for another 20-25 years. A modern wind turbine is designed to operate for more than 20 years and at the end of its working life, the area can be restored at low financial and environmental costs.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
July 29, 2009 August 21, 2009	2. Concerned with the following construction impacts: • Approximately 50% of turbines will be in wooded areas. • Tree removal includes road allowances. • Overhead lines form turbines require more road width including potential dangers trees adjacent to lines. • The 115,000 volt transmission line construction will be looking into authority to expropriate private and NEMI property if required. 3. Expresses concerns regarding: • Impact to First Nation communities (Sacred Giant Site) • Social and economic impacts • Natural and cultural impacts • Visual impacts •	2. Efforts will be made to minimize tree or vegetation removal to accommodate the turbines and transmission line. In the event that tree or vegetation removal is required for the transmission line NPI will undertake the appropriate mitigation measures. 3. NPI has consulted with several First Nations regarding the project and the potential for impacts to First Nation communities. These consultations are expected to continue as the project development process continues. Impacts to the natural, social and cultural environment have been addressed through the environmental screening process and are documented in the Environmental Screening Report (ESR).
Bell, Chris and Joan Members of General Public August 24th, 2009	1. The 43 wind turbines will be aesthetically unpleasant. Their position on top of height ground makes them very visible. Their height of 410 feet is excessive and not in keeping with the landform. 2. The red flashing lights pollute the dark sky. No information has been given as to which of the turbines will have the lights – this will be required for the elevated assessment.	1. Perceptions regarding the visibility of wind turbines are subjective . NPI in the siting of the tubines has attempted to balance the visibility of the turbines with maximizing the output of the tubines. Visual simulations have been prepared as part of the Environmental Screening process. The machines used for this project will blend in well with the surrounding area. In the current layout the turbines are spaced at least 600 M apart.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	Many people have moved to Manitoulin for the rural landscape which could now be ruined. 3. The construction period will be very disruptive. Highway 6 and Highway 540 are two lane roads and too narrow and congested for construction traffic. McLean's Mountain Road and Burnett Side Road are 1.5 lane roads, up very steep hills and will have to be rebuilt at NEMI taxpayer's expense. 4. Gravel pits will have to be expanded or new ones opened to handle the aggregate requirements.	2. Wind turbines will be lit according to Transport Canada (TC) standards. Select WTs on the perimeter will be lit with a single red flashing light (horizontal distance between lit WTs not to exceed 900 meters for any approaching aircraft). The highest WT in the wind farm will be lit. All lit WTs will flash simultaneously. The amount of lighting required should not unduly impact residents and cottagers in the area. Current lighting systems ensure pilot safety, minimal impact on birds and minimal impacts on the night sky viewing while remaining unobtrusive for communities. 3. During the project construction phase truck traffic will increase along Highway 540, Hwy 6 as well as the local roads within the project area in order to deliver turbine parts and accessories to the project. There will also be an increase in regular vehicular traffic as construction workers drive to the construction site. Project related traffic volumes will be substantially reduced after all turbine components are on site. Any damaged roads will be repaired to their pre-construction condition or better at the expense of NPI. Once in operation project related traffic will be limited to maintenance staff. 4. NPI expects to obtain the required amount of aggregate material from existing licensed pits in the area.
Bickel, Gord Member of General Public August 13th, 2009	NPI is trying to get the project approved prior to the new regulations in accordance with the Green Energy Act without making the public aware of all that is involved with the turbines.	NPI expects that it will need to be in compliant with the set back requirements of the pending Green Energy Act regulations.
Dedman, Randy Member of General Public August 12th , 2009	Concerned about harmful effects of shadow flickering, ice throw and lighting on humans and wildlife.	Shadow flicker - Shadow flicker is caused as rotating turbine blades disrupt the sun's rays as they are cast on incident surfaces. When the incident surfaces affected are windows at nearby houses, shadow flicker may become a concern that must be minimized through effective planning and design. Shadow Flicker was modeled for the project and the results are presented in Appendix J of the Environmental Screening Report. The proposed wind farm has been designed to ensure a minimal amount of shadow flicker to nearby receptors. Shadow

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
		flicker can also be minimized by planting trees with landowner consent. The analysis indicates there are no houses which receive greater than 30 hours of shadow flicker per year when accounting for cloud cover, while seven homes may experience a maximum daily shadow flicker greater than 30 minutes. As this simulation is based on a worst case scenario, it is unlikely that many of the houses will noticeably experience the number of hours of shadow flicker that has been modeled. The need for any specific mitigation to address actual flicker effects will be discussed with affected residents. NPI commits to adding screening as is appropriate to address any excess flicker effects as reported by residents. Ice Throw - All of the turbines are located on private lands that are not publicly accessible. During icing events it is possible for ice to fall or be thrown from turbine blades. Any ice that is accumulated may be shed from the turbine both due to gravity and the mechanical force of the blades. An increase in temperature or solar radiation may cause sheets or fragments of ice to loosen and fall, making the area directly under the turbine subject to the greatest risk. Modern wind turbines have sensors that detect an imbalance in the rotor system and cause the turbine to stop rotating its blades and powers off until the imbalance is corrected. Since each wind turbine will be constructed on privately owned land that is generally publicly inaccessible the threat posed from ice throw and fall is greatly diminished. Turbines have all been sited with appropriate setbacks from residences to alleviate this risk. Furthermore, icefall and throw occur in the winter when agricultural fields are not in use. Therefore there should not be very much activity on or in the vicinity of turbines during the winter months. Lighting - Wind turbines will be lit according to Transport Canada (TC) standards. Select WTs on the perimeter will be lit with a single red flashing light (horizontal distance between lit WTs not to exceed 900 meters for any approaching aircraft). The highest WT in the wind farm will be lit. All lit WTs will flash simultaneously. Wind turbines will be lit according to Transport Canada (TC) standards. *(Please see above response).*The amount of lighting required should not unduly impact residents and cottagers in the area. Current lighting systems ensure pilot safety, minimal impact on birds and minimal impacts on the night sky viewing while remaining unobtrusive for communities.

The received comments & concerns have been organized into categories. At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
Ferrie, Helke Member of General Public August 18th, 2009	Concerned with impacts on archaeological significance of the proposed project area.	As part of the environmental assessment process for the proposed project a Stage 1 Archaeological Resource Assessment, as required by the Ontario Ministry of Culture, was undertaken. The assessment concluded that majority of the project area has low archaeological potential. Although the proposed study has found low archaeological potential for much of this property, there is always the possibility of buried deposits. If artifacts or human remains are found in the course of excavation of the property the appropriate authorities should be contacted. Stage 2 survey work is to be conducted if the higher potential areas are to be impacted.
Harfiled, Nicolas Hon.B.Sc. (biology) August 24th, 2009	Indicated that: Part A.6.2.4 of the Guide to EA Requirements for Electricity Projects describes the process of mandatory notification. It states that, "The notice must be mailed or delivered to households in the immediate vicinity of the project and to affected government agencies." My home is clearly identified as residence #3 on a map titled "McLeans Mountain Windfarm Figure 6-4 Noise Receptor Locations and Noise Contours." Neither myself nor my father (owner of Lot 9 Con 1 and Lot 9 Con 2) received correspondence of any sort from Dillon Consulting or NPI. The property I live and farm on, which is owned by my father and which I am currently in the process of buying, is adjacent to turbines 24 and 28. My family should have been notified of all public meetings held by NPI.	The Notice of Project Restart and PIC appeared in the Manitoulin Expositor for two consecutive weeks prior to the scheduled meeting on June 25th, 2009. Notices of Project Commencement, subsequent Public Information Centers and Notice of Completion were published in the *Manitoulin Expositor* over the course of the last five years. The Notice of Completion was also provided to the residents in the study area through Canada Post Ad Mail. The turbines are set back at least 550 meters from all residences including the few residences within the study area for the proposed project. NPI has sited the proposed wind turbines away from local businesses and dense residential areas. NPI will continue an open public consultation process regarding the proposed project.
Williamson, David CAO August 14th, 2009	Indicates that: "NEMI Council has passed previous Resolutions in support of the project and these resolutions remain on the public records. Council's position has been modified though the passage of Resolution No. 218-08-09 rescinding proposed setbacks under the NEMI Zoning By-Law agreed to by Resolution No. 36-02-07 (…). It should be noted that the setbacks identified in Resolution No. 36-02-07 were never	Your comments regarding the recent Council resolutions have been noted. It is NPI's understanding that the project is still in conformance with the existing zoning by-law.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	implemented into the NEMI Zoning By-law under the provision of the Planning Act (…). Asks "(…) to revise page 11 of the (ESR/IES) document and delete any reference to any setbacks governing the project under the NEMI Zoning By-Law (…)"	
Wellman, W.J & A Members of General Public July 20th, 2009	Concerned with negative impacts on tourism.	The project area is not an area that is frequented by tourists. The project is well set back from the Island shoreline areas and as such is not expected to impact tourism activities. While some of the turbines may be visible in the distance horizon from the waters that surround the Island, it is not expected that this would influence people's decision to visit this area. We note that the proposed project may have the potential to attract visitors. At NPI's Miller Mountain project in a remote part of Quebec, in excess of 3500 tourists visited the project in 2008. The Providence Bay Wind Farm located to the south east of the proposed project, approximately 45 km away, established an interpretation centre for the project, which attracts numerous visitors over the summer visitor months.
COMMENTS RELATING TO THE SPECIFIC SECTIONS IN THE ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL SCREENING REPORT		
Harfiled, Nicolas Hon.B.Sc. (biology) August 24th, 2009	1. Section 1.1 in part states that, "No surface water will be required for the project," yet on page 8 of the ESR under section 1.9 it indicates that the following permit may be required: *"Ontario MOE Permit to Take Water under the Environmental Protection Act, should water be extracted for use in the temporary cement plant/concrete batch plant (if necessary) or for other purposes from a surface and or groundwater source in excess of50,000 liters per day;"* Will surface water be required for this project or not? 2. Section 1.2 In part states that "Some de-watering of the turbine foundation area may be required. Affects on groundwater levels are not expected because of this." What will happen to the flow of groundwater as a result of the	1. If an on-site cement batch plant is required, the likely water source would be groundwater – not surface water. The need for such a facility within the project area has not been confirmed. All necessary permits would be obtained should there be a need for groundwater. 2. The amount of dewatering required for turbine foundation construction is expected to be minimal and temporary. The extracted water from the foundation area would not be consumed but would be returned to the area. Blasting may be required to construct the turbine foundations. It is highly unlikely that the project would have any material effect on the ground water resource in the area. 3. The wind turbines, once constructed, will not prevent landowners from constructing buildings in their vicinity. There are currently no by-laws preventing a landowner from

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	blasting required to pour foundations for the turbines? It is my understanding that there have not been any windfarms developed in Ontario on this type of bedrock. It is also my understanding that the spring water (groundwater) flowing down through the escarpment to my farm originates from proposed turbine sites. I am concerned that the construction of the turbines (particularly turbines 24, 28, 29, 30, and 34) may alter the flow of groundwater to my farm. I rely on this water to operate my farm. What is an appropriate compensation for the loss of access to clean water? 3. Section 2.1 In part states that "There are few residences in the vicinity of the turbines. The turbines are set back at least 550m from each residence and future building envelopes." Because many of the turbines are located on single 100 acre lots, many adjacent landowners will be prevented from building on their own land in the future. With the 550m setback requirements of the Green Energy Act, property owner rights will be restricted with respect to building a dwelling. Dillon Consulting and NPI cannot possibly know about adjacent landowners future building plans because they did not adequately consult with us. What is equally problematic is the restriction future landowners will face if they choose to build. I have recently purchased a building permit for a dwelling on Lot 9 Con 2. My building permit is dated August 20, 2009, as is my receipt of payment. I expect NPI to change the proposed location for turbine 28 as it is less than 550m from my building site. I also expect that NPI should report on any negative environmental impacts for the	doing this. NPI is siting its turbines a minimum of 550 m from sensitive noise receptors as required by provincial policy. 4. Thank you for your comment. 5. Discussions were held with several agencies as well input was received from local people with knowledge on conservation issues. If there are other individuals in the area with relevant knowledge then NPI would be quite willing to speak with them. 6. Thank you for your comment. 7. It was not necessary to evaluate each wetland in the study area to avoid them. Available mapping, information from the MNR and field work was all considered to identify the location of wetlands in the project area. 8. A Natural Environment Assessment in consultation with the Ontario Ministry of Natural Resources and Environment Canada was conducted for this project. The assessment concluded that risk to rare, threatened and endangered species in the area is low and minimal adverse significant effects are anticipated. NPI will implement mitigation measure where required. 9. Please see responses provided above to #5 and #8 of this section. Further, there is a large amount of information available regarding the effects of wind farms of birds. This base of information continues to grow. From the experience of existing wind farms, wind farms generally result in minimal effects to birds during operations. 10. The effects on natural habitat as a result of wind farm construction are documented in the ESR (both disturbance and removal effects). Further, NPI continues to work with the MNR and Environment Canada to ensure that effects of the project are minimized.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	new site chosen for turbine 28. 4. Section 4.1 In part states that, "Based on an extensive literature review, consultations with local experts, and a full year of fieldwork, rare, threatened or endangered species are unlikely to be affected by the project." I have partially commented on this statement in paragraph 3 of this elevation request, with particular attention to the Puma, which is endangered in eastern North America. 5. Which local experts were contacted for consultation? Judith Jones, Dr. Gerard Courtin, and Chris Bell were not consulted. Local residents who know the land and its communities better than any, were not consulted. I have seen a list of "local" authorities in the ESR who were consulted with, and most if not all of these people hold offices that are not on Manitoulin Island. Was John Diebolt used as a consultant in this project? He is our local, senior Conservation Officer who likely knows the project area extremely well. I suggest that in the individual Environmental Assessment being requested, some of these truly local experts are used for consultation. 6. Section 4.2 In part states that, "There are no known ESAs in the study area. The one ANSI (life science) in the area has been avoided." I contend that the effects to the ANSI (presumably Bass Lake Marsh/Swamp – AREA_ID 4853) will be mitigated simply because the project area boundary conveniently excludes this ANSI. I have discussed my concerns related to this in paragraph 4 of this elevation	11. The effects to any harvestable forests from the project would be on private land. No concerns have been expressed by landowners to NPI in this regard. No public forested lands are affected. 12. Hunting activities will be only disturbed if project construction occurs during the fall hunting season. Once operational, the wind farm is highly unlikely to affect games species in the area. Anecdotal information form NPI's other projects supports this. NPI is consulting with First Nations regarding the impact of the project on traditional land use activities. 13. The proposed project is located in The Municipality of Northeastern Manitoulin and the Islands (NEMI) which is a rural community. For the purposes of the noise assessment, the area is defined as a "Class 3 Area" which includes rural areas and/or small communities with a population of less than 1000 and an environment dominated by natural sounds and little or no road traffic. All potential receptors in the noise study area for the proposed project are defined as Class 3 areas for purposes of the noise assessment. This approach triggers the most stringent of noise criteria for use in the noise assessment. 14. The statement regarding no businesses refers to the lands within the project area or immediate vicinity of the project. The only effect that is to occur beyond the immediate vicinity of each wind turbine is the visibility of the turbines. The potential for the visibility of the turbines to affect tourism activity on the Island has been addressed in the ESR. In considering the experience of other turbine projects around the world, it is more likely that the project will positively influence people's decision to visit the Island.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	request. 7. Section 4.3 In part states that, "Wetlands in the study area have been avoided as much as possible." Were qualified wetlands evaluators used to evaluate the wetlands that will not be avoided? If not, this should be completed in the requested EA. 8. Section 4.4 In part states that, "The construction and installation of project components has the potential to result in effects to wildlife through the removal of some habitat." This proposed wind farm will result in more habitat loss in the project area than has ever before been experienced – it not only has the potential to result in effects to wildlife – it will have effects to wildlife. 9. Section 4.6 In part states that, "The scale and significance of these effects has been assessed in this Environmental Screening". Ducks Unlimited acknowledges that the indirect impacts of windfarms on migratory birds are not well understood and that quality information on this particular issue is generally lacking (Pers. Comm.). How can Dillon Consulting and NPI assess and mitigate the effects of something the scientific community knows very little about? 10. Section 4.7 In part states that: "From some turbine sites, natural vegetation will need to be cleared for the turbines, collector lines and access roads." Because every turbine will require the construction of at least some length of road, and	15. NPI will be obligated to maintain a minimum 550 m setback from all sensitive noise receptors and meet required noise levels at these locations. The need to consider hunt camps as noise sensitive receptors is being discussed with the MOE. 16. We disagree with this point of view that the project will not result in economic benefits to the Island. The benefits that will result are clearly outlined in the ESR. Further, this project may have the potential to attract visitors. At NPI's Miller Mountain project in a remote part of Quebec, 3500 tourists visited the project in 2008. The Providence Bay Wind Farm located to the south east of the proposed project, approximately 45 km away, established an interpretation centre for the project, which attracts numerous visitors over the summer visitor months. Furthermore Wind farms generally have positive long term effects on the local tourist economy. There are 6,000 wind turbines in Denmark, which are used for marketing tourism. Hotels, guesthouses, and campsites may use wind turbines to promote "green tourism". This is particularly targeted towards the German market, where the public is known to have a high level of interest in both environmental issues and in new technology. In a Scottish study[1] 43% of respondents said a wind farm would have a positive effect on their inclination to visit the Argyll area, an area of high landscape value. About the same proportion of respondents said it would make no difference, while less than 8% felt that it would have a negative effect. Nine out of ten tourists visiting some of Scotland's top beauty spots say the presence of wind farms makes no difference to the enjoyment of their holiday. Twice as many people would return to an area because of the presence of a wind farm than would stay away, according to a poll carried out by MORI Scotland. Commercial tour companies provide guided tours of several wind farms in the Pincher Creek, Alberta region. 17. There is no scientific evidence of direct health effects resulting from noise at the level of

[1] *Tourist Attitudes Toward Wind Farms,* MORI Summary Report, September 2002 www.bwea.com/pdf/MORI.pdf

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	a foundation, natural vegetation will be destroyed at every turbine site. Also, because many (nearly 50%) of the proposed turbine sites are located in wooded areas, much of the vegetation that is destroyed will be forest. 11. Section 5.5 In part states that: "The affected lands do not support harvestable forest resources." This statement is simply not true. I invite you to visit the project area and have one of the adjacent landowners show you some of the harvestable forest resources that will be cleared for collector lines and access roads. 12. Section 5.6 In part states that: "The project is located in an area that may be used for recreational hunting." And that "None of the affected lands can be considered inaccessible." The project area is unquestionably used by recreational and sustenance hunters. The people that hunt these lands include members of Sheguiandah First Nation, local land owners and their families, as well as off-Island residents who come to the area for hunting (bringing money into the local economy). A large percentage of the lands in the project area are used solely for hunting. Should the windfarm cause the emigration of game resources from the area it is possible that many of these landowners will sell, depreciating property values. 13. Section 6.1 In part states that: "There are no built communities in the vicinity of the project, the area is rural in nature with a few scattered residences." This is a terribly misleading statement. The project area boundary conveniently excludes:	noise generated by wind turbines. Please refer to the response provided in the "Human Health" section of this Table.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	• Aundeck Omni Kaning First Nation which is approximately 1 km from the nearest proposed turbine (turbine 8) • All of the homes north and west of HWY 540 • All of the homes on Bidwell Road south of proposed turbines 42 and 43 (these homes are approximately 1 km from the proposed turbines) • All of the homes on Townline Road south of the project area • Sheguiandah and Sheguiandah First Nation • All of the homes along HWY 6 • Little Current which is approximately 3 km from the nearest proposed turbines (turbines 1 and 4) The project area boundary should be extended 1 km in each cardinal direction, with special mention given to Little Current, to properly describe the level of human habitation in the vicinity of the project. Please refer to the McLeans Mountain Windfarm Figure 6-4 Noise Receptor Locations and Noise Contours map to help clarify my arguments on this topic. Note that the 40 dBa Noise Contour of proposed turbine 37 exceeds the project area boundary to the west. Also note the obvious exclusion of Aundeck Omni Kaning from the project area (the project area boundary clearly cuts to the southwest as it approaches AOK). 14. Section 6.2 In part states that: "There are no businesses in the vicinity of the project that could be negatively affected." How can Dillon Consulting make such a bold statement	

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	based on the information in this ESR? Most Island businesses rely on tourist dollars, and tourists do not come to Manitoulin Island to see wind turbines. Tourists come to the Island to get away from large man made structures like turbines, and the light and noise pollution associated with such structures. 15. Section 6.3 In part states that: "Disruption during operations is not expected," and that "No recreation cottages are within the project area. There are a couple of hunt camps in the project area." - One of the 40 dBa Noise Contours on the McLeans Mountain Windfarm Figure 6-4 Noise Receptor Locations and Noise Contours map includes a large portion (approximately 30%) of the land my family and I hunt on (Lot 9 Con 2). This will undoubtedly disrupt the game that I hunt and will disrupt the deep connection I feel with the land when I am hunting. I personally know of 12 dwellings in the project area, plus at least 2 building permits for dwellings that have been purchased within the last 6 months that are also within the project area. Of these 14 dwellings, at least 4 are within 550 metres of a proposed turbine. I am also unclear of the distinction Dillon Consulting makes between a recreation cottage and a hunt camp. Many consider hunting to be a recreational activity (though hunting for me is part of my Manitoulin lifestyle), therefore, making a hunt camp a recreational cottage. Also, many "hunt camps" are used year round for many forms of recreation including skiing, snowshoeing, wild crafting, maple syrup	

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	making, and hiking. Regardless of their uses, these camps are all considered dwellings and will require the Green Energy Act setback of 550 m. 16. Section 6.5 In part states that: "Negative effects on the area economy are not expected. The project will result in positive economic impacts through payments to land owners and taxes that will be paid to the municipality and job creation. Supplies and services will be obtained in the local area as much as possible." I have already addressed my concerns regarding negative effects on the area economy. Information in the ESR does not convince me that the tourism industry and land values of Manitoulin Island will not be negatively affected. NPI's commitment to support the local economy through job creation and the purchase locally of supplies and services is not convincing. Full-time, long term job creation has been estimated by NPI to be anywhere from 7-10 jobs, with no written commitment to hire locally. I have also not seen any written commitment in the form of a legally binding contract that holds NPI to using local businesses and labour during the construction phase of the project. It seems very likely that there will be no net economic benefit to the Island, it seems more likely that there will be a long term net negative impact to the local economy. 17. Section 6.8 In part states that: "Potential effects to public health and safety during the operations period are minimal,"	

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	and that "Project Health and Safety concerns have been responded to – local residents are generally supportive of the project. Potential health effects from wind turbines are still poorly understood. Dillon Consulting and NPI should not be able to make this claim, especially when organizations like the World Health Organization are approaching this issue with caution. I do not feel it is safe for us (residents within or near the project area) to be living in such close proximity to wind turbines until our provincial and national governments have a clearer understanding of the potential health effects from wind turbines. Local residents are not generally supportive of the project, at least not since being given the most recent information.	
Roy, Jeffery Member of General Public August, 2, 2009	1. Commented on the following statement as presented in the EIS/ESR document: *"NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In- Tariff (FIT) program"*. This misleading because Northland Power Inc. (NPI) has publicly stated that they are not obligated to do not intend to follow the restrictions of the GEA. 2. Commented on the following statement as presented in the EIS/ESR: *"Significant effects to the natural and social environment have been avoided through careful site selection, good planning, the implementation of mitigation measures, and adherence to regulatory requirements"*. The (project) sites were selected according to availability of landowners willing to buy in; for example when one landowner recently reconsidered his decision to have Tower 3 on his land, it was moved from its previous	1. The proposed project conforms to the current legislation i.e., the Environmental Assessment Act (EAA) and the Electricity Projects Regulation (O.Reg. 116/01). NPI conducted an environmental screening according to the Ministry of the Environment's (MOE) "Guide to Environmental Assessment Requirements for Electricity Projects". The proposed regulatory changes pursuant to the Green Energy and Green Economy, 2009 Act ("MOE Regulatory Changes"), including a document describing the requirements of the new Renewable Energy Approval ("REA Approval Requirements") had not been passed as legislation when the ESR was completed. NPI intends to meet the 550 m setback from all applicable receptors and other set backs required by the Province. 2. The siting of the turbines was based on a combination of factors including: land availability, wind resource potential, natural environmental features and their sensitivity, and social considerations (e.g. residences), and project economics. 3. Effects to hunting activity would only occur if project construction occurs in the Fall during the hunting season. Once the project is operational, no effects to hunting are

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	location to its current one where it is close to a well known waterfowl pond and in the middle of a mature maple forest habitat. 3. Commented on the following statement as presented in the EIS/ESR: *"The project is located in a rural area where the wind farm will not interfere with the existing land uses. No significant adverse environmental effects are anticipated. The overall conclusion of this ESR is that this project can be constructed, operated and decommissioned without any significant impacts to the environment, including the natural and social environment"*. This is the type of overstatement that is repeated frequently through the report as if its repetition alone will give the document some validity. There will be a significant interference with current land use; e.g. hunting is a major pastime in the green bush and will be significantly impacted by the construction and operation phase noise. Agricultural land (although limited) will be significantly reduced on the affected lots due to the combined land degradations of the development. Significant noise issues may affect the enjoyment of adjacent lands. Building restrictions on land within setback radius of turbines will restrict use. See further more specific comments below. 4. Commented on the following statement as presented in the EIS/ESR: *"In addition to the wind turbines, the project will require a 10.3 km 115 kV power transmission line to be constructed to the west of the study area"*. No routing has been suggested that runs to the west. I assume this is the first of several errors in	anticipated. The land has very limited value for agricultural which is limited to cattle pasturing. The landowners whose property the turbines will be located on have not expressed any concerns regarding this. The turbines once operational will not restrict any development on adjacent lands. Landowners are free to build on their property as per current zoning regulations. We do note that the project lands have very little development within it. Most development activity has occurred along the edges of the project. 4. Reference to the western direction of the transmission line is in error. The location of the proposed 115 kV power transmission line is to the north-east corner of the project. Mapping in the ESR shows the proposed route for the transmission line. 5. 5a) The proposed project has been in the formal planning stages since the spring of 2004. Since that time, various forms of consultation have taken place including sending notices to residents throughout the area. Since 2004, NPI has had discussions with several Aboriginal communities in proximity to the project area. This information is available in section 4.3 of the EIS/ESR for the McL:eans Mountain Wind Farm document. Notices of Project Commencement, subsequent Public Information Centeres and Notice of Completion were published in the *Manitoulin Expositor* over the course of the last five years. Notification of these project milestones was also provided the residents in the study area through Canada Post Ad Mail. NPI continues an open public consultation process regarding the proposed project. NPI held a Public Information Meeting on June 28, 2005 where NPI indicated that intitially the proposed wind farm would consist of 60 wind turbines for a total capacity of 99 MW. The number of proposed wind turbines and total capacity of the proposed wind farm has therefore decreased over the past five years during the planning stages of the proposed project. 5b) Please refer to the response provided above.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	direction in the document. Or perhaps there is another route being considered – the project has a history of metamorphosing so frequently that local stakeholders have difficulty keeping up. 5. Commented on the following statements as presented in the EIS/ESR: 5a) *"As part of the EA requirements, a consultation process has been undertaken to provide the opportunity for the public, government agencies and aboriginal communities to identify any issues that they may have with the project and obtain information to mitigate their concerns."* I will let the First Nations speak for themselves as I understand they feel they have not been appropriately consulted. As for the local residents - the first we heard of this project was mid June 09 when NPI announced the "public information meeting" in the local paper. Residents who did not subscribe to a paper would not have heard about it. Previous meetings referred to in the ER involved a completely different proposal with different turbine locations, overall size and transmission line. 5b) *"Public and agency consultation has been a cornerstone of this project with multiple information sharing and stakeholder feedback opportunities provided throughout the course of this study. Potential stakeholders were identified and contacted early in project planning to identify areas of concern. On June 8th and 15th, 2009 the Notice of study restart and PIC #3was published in the Manitoulin Expositor. The notice was also sent on June 15th, 2009 to all residents in the project area and the larger area through Canada Post Ad*	5c) The Notice of Project Restart and PIC appeared in the Manitoulin Expositor for two consecutive weeks prior to the scheduled meeting on June 25th, 2009. Northland Power Inc. (NPI) held a Public Information Meeting on June 28, 2005 where NPI indicated that initially the proposed wind farm would consist of 60 wind turbines for a total capacity of 99 MW. NPI does not anticipate significant changes to the proposed number of wind turbines (i.e., 43) as recently presented at the Public Information Centre on July 25th, 2009. The number of proposed wind turbines and total capacity of the proposed wind farm has therefore decreased over the past five years during the planning stages of the proposed project. 6. Comment noted regarding the attempts of NPI to address the concerns of residents regarding the transmission line routing. NPI is willing to consider all reasonable options to route the transmission line through this area. At this time, the route as proposed in the ESR is still proposed. 7. NPI expects that it will have to meet the set back requirements of the *Green Energy Act* which are likely to exceed the set back distances that the Town had formally established through resolution.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	Mail." Our family lives on McLean's Mountain Road and we and our neighbours did not notice this mailing amongst the advertisement mail we received in June. 5c) *"The final PIC was held on June 25, 2009 at the NEMI Recreation Centre/Arena in Little Current, Ontario from 7:30 pm to 9:30 pm. During the PIC, several information panels were displayed to provide the public with information about the project (see Appendix B). The purpose of the PIC was to present:* *• The results of environmental studies and evaluations of the siting of the wind turbine and transmission line route;* *• The assessment of project impacts on the environment with potential mitigation measures and identification of residual effects;* *• The specific information on the project; and,* *• To provide a venue for questions and for providing feedback to NPI about the project.* *The PIC was organized as a drop-in centre. In total, thirty-four (34) participants signed in. Overall the PIC was well received."* The date in the Expositor appeared incorrectly and many people may have missed it. The season is particularly busy in June for local people to attend a meeting with short notice. Many people had seen enough versions of this project over several years that they were skeptical that the development would proceed. To my knowledge there was no substantive changes made to the project in response to the public concerns. Steadily escalating public outcry as a result of educational efforts has also not resulted in any material change to the project. 6. Commented on the following statement as presented in the	

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	EIS/ESR: *"Follow-up discussions were held with residents regarding the routing of the transmission line along Morphet's Side Road."* This refers to an effort to convince me to allow the 115KV line over my property (presumably over the edge of the escarpment and directly toward Little Current) as opposed to running down Morphet's Side Road. (MSR) This was the only alternative cheaper for the company than MSR. MSR is canopied in its upper section by 100 year old maple trees and features a fabulous vista to the East over the East Channel. Further east it is lined by trees and passes four lovely hillside farms. We didn't want a transmission line with ROW along it, nor did we want it overhead through our farm. (an underground routing was proposed but NPI's response was that it was too expensive.) 7. Commented on the following statement as presented in the EIS/ESR: *"The wind turbine setback distance requirements as specified in the NEMI zoning by-law is observed or even surpassed in the siting the wind turbines for this project. These setbacks are:* *1) Separation distance from dwellings, the great of* *a) 250m, or* *b) Ministry of the Environment, Certificate of Approval requirement, (NPC232)* *2) Participant property line setback – 10 m* *3) Non-participant property line setback – rotor radius plus 10 m* *4) Setback from road right-of-way line – rotor radius plus 10m* *5) Separation distance from non-dwelling principal and accessory structures – rotor*	

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	radius plus 10m." My understanding is that council had passed this concept in principle but subject to further consideration and research. Many municipalities are now realizing that the old setbacks are simply not adequate to protect residents. In addition they are recognizing that the setbacks may be better defined with reference to property lines rather than receptors to avoid infringement on property rights. The GEA has not yet established appropriate setbacks. The council intends to revisit this motion and propose a bylaw in the near future. This is well known to NPI and it is disingenuous to imply that the local government is onboard with the project as it stands.	
	8. Commented on the following statement as presented in the EIS/ESR: *"A key aspect of all project phases is to minimize environmental effects. The wind turbines have been sited to target areas with the best wind energy potential, avoid sensitive natural areas/habitats, optimize use of existing roads, minimize the visual impacts of the turbines, and respect all municipal set back requirements"*. See above.	**8.** Thank you for your comment. Please refer to the response provided above.
	9. Commented on the following statement as presented in the EIS/ESR: *"It is anticipated that the maximum width of the ROW would be approximately 8-10 meters depending on the distance of poles and conductor swing. The transmission line route as shown in Figure 2-1 is largely contained within municipal road rights-of-way"*. Given the description of MSR (above) we are skeptical that an 8 to 10 meter ROW can be "largely contained within municipal road rights-of-	**9.** The statement regarding the anticipated width of the ROW for the transmission line in the ESR is correct. Also, NPI has not applied to expropriate any land for the project.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	way." If NPI thought that was true they would not have applied for expropriation rights to route the transmission line.	
	10. Commented on the following statement as presented in the EIS/ESR: *"Turbine staging areas are located at each turbine site. The turbine staging area is comprised of three different zones. The crane pad is the area needed to support the crane used for construction and will be approximately 12 meters wide by 36.5 meters deep and will be accessible from the access road with a slope of less than 1% or less in all directions. Each turbine position will also require a staging and equipment storage area for the safe erection of the towers and the lift and securing of the nacelle and blades. Thus, a total leveled surface of approximately 40m by 40m will be required at each turbine. Furthermore, a 360 degree radius around the base of the turbine to a distance of 50 meters The maximum construction site required at each foundation is 225 feet (69 m) by 250 feet (76 m) (the "Construction Site"); the Construction Site includes a crane pad area of 80 feet (24 m) by 60 feet (18m), which may have a maximum slope of 1% in any direction. The Construction Site will be cleared of vegetation, rocks and other obstructions that may impede access by erection equipment.* *• Soil compaction to provide ground-bearing capacity of nominal 4,500 pounds per square foot.* *An open area of not less than 300 feet (92 m) by 600 feet (183 m) will be required as a staging area. The entrance and exit will be 40 feet (12 m) wide and have an* *inside turning radius of at least 150 feet (46 m"*. NPI states that at least ½ of the turbines are located in forested areas. Most of this forest is mature sugar maple or cedar. The NPI statement *"A key aspect of all project phases will be on the minimization of environmental and social effects"* rings rather hollow in the face of this description as does	**10.** Some vegetation disturbance and removal will occur during the construction phases of the wind farm. Vegetation survey field work has been conducted to aid in the positioning/routing of the project components. The nature of the anticipated impacts is documented in the ESR. NPI will minimize the removal of vegetation and where required, replant areas with native vegetation to maintain biodiversity.

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	their claim that the natural forest will "largely reestablish itself within a year" (Rick Martin July 2009).	
	11. Commented on the following statement as presented in the EIS/ESR: *"A decommissioning plan will be prepared in accordance with provincial legislation and guidelines that exist at the time of decommissioning. Decommissioning will involve the removal of the turbines and other associated infrastructure including the turbine foundations to below grade and the removal of electrical lines/facilities. Infrastructure that is left below grade will not affect future land use. Previously disturbed lands would be rehabilitated and returned to their previous state."* This suggests to me that if Northland pulls out or sells out at some point there will be no one left with the very expensive obligation to decommission. This should all be specified as part of the initial process and bonded to ensure it gets paid for. The suggestion that "Previously disturbed lands would be rehabilitated and returned to their previous state" is of course ludicrous. How can you replace a mature maple sugar bush? – they don't seem to be making them anymore.	**11.** A decommissioning plan will be prepared by NPI. The purpose of this decommissioning plan will be to identify the methodology that NPI will use to mitigate potential impacts resulting from the cessation of operation of the facility at the end of the Project's useful life. The decommissioning plan will identify the specific Project components that will be removed; the costs associated with the removal of the components and associated scrap value. Some vegetation disturbance and removal will occur during the construction phases of the wind farm. NPI will ensure to minimize removal of vegetation and where required, replant areas with native vegetation to maintain biodiversity.
	12. Commented on the following statement as presented in the EIS/ESR: *"The (transmission) line has been routed to minimize its distance and avoid sensitive environmental features. The line will be above ground. Some minor variations to the alignment are possible dependant on public input and engineering considerations."* This repetitive statement has been questioned above.	**12.** Thank you for your comment. Please refer to the relevant responses provided above.
	13.	**13.** Thank you for your comment. Please refer to response provided to *Question #20* of this

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	Commented on the following statement as presented in the EIS/ESR: *"Operations will directly employ up to 8 people whose tasks will be to monitor and operate the wind farm. These long term employment opportunities will generate total annual incomes of about $600,000."* Even if this figure was likely to represent local employment (which is hardly likely – these are highly specialized and technical machines) it is a tiny drop in the bucket compared to the employment from tourism (see below).	section regarding impacts on tourism.
	14. Commented on the following statement as presented in the EIS/ESR: *"The McLean's Mountain Wind Farm is located in the in NEMI. This will represent an annual tax payment to the Municipality of approximately $95,000 per year"*. This figure (which might require justification) may be offset by reduced property values in the entire surrounding area as evidenced in other areas.	**14.** Based on the consultations undertaken with the local residents NPI noted a concern over the loss of property values due to the proposed development of the McLean's' Mountain Wind Farm. The vast majority of evidence on the impact of wind farms on land values comes from Europe, Australia and United States of America (USA). The studies conducted in these countries indicate wind farms have no material effect on property values. Data from Ontario is beginning to emerge as more wind farms are constructed, and the experience from those projects also suggests that wind farms do not decrease property values. A 2006 study conducted by Blake, Matlock and Marshal Ltd. for Windrush Energy suggests that wind farms have not negatively affected property values. *"Property Value Study: the Relationship of Windmill Development and Market Prices"* aimed to determine if the development of wind farms in the Melancthon area has had any impact on the growth of property values in the Township. Property values before and after wind farm development in the Township of Melancthon where compared to values in East Luther Grand Valley Township, a neighbouring and similar township except for its lack of wind farms. Property values in Melancthon were also compared to those in Dufferin County. The analysis showed that property values in the Township of Melancthon grew similarly to the rest of the County, and increased more than East Luther Grand Valley Township. Wind farm development was not found to have diminished property values. The Canadian Hydro Developers Inc. also compared housing price ranges on Wolfe Island

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
		and Simcoe Island in Ontario, before and after the development of the wind farm (http://www.shearwind.com/glen_dhu_community/fact_sheet.html). Findings indicate that Township of Melancthon experienced a stronger growth rate in sales price per property, than the adjoining East Luther Grand Valley Township. The findings of this particular research indicate that the presence of the Wind Farm in Melancthon Township has not had an adverse impact on values within that municipality. A study conducted by the Renewable Energy Policy Project (REPP) *"The Effect of Wind Development on Local Property Values"* (May 2003) presents data to counter the threat of decreased property values. The REPP study is the first study to systematically analyze property values data in order to examine the charge often voiced by wind farm opponents that wind development will lower the value of property within view of the turbines. The REPP study looked at wind development projects with a generating capacity of 10 MW or more that were installed in the U.S. from 1998 to 2001. The REPP study also used much larger wind farms (up to 80 wind turbines per site) than the proposed McLean's' Mountain Farm (43 wind turbines). The REPP study found no evidence that property values decreased as a result of wind farms. Quite the contrary, for the great majority of projects the property values in the view shed of the wind farm increased at a higher rate than they did in the comparable community. Experience in other countries indicates no evidence supporting the claim that views of wind farms decrease property values: • USA - Research in 2002 by ECONorthWest backed-up by a May 2003 Analytic Report for the REPP involving the review of over 25,000 records of property sales within a distance of 8km of wind farms and interviews with property tax assessors. The report found that property values increased a t a higher rate within the view-shed of the wind farm than in comparable locations away from wind farms. • Denmark - A report by the Institute of Local Government Studies (AKF) found that "the

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
		economic expenses in connection with noise and visual effects from wind mills are minimal". • United Kingdom – The Royal Institute of Chartered Surveyors (RICS) released a study in 2005 that found that of 405 surveyors surveyed, 63% felt wind farm developments had no impact on the value of agricultural lands. The surveyors involved in the study all had experience with transactions affected by wind farms.
	15. Commented on the following statement as presented in the EIS/ESR: *Will the project "have negative effects on residential, commercial or institutional land uses within 500 metres of the site"?* • *There are no commercial or institutional land uses in the project area.* • *There are a few residences in the vicinity of the turbines. The turbines are set back at least 550 m from each residence and future building envelopes."* This is in fact not true and represents one of the major objections to the project as planned. Precisely because the setbacks are from current residences, the building and business opportunities for adjacent landowners are being restricted or the land within the setback rendered unsafe for use. It would not make sense for the municipality to insist on a certain setback from a residence and then allow a residence to be built within the setback jeopardizing the health of current and future owners.	**15.** There has been very little historical development activity in the project area. This absence of development activity has been one of the reasons for the project being located in this area. Adjacent property owners will not be restricted to build on their property to the extent that is allowed under the current zoning by-law.
	16. Commented on the following statement as presented in the EIS/ESR: *Will the project "be inconsistent with the Provincial Policy Statement, provincial land use or resource management plans?* • *The project respects the pertinent Provincial Policy Statement".*	**16.** The proposed project conforms to the policies set out by the Provincial Policy Statement (alternative and renewable energy) as well as to The Official Plan for the Manitoulin Planning Area. The proposed project is not sited on the Niagara Escarpment and therefore is not required to conform to The Niagara Escarpment Commission policies.

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	The project is located on one of the highest and most prominent portions of the Niagara Escarpment as it exists on Manitoulin. As such, provincial policy discourages development of the brow of the escarpment. One of the previous incarnations of this project was located well back from the brow of the escarpment for that very reason.	
	17. Commented on the following statement as presented in the EIS/ESR: *Will the project "cause negative effects from the emission of noise?* • *The operation of the construction equipment will result in noise increases in a localized area.* • *The operation of the turbines will result in noise, although the turbines have been sited to meet MOE noise criteria.* • *Increased road traffic from the construction workforce could increase road traffic noise levels in area. See Section 6.12 or effects assessment/mitigation".* The noise forecast data (which in itself has questionable accuracy) suggests levels of noise that would cause significant disruption in the lives of local residents who have a right to the peaceful enjoyment of their homes and properties. There is also increasing evidence for the validity of Wind Turbine Syndrome in a small but significant percentage of predisposed individuals, possibly related to the low frequency sound. This condition is prompting authorities in many countries including our own to reevaluate the appropriate setbacks. The setbacks suggested in the draft of the GEA call for greater setbacks than NPI is willing to entertain.	**17.** A Noise and Acoustics Assessment was conducted in accordance with the Ontario Ministry of the Environment guidelines. This document can be found in *Appendix G* of this report. Wind turbines make some sound. The noise from a wind turbine is caused by the passing of the blade through the air, and is similar to white noise from wind, or waves. But even when the turbine is turning you can carry on a conversation at its base. The sound is a "swish" like the waves on a beach. Wind turbines produce noise only when it is windy, but the ambient noise from adjacent Highway 6 or Highway 540 or wind rustling through trees and grasses increases as winds increase. There is no scientific evidence of direct health effects resulting from noise at the level of noise generated by wind turbines. It has been repeatedly shown by measurements of wind turbine noise undertaken in the UK, Denmark, Germany and the USA over the past decade, and accepted by experienced noise professionals, that the levels of infrasonic noise and vibration radiated from modern, upwind configuration wind turbines are at a very low level; so low that they lie below the threshold of perception, even for those people who are particularly sensitive to such noise, and even on an actual wind turbine site.Consideration of any health concerns associated with wind turbines was conducted be as per provincial and federal regulations as well as in the environmental assessment. There are a few residences in the vicinity of the turbines. All wind turbines have been sited a minimum of 550 meters from all residences and potential residences in the area.

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	18. Commented on the following statement as presented in the EIS/ESR: *Will the project "have negative effects on the availability of forest resources? The affected lands do not support harvestable forest resources."* This is a shockingly narrow perspective to take on the value of our forest resources especially when completing a review of the environmental effects of a large industrial development on a rural ecosystem.	**18.** The effects to any harvestable forests from the project would be on private land. No concerns have been expressed by landowners to NPI in this regard. No public forested lands are affected.
	19. Commented on the following statement as presented in the EIS/ESR: *Will the project "have negative effects on neighbourhood or community character? There are no built communities in the vicinity of the project, the area is rural in nature with a few scattered residences"*. How is that for blowing off the concerns of the estimated 400 people who live within 1 km. of a proposed turbine site? And if any community has character I would suggest Manitoulin does. NPI is quickly finding that out as more and more people in the area learn about what is planned. Manitoulin prides itself in the pristine rolling green farmland and clear waters that are the basis of its tourist industry and a draw for many of its new residents. A quiet lifestyle, dark skies, an enjoyment of the arts and the outdoor experience characterizes the values of many Manitouliners.	**19.** Thank you for your comments regarding the character of the area. NPI has attempted to address the concerns of the residents in the area and will continue to do so as the project continues into development phases.
	20. Commented on the following statement as presented in the EIS/ESR: "*Will the project have negative effects on recreation, cottaging or tourism? The project could temporarily affect hunting activity in the area*	**20.** Wind farms generally have positive long term effects on the local tourist economy. There are 6,000 wind turbines in Denmark, which are used for marketing tourism. Hotels, guesthouses, and campsites may use wind turbines to promote "green tourism". This is particularly targeted

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	during construction. Disruption during operations is not expected. No recreation cottages are within the project area." This point has largely been addressed. The long term effects on the tourism industry have not been adequately studied. Initial inquisitive interest followed by a sharp decline in tourist approval has sparked a reassessment of industrial wind turbine development in some tourism dependant areas of the world. The NPI response neglects to consider the fact that the turbines are arranged along the brow of the escarpment and will be fully visible from the premium tourist area – the North Channel sailing and boating area, as well as the large cottage area of Bay of Islands and the whole corridor of access to Little Current from across La Cloche Island to the North.	towards the German market, where the public is known to have a high level of interest in both environmental issues and in new technology. In a Scottish study[2] 43% of respondents said a wind farm would have a positive effect on their inclination to visit the Argyll area, an area of high landscape value. About the same proportion of respondents said it would make no difference, while less than 8% felt that it would have a negative effect. Nine out of ten tourists visiting some of Scotland's top beauty spots say the presence of wind farms makes no difference to the enjoyment of their holiday. Twice as many people would return to an area because of the presence of a wind farm than would stay away, according to a poll carried out by MORI Scotland. Commercial tour companies provide guided tours of several wind farms in the Pincher Creek, Alberta region. Several wind farms in Australia attract so many visitors that commercial tour operators provide opportunities for the public to get a close up view of the wind farms. Out of the proposed 43 wind turbines only a few of the wind turbines (east of Highway 450) are sited from 1.5 km to 3km away from the shore line of the North Channel. Wind turbine #11 is also sited approximately 1.5 kilometers away from the North Channel shore line. NPI does not expect that the presence of the turbines would factor into a person's decision on whether to visit the Island.
	21. Commented on the following statement as presented in the EIS/ESR: *Will the project "have negative effects on the economic base of a municipality or community? Negative effects on the area economy are not expected. The project will result in positive economic impacts through*	**21.** Thank you for your comment.

[2] *Tourist Attitudes Toward Wind Farms*, MORI Summary Report, September 2002 www.bwea.com/pdf/MORI.pdf

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	payments to land owners and taxes that will be paid to the municipality and job creation. Supplies and services will be obtained in the local area as much as possible." Again the inadequacy of the response deserves no further comment.	
	22. Commented on the following statement as presented in the EIS/ESR: *"Soils in the immediate area are too shallow for cultivation and are suitable only for woods or rough pasture"*. I have one of the most fertile farms on Manitoulin, 200 acres of which are included in the "study area". Some of the fields above the escarpment well within the study area produce an excellent crop of hay or have good pasture when not too dry.	**22.** The assessment of physiography/topography of the study area concluded that the soils in the study area are mainly too shallow for cultivation and are suitable only for woods or rough pasture. This is a generalized statement is intended to largely apply to lands where the turbines are to be located on.
	23. Commented on the following statement as presented in the EIS/ESR: *"There exists the potential for some slight alterations to topography as a result of grading and blasting required for turbine foundations and access road construction."* An understatement.	**23.** Thank you for your comment.
	24. Commented on the following statement as presented in the EIS/ESR: *"Setbacks specific to birds that will be observed include the following:* *• 90 m River/Stream Setback* *• 120 m Wetland Setback – none of the wetlands in the project area are considered to be significant. Attempts have been made to meet this setback as much as possible."* I don't agree that these setbacks, as minimal as they are, are being met. Many of the proposed turbine placements seem to be quite close to wetland areas. The Perch lake drainage system drains	**24.** Thank you for your comments regarding the project set backs. We note that the ESR has been reviewed by the MNR and no concerns have been expressed regarding the proposed project setbacks.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	down to the Bidwell Bog and significant alterations to that system of drainage would have effects on a rare domed bog formation.	
	25. Commented on the following statement as presented in the EIS/ESR: *"No rare plant species were found in vegetation survey plots."* Is this a standard method of surveying for rare species?	**25.** NPI continues consultation with the MNR to ensure additional methods are in place to protect species at risk, should they be observed during construction.
	26. Commented on the following statement as presented in the EIS/ESR: *"305 m (1000 ft.) Perch Lake Setback– The NEMI municipal set back requirement identifies Perch Lake as a sensitive lake and requires a 305 m (1000 ft) setback for all building activity."* I don't think turbine sites 29 and 34 meet this requirement if taken from the wetland at the east end of the lake and perhaps the more sensitive part ecologically.	**26.** From our measurement, the turbines meet all required minimum set backs.
	27. Commented on the following statement as presented in the EIS/ESR: *"No bald eagles were observed during winter monitoring but a single bird was observed during spring migration monitoring in April 2008 at the Townline Road - Greenbay Road Junction area."* I regularly see a bald eagle pair (with a new juvenile this year) above a nest at Freer Point (2000 M from turbine 11) Also a bald eagle has been frequently seen above Whites Point east of McLean's Mtn.	**27.** Thank you for the information. This information will be considered as part of the planned post-construction bird studies. A separation distance of 2km from a turbine is greater than the buffer distances provided at all known Ontario wind farm developments (the MNR typically requests a separation distance of 1 km for known bald eagle nest sites). The reported bald eagles are appropriately protected from risk with this separation distance.
	28. Commented on the following statement as presented in the EIS/ESR: *"NEMI primarily consists of northern boreal forest that plays an important role in the local economy, for mining, forest harvesting and tourism. Misery Bay Nature Reserve (MBNR) is located along remote stretches of Lake Huron shoreline at Misery Bay. The local economy in NEMI includes mainly farming and lumbering where tourism is a main*	**28.** As part of the more comprehensive assessment of the study area the Misery Bay Nature Reserve was considered in the Environmental Impact Assessment/Environmental Screening Report (EIS/ESR) for the McLean's Mountain Wind Farm as it is an important natural feature in the larger area and should be mentioned.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	aspect of the local economy. The nature reserve lies 35 kilometers west of the Town of Gore Bay." What has Misery Bay got to do with eastern Manitoulin? Perhaps more evidence this report was cutting and pasting into a mold for a previous unrelated study?	
	29. Commented on the following statement as presented in the EIS/ESR: *"There are few residences within the proposed study area which are located along existing roadways (Green Bush Road, Morphet's Sideroad and McLean's Mountain Road). There are no businesses in the vicinity of the study site."* That is because the boundaries of the study site were drawn to specifically exclude the corridors of housing along the shore and along Green bay Road. Farmers are business men, so are tourist operators and marina operators and artists.	**29.** Yes this is correct, the project area was selected to maximize distances from developed areas that are located outside of the edges of the initially defined project area.
	30. Commented on the following statements as presented in the EIS/ESR: *"The Little Current Harbour provides deepwater access for private yachts and cruise ships. Tourism is an important economic factor. Four-season recreational opportunities and special events draw visitors to the NEMI. Tourist attractions in NEMI consist of many public beaches, fishing, hiking, fossil hunting, variety of tours, summer theatres, and wildlife watching. Hunting is popular in the fall. The project lands are not likely to be of interest to visitors to the Island, with the possible exception of hunters although all of the project lands are private. Nevertheless, some residents have expressed concern that the visibility of the turbines could affect tourism activity and related businesses. The project is well set back from shoreline areas which is the focus of tourism activity in the general area. (three turbines are about 1.5- 2 km from the shoreline and the rest are at least 3 km away). As such, no specific mitigation measures are required."* Perhaps this is an attempt to deceive a reviewer who might not	**30.** This section of the ESR speaks to the general tourist areas of the District of Manitoulin as well as the Town of Northeastern Manitoulin and The Islands (NEMI). The project area is generally well removed areas of tourist attractions. The closest wind turbine (WT 25) is located about 1.5 kilometers away from the North Channel shoreline. There are some homes/cottages along the shoreline in the south-east corner of the study area. Some of the turbines along the western edge of the project are expected to be visible from these cottages/homes (although the view would be opposite from the water). The proposed project is not sited on the Niagara Escarpment and therefore is not required to conform to The Niagara Escarpment Commission policies.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	be familiar with the area. The distance from shore is irrelevant given that the turbines are 120M high and located on top the escarpment. As the report says *"The site lies mainly above an escarpment, which trends along the northern, eastern and southeastern boundaries of the property. The escarpment is 300 m (I think feet) high and is a major physiographic feature of the area."* Precisely why the Niagara escarpment commission restricts turbines from the bluff.	
	31. Commented on the following statement as presented in the EIS/ESR: *"Analysis of noise levels shows that the noise impact from the operating phase of the wind farm would not exceed the most restrictive nighttime noise limits that apply for an area with a Class 3 (Rural) acoustic designation. As the turbines have been sited to comply with MOE noise restrictions (40 dB level) at receptors within 1500 m of each wind turbine there is no need to apply mitigation measures. No adverse significant effects are predicted."* The noise forecast data suggest levels of noise that would cause significant disruption in the lives of local residents who have a right to the peaceful enjoyment of their homes and properties. There is also increasing evidence for the validity of Wind Turbine Syndrome in a small but significant percentage of predisposed individuals possibly related to the low frequency sound. This condition is prompting authorities in many countries including our own to reevaluate the appropriate setbacks.	**31.** A Noise and Acoustics Assessment was conducted in accordance with the Ontario Ministry of the Environment guidelines. This document can be found in *Appendix G* of this report. Wind turbines make some sound. The noise from a wind turbine is caused by the passing of the blade through the air, and is similar to white noise from wind, or waves. But even when the turbine is turning you can carry on a conversation at its base. The sound is a "swish" like the waves on a beach. Wind turbines produce noise only when it is windy, but the ambient noise from adjacent Highway 6 or Highway 540 or wind rustling through trees and grasses increases as winds increase. There are no direct health effects from noise at the level of noise generated by wind turbines. It has been repeatedly shown by measurements of wind turbine noise undertaken in the UK, Denmark, Germany and the USA over the past decade, and accepted by experienced noise professionals, that the levels of infrasonic noise and vibration radiated from modern, upwind configuration wind turbines are at a very low level; so low that they lie below the threshold of general human perception.
	32. Commented on the following statement as presented in the EIS/ESR: *"The presence of wind turbines will alter the current rural "bush" nature of the study area. Some residences in the project area may experience temporary disruption effects during project construction (e.g. noise, dust and additional traffic). Although these effects are common to any large-*	**32.** The study area for the proposed project is designated as rural in the Official Plan for the Manitoulin Planning Area. The term "bush" in the context of the visual impact assessment conducted for this project is used to describe a vegetated area.

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	scale construction project, they do have the ability to temporarily affect the character of the area during the construction of the project. The visual impact of wind turbines is subjective, with people's reaction being either positive, negative or neutral in regards to their influence on the landscape. The alteration of the viewscape is further discussed in Section 6.25." I suspect if you are not aware of any Manitoulin culture you would characterize the area as "rural bush". The living beings in the "bush" area are apparently incidental. The information on the three categories peoples responses fall into with respect to the visual impact is informative!	
	33. Commented on the following statement as presented in the EIS/ESR: *"Some residents along Morphets Side Rd have expressed concerns related to the proposed transmission line route. While this transmission line will not result in any nuisance effects to residents along the road way, its presence may be perceived as a visual intrusion to the area and impact the rural character of the area. As there are few residents in the vicinity of the project and all are well removed from the turbine sites, these types of effects are expected to be minimal. Changes to the character of the area will result from the turbines being visible from some areas."* See previous comment about the general level of distain for public concern.	**33.** Please refer to the response provided above.
	34. Commented on the following statement as presented in the EIS/ESR: *"As the wind farm is well removed from major recreation features such as La Cloche Provincial Park (>20 km away), effects to recreation/tourism are unlikely."* To my knowledge there are few	**34.** NPI is not aware of any proposal for recreation activity development in the project area. To date, the only recreation activity in the project area is hunting. Comments on the impact of the project on hunting activity have been previously provided in this table.

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	recreational opportunities developed as yet in this recently designated area. Given that, the meaning of the statement is obscure.	
	35. Commented on the following statement as presented in the EIS/ESR: *"McLean's Mountain is one of many scenic lookouts of Manitoulin Island. There is a viewing platform at the top of the bluff on the west side of Burnets Side Road. While the project will not affect views from this platform (the views are to the north over the North Channel), there may be an opportunity to improve this facility with the addition of a project information kiosk at this location."* This lookout is not near or to the west of Burnett's Side Road. Of more relevance are other lookouts like the famous Cup and Saucer trail and lookout that currently looks over the entire beautiful Green Bush area and where people who visit in large numbers especially in the summer and for the fall colours will now see all 43 turbines. (I guess Dillon forgot about that lookout)	**35.** Information regarding the viewing platform on the west side of Burnets Dide Road were provided by NEMI municipality. A set of photomontages have been prepared from various locations throughout the study area that simulate the to-scale appearance of the wind farm and are presented in Appendix H of the EIS/ESR for the McLean's Mountain Wind Farm. These locations represent the locations that have the highest potential for turbine visibility or are viewpoints of interest brought to the attention of NPI by project stakeholders. Based on the visual simulations from select vantage points, views of the turbines in the surrounding lands will vary depending on the location of the vantage point. In most cases, only a portion of the turbine may be visible (e.g. blade tip). The variability in the level of visibility is due to topography, existing vegetation and the separation distance from potential viewing locations of concern. It is not expected that the views, if any, would contribute to a perceived change in the visual character of the area (which is highly subjective and can somewhat depend on one's viewpoint regarding wind energy - supporters tend to like the look of turbines while those opposed to wind energy do not).

The received comments & concerns have been organized into categories.

At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.

Stakeholder Affiliation and Contact Information	Comment Received	Proponent Response
	36. Commented on the following statement as presented in the EIS/ESR: *"The proposed project lands are of limited value to tourism. Some recreational hunting for small game and waterfowl may occur in the project area early in October and early in December. The visibility of the turbines beyond the immediate project area will be very limited."* This obvious inaccuracy has been refuted above.	**36.** Please refer to the response provided above.
	37. Commented on the following statement as presented in the EIS/ESR: *"No significant changes to recreation and tourism activity are expected as a result of the project. As such, no significant effects to tourism and recreation activity are expected."* Excellent logic.	**37.** Thank you for your comment.
	38. Commented on the following statement as presented in the EIS/ESR: *"Some residents have expressed concerns with the turbine lighting. Attempts will be made to minimize the number of turbines to be lit to reduce this effect. As per Transport Canada requirements some of the wind turbines will require navigation lighting."* Yes, residents are concerned about light pollution. Manitoulin and NEMI have both passed dark skies legislation that this project is clearly in contravention of. Manitouliners value their dark skies. To suggest that the majority of the towers will not have to be lit is misleading.	**38.** NPI is aware that townships on Manitoulin Island embrace and endorse the practices of the Dark Sky Initiative with by-laws. Section 5 *"Exemptions"* of The Township of Central Manitoulin's *By-Law #2003-16 the "Outdoor Lighting Control and Dark Sky By-law"*, sub section 5.4 reads as follows: ***"****Nothing in this by-law shall apply to navigational lighting systems at lighthouses and airports, nor to airport lighting systems marking runways (…) For daytime, white strobe lights may be used, and for nighttime, only red lights shall be used"****.*** The proposed wind turbines (WTs) will be lit with navigational lighting systems as required by Transport Canada (TC) standards. Select WTs on the perimeter will be lit with a single red flashing light (horizontal distance between lit WTs not to exceed 900 meters for any approaching aircraft). The highest WT in the wind farm will be lit. All lit WTs will flash simultaneously.
	39.	**39.**

The received comments & concerns have been organized into categories. **At the end of the summarized "Comment Received" the number of times the comment was received is noted as an *italicized* number in brackets.**		
Stakeholder Affiliation and Contact Information	**Comment Received**	**Proponent Response**
	I have based this review on the most glaring of the errors in the sections where I have certain knowledge. The authors of the report show little understanding of the geography of Manitoulin and even less of the values Manitoulin people hold. I am not sufficiently expert in biology to comment on the fish, bird and bat studies but one would have to wonder about the quality of the conclusions in those areas given the quality of the rest of the report. In conclusion I contend that the number of errors in facts and the omissions and bias of content combine to completely undermine the credibility of this report. It would only be proper for this project to be advanced to a full environmental assessment in order to ensure the protection of the environment and the people of NEMI.	Thank you for your comments.

Section 3

Supplementary REA Reports

Project Description Report

Northland Power Inc – McLean's Mountain Wind Farm
Project Description Report

1.0 INTRODUCTION

The following presents the Project Description Report (PDR) for the NPI McLean's Mountain Wind Farm that has been submitted to the MOE to initiate the REA process for this project.

Northland Power Inc. (NPI) 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. This wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity. Based on the REA Regulations, we understand this project to be a "Class 4" wind facility.

NPI intends to develop the project under the new Green Energy Act (GEA) Feed-In-Tariff (FIT) program.

The following figure shows the general location of the project.

The selection of the project area was based primarily on the wind resource assessment results, access to the local electrical distribution system, environmental constraints and local landowner support. The wind turbines will be located entirely on private land. Some sections of the

electrical system will be contained within municipal rights-of-way. NPI currently holds land lease "options" for the private properties where project components are to be located.

The project proponent's contact information is as follows:

Name:	Rick Martin
Title:	Project Manager
Company:	Northland Power Inc.
Address:	30 St. Clair Avenue West, 17th Floor Toronto, Ontario M4V 3A1 Canada
Telephone:	705.271.5358
Email:	rickmartin@northlandpower.ca
Webpage:	www.northlandpower.ca

2.0 Project Facilities, Equipment and Technology

The basic components of the Project include 43 wind turbines with an initial installed capacity of 77 MW. All turbines will be located within the Project Area as shown in the figure attached to this PDR. The electrical components will comprise an overhead grid collection system, a step-up transformer and an aboveground 10 km transmission line (115 kV) to connect with the Hydro One Transmission system, circuit S2B that is located on Goat Island. There will be the need to cross the North Channel to Goat Island with a submarine cable to facilitate the transmission connection.

2.1 Wind Turbines

The wind turbines consist of towers, tower foundations, rotor blades, and gearbox/electrical generator housing. The project will use VESTAS V90 – 1.8 MW turbine, the towers will be approximately 80 m in height and the blade diameter including hub, will be approximately 90 m.

The land base required for each turbine, excluding the access road, is less than half an acre once in operation.

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; and
g) REA setback requirements.

Please note that the wind farm layout presented in the ESR is to be considered as draft subject to revisions based on the input received from government agencies, aboriginal communities, the public and landowners through the REA consultation process.

2.2 Ancillary Facilities

Each wind turbine will require several ancillary facilities, including: access road, and overhead electrical collection system. Access roads will be required to access each turbine site from existing public roads during both the construction and operation phases of the project.

The wind turbine transmits its generated electricity via a collection system to a step-up transformer substation to be located within the project area. It is anticipated that 34.5 kV overhead lines would be used for the collection system. From the step-up transformer, a 115 kV transmission line will need to be constructed to connect the project to the existing Hydro One transmission line located on Goat Island. The project's transmission line will be largely contained within municipal road rights-of-way. Some private land may be crossed and NPI will acquire easements through the affected parcels of private land.

3.0 Project Activities

The following project activities are expected:

Project Activities	
Construction Activities	➢ Turbine Sites: • Site clearing and grading • Construction of access roads • Delineation of temporary work areas • Completion of necessary site grading. • Installation of crane pads. • Installation of tower foundations. • Tower/turbine erection. • Connection of wind turbine to electrical collection system. • Remediation of temporary work areas. • Completion of permanent access roads. • Site landscaping (final grading, topsoil replacement, fence installation, etc.).
	➢ Collection System: • RoW clearing as required. • Installation of single poles • Installation of 34.5 kV overhead lines on leased lands and within municipal road rights-of-way. • Construction of step-up transformer substation.

Project Activities	
	➢ Transmission Line and Interconnection: • 8-10 m right-of-way clearing as required. • Installation of primarily single poles. • Installation of transmission line conductors. • Installation of submerged line. • Installation of switch gear at connection point with Hydro One transmission line (Provincial grid). • Commissioning of the Project.
Operation and Maintenance Phase Activities	➢ Turbine Sites: • Periodic vehicle access for maintenance. • Remote condition monitoring and meter calibrations. • Grounds keeping.
	➢ Overhead Collection System: • Testing and maintenance of electrical equipment.
Decommissioning Phase Activities	➢ Turbine Sites: • Removal of tower and turbine infrastructure. • Removal of foundation to not less than 3' below grade. • Turbine site grading and rehabilitation (dependent upon new proposed use). • Removal of all waste from the site
	➢ Access roads • Access roads will be left at landowner's requests or graded to restore terrain profiles (as much as possible), and vegetated.
	➢ Collection Lines: • Removal of overhead collection line conductors and poles.
	➢ Transmission Line and Substation: • Removal of transmission line above-ground conductors. • Removal of sub-station components. • Removal of poles. • Removal of all waste from the site

4.0 Potential Project Effects

The following potential environmental effects were evaluated through the REA process:

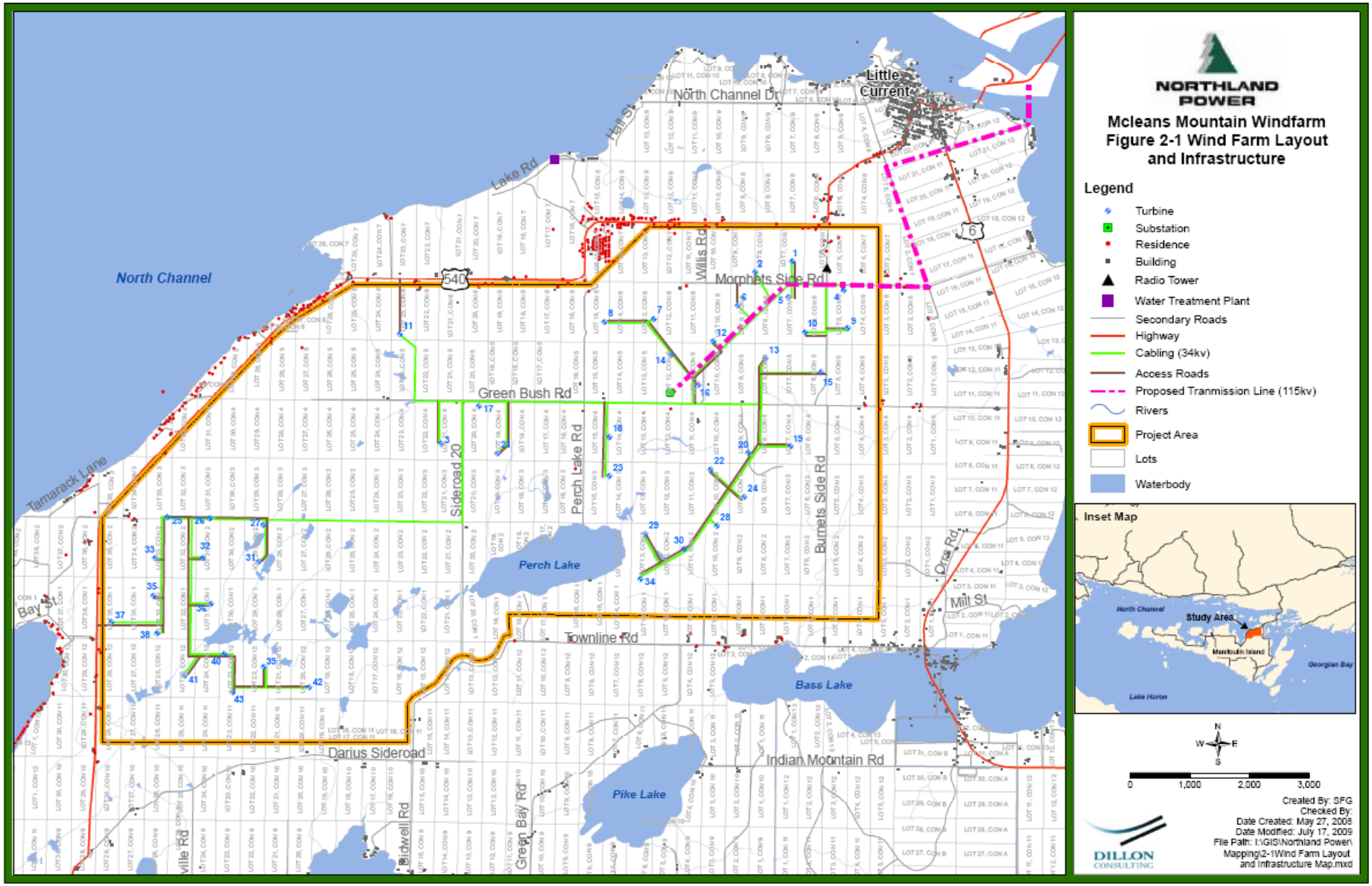
Construction (short-term)

- Erosion/storm runoff could affect water quality (increased sediment loads) of local streams
- Potential for soil/water (surface & ground) from spills of fuel and oil
- Removal of active agricultural (pasture) land from production
- Increase in particular matter (dust) in the local area

- Noise effects from the operation of construction machinery and transport of materials into the project area
- Potential for loss of fish habitat as a result of stream crossings by the turbine access roads (to be confirmed)
- 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
- Potential for traffic delays on local roads from construction related traffic
- Public safety effects from operation of heavy equipment
- Potential for effects on archaeological resources
- Potential for effects on aboriginal areas of interest (to be confirmed)

Operation Period (long-term)

- Noise from operating wind turbines (all turbines will meet the 40 dBA limit for non-project participating receptors)
- Visual impact of turbines
- Potential for bird and bat kills
- Potential for short term noise disturbance effects in local area from infrequent major turbine repairs


NORTHLAND POWER
Mcleans Mountain Windfarm
Figure 2-1 Wind Farm Layout and Infrastructure
Legend
Turbine
Substation
Residence
Building
Radio Tower
Water Treatment Plant
Secondary Roads
Highway
Cabling (34kv)
Access Roads
Proposed Tranmission Line (115kv)
Rivers
Project Area
Lots
Waterbody
Inset Map
Study Area
North Channel
Manitoulin Island
Georgian Bay
Lake Huron
0
1,000
2,000
3,000
Created By: SFG
Checked By:
Date Created: May 27, 2008
Date Modified: July 17, 2009
File Path: I:\GIS\Northland Power\Mapping\2-1Wind Farm Layout and Infrastructure Map.mxd
DILLON CONSULTING
North Channel
Little Current
North Channel Dr
Hall St
Lake Rd
Willis Rd
Morphets Side Rd
Green Bush Rd
Sideroad 20
Perch Lake Rd
Burnets Side Rd
Ores Rd
Mill St
Townline Rd
Bass Lake
Perch Lake
Pike Lake
Indian Mountain Rd
Darius Sideroad
Bidwell Rd
Green Bay Rd
Tamarack Lane
Bay St
540
6

Construction Plan Report
(Construction Schedule)

Construction Schedule
Supplementary Information for Construction Plan Report Under the Renewable Energy Approval (REA) Requirements, Ontario Regulation 359/09 for Class 4 Wind Facility

Section 2.2 Description of Project activities, Table 2.2 of the Northland Power Inc's McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) Document, July 2009 provides a description of Construction activities for the proposed project. The anticipated construction schedule for the proposed McLean's Mountain Wind Farm project as follows:

Access Road Construction:	Fall 2010
Foundation Construction:	Fall 2010
Electrical interconnection:	Spring 2011
Commissioning:	Spring 2011

The description of the construction, operation, and decommissioning phases of the project are provided in **Table 2.2** as excerpted from the ESR, July 2009 is as follows:

Table 2.2 – Project Activities

Project Activities	
Physical Works/Activities	**Description of Activity**
Construction	
Surveying & Geotechnical Investigations	The land survey activities are to include staking the boundaries of the construction areas, temporary workspace, access roads, distribution line routes, transmission line route, as well as marking the location of existing underground pipelines and cables. Areas to be avoided will be fenced and/or flagged and avoided. Geotechnical work will involve bore samples being taken in proposed turbine locations.
Development of access roads	Access roads will be approximately 10 m wide to accommodate maintenance vehicles and heavy equipment for larger repairs/replacements. The excavation of earth and some blasting of rock is expected to be required for the construction of the turbine access roads. The number and location of the crossings is to be confirmed based on additional planned field work. Access road culverts, comprised of various diameters, are to be constructed across the various watercourses in order to accommodate vehicular access and construction traffic across the watercourse while maintaining unimpeded flow within the watercourse. The type of crossings and the mitigation measures will be developed in consultation with the appropriate governing bodies (DFO, OMNR).
Clearing	Bush, trees, and other vegetation will be cleared from the construction areas as required. An area of approximately 1ha will be required for each turbine location for assembly of the turbine. The clearing of a right-of-way will be required for the turbine access roads and the 115 kV transmission line (details below).
Soil stripping and	Graders, bulldozers, and backhoes will be used to strip any soil that could

Project Activities	
Physical Works/Activities	**Description of Activity**
Grading	be present. Following soil stripping, grading will be conducted on irregular ground surfaces to provide a safe and clean work surface. Grading will be done in such a manner so as to not alter drainage patterns in the area.
Collector Line Installation	Each turbine will be connected to the transformer substation through a collector line system. The line will run along the turbine access roads as much as possible. The lines will be predominately supported by single poles.
Transmission Line Installation	A 115 kV line will be constructed to transmit the power to the Hydro One Transmission line on Goat Island and will require submarine crossing of the North Channel. The 115 kV transmission line will require the clearing of a right-of-way of approximately 8-10 m. It is expected that the tower structures would be composed of single poles and be spaced approximately 75 m apart. The line has been routed to minimize its distance and avoid sensitive environmental features. The line will be above ground. Some minor variations to the alignment are possible dependant on public input and engineering considerations.
Foundation excavation	Depending on soil conditions, the size of the excavation for the turbine tower will be approximately 2.5 meters to 3 meters deep and about 20 meters wide. If soil conditions permit, a tracked excavator will be used for excavation. Excavation will proceed until bedrock is exposed; in some cases this might be shallower than 12 inches. Any top soil would be stockpiled for future use. It is expected that either a spread base foundation or rock anchor foundation will be used. Depending on rock strength, blasting may be required for excavation in the bedrock. Blasting would be undertaken as per MNR and local municipal requirements.
Pouring turbine foundation	For a gravity caisson or socket foundation, concrete will be poured into the forms continuously. The amount of concrete required will depend on ground/soil characteristics. The forms for the foundations will be removed and the excavated area back-filled and compressed such that only the tower base portion of the foundation is above ground.
Turbine Transportation	Each of the disassembled turbines and generators will be trucked to the site on a flat-deck trailer. It will be necessary to undertake some local road intersection improvements to allow the trucks to make turns. It might also be necessary to reinforce some of the bridges leading up to the site. The nature of these improvements will be confirmed in consultation with the municipality and all appropriate permitting and approvals will be obtained.
Equipment lay-down	To create a safe and level work area for storing and assembling the wind turbine generators and towers, a suitable sized area may have to be stripped and leveled, depending on the local conditions. Each of the turbines and generators will be trucked on a flat-deck trailer to the site and assembled within this temporary construction area.
Tower, generator, and rotor assembly	The tower comes in three sections that are assembled at the turbine sites one section at a time. The nacelle, which houses the generator is lifted by a crane and attached to the top of the top tower section. The rotor blades will be lifted, assembled in the air and attached to the nacelle.

Project Activities	
Physical Works/Activities	**Description of Activity**
Spills Management	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 guidelines such as NPI's Waste Management Plan.
Waste Management, clean-up and reclamation	Garbage and debris will be removed and disposed of at an approved location. Slash trees will be chipped. All equipment and vehicles will be removed from the construction area. The temporary lay-down areas and disturbed areas around the foundation of each turbine and at the substation will be replaced with the stockpiled topsoil. The disturbed areas (including trenches/plough seams) will be re-seeded. The proponent will prepare a Generator Waste Registration Report for each waste that will be generated on site as per O.Reg. 347 of the EPA. All waste fluids and oils will be removed from the site and recycled, where possible, or disposed of according to provincial guidelines.
Drainage System	Drainage patterns will be maintained as much as possible in the construction of the access roads and turbine foundations. Culverts will be installed under roadways as required to maintain the flow of watercourses.
Wind Farm Commissioning	Turbine commissioning can occur once the wind turbines have been fully installed and the electrical connections are completed. The commissioning involves testing and inspection of electrical, mechanical, and communications operability. A detailed set of operating instructions must be followed in order to connect with the local electrical system.
Operations and Maintenance	
Wind Turbine Operation	The wind farm will require full time technical and administrative staff to maintain and operate the facility. It is expected that the equivalent of ten full time people will be required to keep the facility operating properly. Typically, only a small percentage of the turbines would need to be accessed with large equipment during their operating life. Monitoring of potential bird and bat effects from the operating wind farm will be undertaken. The program would involve area searches for bat and bird carcasses. The nature and duration of the post construction monitoring program will be developed with the input of Environment Canada and the MNR.
Inspection, Maintenance and Repairs	Maintenance inspections will be required approximately every 3 months for routine servicing and lubricant replacement. Light 4x4 trucks, vehicles, and ATVs may be used to access the towers. Larger trucks and cranes may be required periodically for larger repairs, but this is expected not to happen frequently. Scheduled maintenance on turbines will occur every quarter for the first few years and may move to twice annually thereafter.
Decommissioning and Abandonment A decommissioning plan will be prepared in accordance with provincial legislation and guidelines that exist at the time of decommissioning.	
Rotor, generator and tower disassembly	The rotor, generator and towers would be disassembled and removed from the site for re-use, reconditioning or disposal using flatbed trucks.
Removal of access	All permanent access roads would be deep-ploughed, as appropriate and

Project Activities	
Physical Works/Activities	**Description of Activity**
roads	graded to restore terrain profiles, and vegetated.
Removal of concrete foundation	Within 12 months of termination of lease, the foundations will be removed to not less than 3 feet below grade or bedrock, and covered with subsoil to rebuild the grade. Topsoil would be replaced over the area to current depths of adjacent horizons and the area replanted with trees, depending on the land use at the time and removal plan developed with MNR.
Removal of electrical collection and transmission lines	The above ground collection and transmission lines and poles will be removed.
Waste Management	All waste material would be removed from the site and disposed at an appropriate facility (e.g. licensed landfill). The proponent will prepare a Generator Waste Registration Report for each waste that will be generated on site as per O.Reg. 347 of the EPA. All waste fluids and oils will be removed from the site and recycled, where possible, or disposed of according to provincial guidelines

Design and Operations Report (Community Response Plan)

Supplementary Information for the Design and Operations Report – Community Response Plan Under the Renewable Energy Approval (REA) Requirements, Ontario Regulation 359/09 for Class 4 Wind Facility

Section 7.1 Community Liaison and Follow-up as excerpted from the Northland Power Inc's McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) Document, July 2009 provides a description of community liaison and follow-up measures for the proposed project:

7.1 Community Liaison and Follow-up

NPI will provide information releases to the community if new issues arise or if the community has specific concerns. Company representative contact information will be available to the public to address concerns and questions during operations. Stakeholder consultation and communications activities going forward will include:

- Project update bulletin or bulletins as required, mailed or hand-delivered to keep area residents apprised of the progress of construction, dates and timings of any traffic disruptions connected with the project and any other matters that may affect or be of interest to area residents and other project stakeholders;
- Newspaper notices regarding traffic disruptions and construction timings of interest;
- Personal consultations as requested or if warranted by project activity;
- Meetings with municipal and other local and provincial government authorities;
- NPI will hold another community public information centre to present the final proposed project infrastructure and transmission line route; and
- Ongoing consultations and meetings with local stakeholders.

The Community Response Plan will engage and inform the public, identified Aboriginal communities and the Municipality of project activities in the following manner:

- Project update bulletins will be posted at the Project Office and distributed to the local Aboriginal communities' offices as well as to the Municipal Town Office.
- A McLean's Mountain Wind Farm Project Office was established. The office is located in the Town of Little Current. The project office will serve as central point of information regarding the proposed project. The project office's address is as follows:

Northland Power Inc.
Little Current Office
McLean's Mountain Wind Farm Office
23A Vankoughnet St. East

- Little Current ON, P0P 1K0All correspondence regarding the proposed project will be directed to the main project contact – the Project Manager who will be available via the project office and may be contacted as follows:

Rick Martin
Manager, Business Development, Renewable Energy
Project Manager, McLean Mountain Wind Farm
Northland Power Inc.
(705)271-5358 cell
(705)368-0303 Manitoulin Island Office
rickmartin@northlandpower.ca

Draft
Environmental Management Plan

McLean's Mountain Wind Farm
Draft Environmental Management and Protection Plan

Supplementary Information for the Design and Operations Report Under the Renewable Energy Approval (REA) Requirements, Ontario Regulation 359/09 for Class 4 Wind Facility

DRAFT

Prepared by:

Dillon Consulting Limited
January 2010

Table of Contents

A. INTRODUCTION

The Environmental Management and Protection Plan ("EMP" or "the Plan") is intended to identify key project environmental information, instructions and mitigation measures specific to the McLean's Mountain Wind Farm Project. This Plan fulfills the requirements of both: the Design and Operations Report as well as the Construction Report under the Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. This Plan will ensure that the relevant permitting conditions, environmental mitigation and enhancement measures identified in the Environmental Screening Report/Environmental Impact Statement ("ESR") the consenting permitting conditions and requirements of any legal agreements (including landowner agreements) are established and implemented in the pre-construction, construction and subsequent operation & maintenance phase of the wind farm.

This Plan is applicable to Northland Power Inc.'s ("NPI") employees working on the pre-construction, construction, and operation & maintenance phases of the McLean's Mountain Wind Farm Project.

The Plan will be adhered to, the relevant section completed and the document signed off, issued and handed over to the relevant Manager (detailed below in brackets) at the end of the following stages:

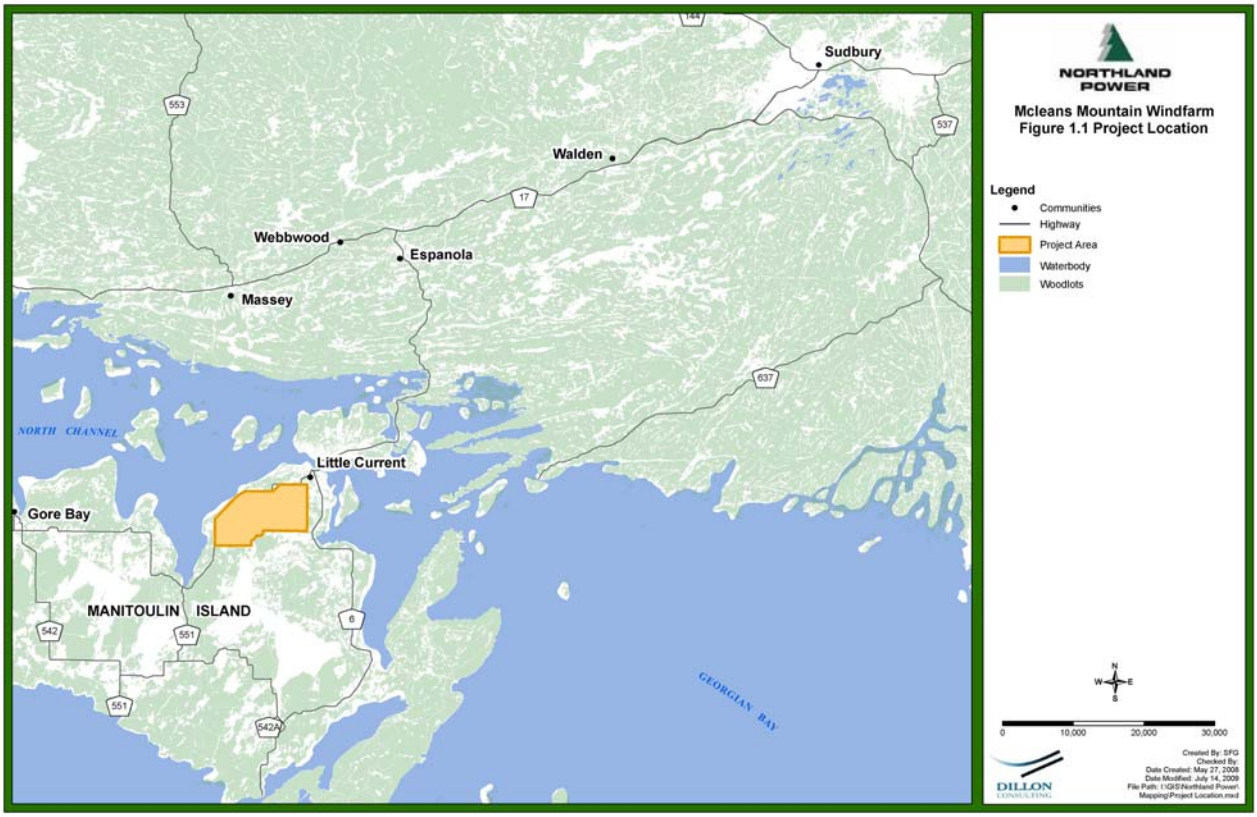
- *Pre-construction (Development Project Manager DPM) – Issue 01*
- *Construction (Construction Project Manager CPM) – Issue 02*
- *Operation (Operations Manager OM/Wind Farm Owner) – Issue 03*

- This Plan also provides general guidance to NPI's subcontractors on environmentally safe working procedures and standards for particular operations that are to be implemented during the construction phase of this wind project

B. PROJECT DESCRIPTION

NPI is proposing to construct and develop the McLean's Mountain Wind Farm ("MMWF" or "the project") to generate electricity in Ontario. The project is located approximately three (3) kilometers southwest of the Town of Little Current and lies within the Municipality of Northeastern Manitoulin and the Islands ("NEMI"), Ontario. The wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 megawatt (MW) of electricity. In addition to the wind turbines, the project will require a 10.3 km 115 kV power transmission line to be constructed to the north-east of the study area to connect the MMWF to the Hydro One Transmission grid on Goat Island (located just north of Little Current). **Figure 1** presents the project location and study area.

Figure 1:
Project Location



The project components include:

- approximately 43 wind turbines;
- 690V /34 kV pad-mount transformers
- 34 kV collection system to link the wind turbines to the substation. While these lines are expected to be primarily above ground there may be sections of the line where buried cables would be preferable. The buried cable would extend out from the base of the wind turbine tower for a minimum distance of 100 meters. This would be determined in the final design for the project);
- Transformer substation (to step up the electric output from 34 kV to 115 kV);
- A 10.3 km, 115 kV single circuit transmission line, including a submerged crossing to Goat Island;
- A switching station at the point of connection with the provincial grid;
- Turbine access roads;
- Four (4) meteorological towers (which are already installed and operating);
- Staging areas for assembly of wind turbines, only required during construction; and
- A temporary concrete batch plant (only required if concrete cannot be sourced through local suppliers).

Foundations for the wind turbines shall be constructed with poured concrete. Construction is anticipated to take approximately 12 to 15 months.

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 same. Vegetation from this area will be cut short and a graded working area will be provided.

C. EMPLOYMENT & AUTHORITY OF ENVIRONMENTAL MONITOR

NPI will appoint an Environmental Monitor ("EM") to observe all aspects of site construction work throughout the construction phase of the project.

The EM will ensure that NPI's own environmental management system, as set down in Section **D. Environmental Monitoring,** is being observed and will ensure compliance with all site permits and mitigation measures required by local, provincial or national law or applicable Contracts.

Reporting: The EM will report on a weekly basis with respect to any environmental problems identified or discovered as well as corrective actions taken to resolve the problem. In the event of a noncompliance issue, the EM will work directly with those contractors and individuals involved to correct the violation. Weekly reports to be prepared and sent to NPI and the Owners and will include:

- *Period covered by the report;*
- *Construction Activities observed;*
- *Compliance with applicable SCA conditions; and,*
- *Details of any corrective action that becomes necessary.*

The EM will co-ordinate activities with the Archaeological Monitor who will be working in accordance with the requirements of the "Cultural Resources Construction Monitoring and Construction Plan".

Stop Work Criteria: The EM will have authority to stop work in the location of the non-compliance and/or stop the activity causing the non-compliance, until such time as satisfactory measures are taken to stop continuing non-compliance. The following are considered "stop work" criteria:

- *Failure of best industry practices which result in off-site sedimentation that violates applicable water quality standards.*
- *The failure of pollution prevention control measures designed to prevent the discharge of hazardous substances or oil in storm water discharges from the site which causes a release to the environment.*
- *The presence of unidentified hazardous materials as evidenced by significant soil staining, odor, or oil in ground water.*
- *Failure to take corrective action within an acceptable time period following a non-compliance with Applicable permits & legislation, the Site Certification Agreement or restrictions in respect of archaeologically sensitive areas.*

In the event of any work stoppage or in response to any emergency situation the EM must promptly inform the NPI site management, (who will inform the Owner), and any appropriate local authorities, either by phone or in person with facsimile (fax) confirmation as required. The EM shall observe implementation of the corrective actions to determine whether and when compliance is achieved. As soon as compliance is achieved the EM shall withdraw the stop-work notice.

D. ENVIRONMENTAL MONITORING

To aid all parties involved, an environmental checklist has been created (**Appendix 1**). This covers all environmental risks commonly experienced during wind project construction. It is vital that this checklist is reviewed to ensure that all environmental risks for this particular project location are included.

The following sections refer to the numbered checklist and provide minimum requirements to address each environmental hazard.

E. OBJECTIVES AND PHILOSOPHY

NPI's reputation for developing, constructing and operating wind farms is well regarded and follow best practices to ensure that projects are compatible with existing land uses, minimize impact of the environment and are well accepted by local communities.

This EMP has been developed by Dillon Consulting Limited ("Dillon") to provide the required protection measures for the activities associated with the construction, maintenance and operation phases of the McLean's Mountain Wind Farm, as such these are long term initiatives. The purpose of the EMP is to further expand on the environmental protection and management measures that were committed in Northland's McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR Dillon, July 2009).

This EMP forms an integral component of all construction work to be done on this project. The purpose of the EMP is to:

- *Ensure that the Municipality of Northeastern Manitoulin and the Islands'("NEMI") commitments to minimize environmental effects in general, and specific regulatory requirements, will be met;*
- *Provide concise and clear instructions regarding measures for protecting the environment and archaeological resources, and minimizing potential adverse environmental effects;*
- *Document environmental concerns and describe appropriate protection measures associated with Project construction;*
- *Provide a reference document for planning and/or conducting specific activities that may have an effect on the environment;*
- *Function as a training aid for environmental education and orientation; and,*
- *Communicate changes in the program through a revision process.*

Through field directives and advice offered by trained and experienced personnel, all users of the EMP will apply appropriate environmental protection practices. The EMP is a standalone document that provides guidance for the implementation of sound environmental protection practices, though it can be read in conjunction with other environmental regulatory documents such as the ESR (Dillon July, 2009) as well as other approval applications for further detail and background.

F. A *LIVING* PLAN

NPI recognizes the importance of the EMP and its execution during all phases of the project. Many of the commitments and construction measures discussed in the plan were done with the latest information and with best industry practices. NPI realizes that during the construction, operation and maintenance of the project new and innovative techniques may be developed which are more beneficial to the protection of the natural environment.

As such, NPI will encourage the investigation and use of these new techniques should they improve upon the ones discussed in the following EMP. This *Living* approach to the EMP will ensure that these new techniques can be used to improve our performance and to further mitigate any potential impacts to the natural environment.

1.0 ENVIRONMENTAL PROTECTION AND CONSTRUCTION MEASURES

Site development and road construction projects require a variety of construction practices to complete the work. Potential environmental interactions related to these construction practices are identified in this section. Environmental management measures, designed to reduce potential for environmental effects, are included within each subsection. General environmental protection measures are listed below.

1.1 General Measures

- *Environmentally sensitive areas will be staked out prior to work operations so that these areas are protected.*
- *Work will comply with conditions outlined in the Approval-to-Proceed and any associated permits/approvals.*
- *A Setback has been provided for the following natural or sensitive feature:*
  - *30m Watercourse Setback;*
  - *120m River/Stream Setback;*
  - *55 m Non Participating Lot Setback;*
  - *55 m Road Setback;*
  - *120m Wetland Setback (in the majority of cases);*
  - *120m Life Science ANSI Setback;*
  - *305m Perch Lake Setback; and*
  - *550m Residence Setback*
- *Work conducted in the vicinity of wetlands/watercourses will be conducted in a manner which ensures that erosion and sedimentation of wetlands/watercourses is minimized.*
- *Erodible soils will not remain exposed for longer than absolutely necessary. In areas where extensive erosion occurs (e.g., along steep slopes) or in environmentally sensitive areas, an active re-vegetation program will be implemented as soon as possible following disturbance to ensure rapid re-vegetation.*
- *Appropriate erosion control measures will be installed prior to conducting the work. Work will be completed as soon as possible, and will be suspended during and immediately after intense rainstorms and during periods of high runoff.*
- *The area of disturbance will be limited to that which is absolutely necessary to conduct the work.*
- *Necessary means will be undertaken to ensure that work does not intrude on property outside the project boundary. This may include staking out private property prior to work operations.*

Activity-specific environmental protection measures are provided in the following subsections.

1.2 Vegetation Clearing and Disposal

Outline of Procedure

Vegetation clearing consists of the removal and disposal of all trees, shrubs, fallen timber, logs and other surface litter within the work area as directed and designated by the plans/drawings or the Environmental

Monitor. Vegetation clearing may be required prior to the removal of soil during site development and/or road construction.

Principal Environmental Concerns

Cut vegetation piled near or in a watercourse could degrade aquatic habitat or obstruct fish passage. Other potential environmental effects include altering wildlife habitat. Over-cutting exposes remaining trees to an increased risk of blow down. Removal of forest or hedgerow vegetation can result in wind stress, desiccation, and increased soil erosion.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection measures will minimize the potential environmental effects of vegetation clearing and disposal.

- *Clearing will be minimized to that necessary to construct and operate the proposed turbines, install collector lines and transmission lines and implement access roads.*
- *Best efforts will be made to schedule clearing of land outside of the sensitive bird breeding and nesting season, which is considered to be May 9 to July 23.*
- *Hedgerows will be left intact, where possible.*
- *Slash and any other construction material or debris will not be permitted to enter any watercourse.*
- *Slash will be piled outside the buffer zone of a wetland or watercourse (i.e., greater than 30 m from a wetland or watercourse) for subsequent chipping. In cases where maintaining a 30 m buffer around watercourses would interfere with the landowner's agricultural operations, temporary storage of slash may occur within the 30 m buffer but not within 10 m of a watercourse.*
- *Slash will not be burned.*

1.3 Ditching

Outline of Procedure

Ditching consists of excavation and grading to construct a new ditch or to re-establish an existing, deteriorated ditch. Ditching is undertaken to affect drainage and to correct deficiencies such as erosion, non-conformity in grade and restrictive vegetative growth that impedes drainage.

Principal Environmental Concerns

Where ditching is undertaken, potential runoff of sediment-laden water could result in effects on water quality, aquatic ecosystems or other environmentally sensitive areas.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection

measures will minimize the potential environmental effects of ditching:

- *Ditching will proceed in the upslope direction.*
- *Trapezoidal ditches result in less erosion of the ditch bottom and will be installed where space requirements allow. In cases where the available right-of-way is insufficient in width to achieve the desired cross-section, the alternative V-bottom ditch will be constructed.*
- *Where ditching takes place near a watercourse, no ditching will be done within 30 m of the watercourse. Vegetation located in this 30 m buffer area acts to filter any sediment laden runoff water prior to entering the watercourse.*
- *Within a week of doing ditching work, or as directed by the Environmental Monitor, all exposed soils will be either seeded with non-invasive, herbaceous, native species or receive straw/hay mulch application.*
- *Ditching will not be done within an existing ditch prior to July 1 or after September 30, unless a letter of advice has been obtained from the Department of Fisheries and Oceans.*
- *If ditching prior to July 1 or after September 30, mulch or an erosion control blanket (i.e., jute mat, erosion control mat) must be applied overtop of the seed.*
- *If seeding is not possible due to lateness of the season, the exposed soils will be completely covered for "overwintering" with either mulch or an erosion control blanket.*
- *Erosion control material will be removed during the following spring, and the area will be prepared for seeding.*
- *The Environmental Monitor will direct additional seeding or erosion control requirements within this 30 m zone, as appropriate.*
- *A check dam will be installed at the end of the ditch where it meets the Buffer Zone or other environmentally sensitive area. Additional erosion control structures will be installed further up the ditch as required or as directed by the Environmental Monitor.*
- *Natural drainage will be maintained whenever practical.*
- *Ditches will be directed into surrounding vegetation where possible, or a sediment collection pond, rather than emptying into a natural wetland/watercourse.*
- *Depending on the erosion potential or to ensure stabilization, the ditch may be hay mulched, hand seeded, hydro seeded or lined with an erosion control mat (i.e., jute mat and/or vegetative erosion control blanket).*
- *Rip-rap or an erosion control blanket designed for high flows will be used to line the bottom of ditches that have steep grades and/or excessive erosion as directed by the Environmental Monitor.*
- *Petroleum, septic wastes or otherwise contaminated material encountered in the ditch will be reported to the Environmental Monitor and to the Emergency Response.*

1.4 Grubbing, Stripping, and Excavation

Outline of Procedure

Grubbing refers to the removal of all stumps, roots, root mat and other debris, while stripping refers to the removal of topsoil. Materials excavation refers to the excavation of all other soil materials as included in earthworks, preparation of roadbed, site development, trenches, drains, borrow from adjacent land or pits,

intersections, private entrances and other similar works.

Principal Environmental Concerns

The principal concern associated with these activities is the potential for erosion due to exposed soil areas and the associated sediment-laden runoff effects on water quality, aquatic ecosystems and environmentally sensitive areas.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection measures will minimize the potential environmental effects of grubbing, stripping, and excavation:

- *Erosion control measures are to be in place prior to any grubbing activities if site conditions warrant or as directed by the Environmental Monitor.*
- *Topsoil and excavated overburden and bedrock will be stored in separate stockpiles for later use during rehabilitation.*
- *Dewatering of excavated areas will make use of measures to minimize and control the release of sediment laden water through the use of filtration through erosion control devices, settling ponds, straw bales, geotextiles or other devices as necessary.*
- *Water from dewatering will not be permitted to directly enter a watercourse or wetland.*
- *Care will be taken during excavation activities as there is potential for disturbing a decommissioned landfill present in the Study Area.*
- *Watercourse culvert crossings as required for access roads for the turbine locations will span the watercourses in accordance with MOE and MNR practices.*

1.5 Disposal of Excavated Waste Materials

Outline of Procedure

Waste materials are generated during excavations involved with site development and road construction practices.

Principal Environmental Concerns

The principal concern associated with this activity is the potential for erosion of disposed materials and the associated sediment-laden runoff effects on water quality, aquatic ecosystems and environmentally sensitive areas.

Environmental Protection Measures

In addition to the general environmental protection measures described above, the following protection measures will minimize the potential environmental effects of the disposal of excavated waste materials. It is

important to note that, once material is deemed to be waste material, it may become the property of the Contractor or other party. Where this occurs, these same protective measures are recommended to be followed by the user of the material once removed from the site:

- *If the excavated waste material is to remain in one disposal location for extended periods of time, appropriate protection measures will be taken such as stabilization of the material and/or perimeter sediment control.*
- *Excavated waste materials will not be disposed of in an environmentally sensitive area or in the Buffer Zone of a watercourse/wetland.*
- *Excavated materials will largely be used on original clearing sites, where appropriate.*

1.6 Infilling and Grading

Outline of Procedure

Infilling consists of placing soil and/or rock for site development and construction purposes. This includes preparation and construction of roadbeds, embankments, and slopes. Placing material in depressions to level them off helps to minimize ponding. Grading consists of shaping the unpaved road or site surface and is used to stabilize a surface, improve surface drainage and to provide for runoff in a controlled manner.

Principal Environmental Concerns

The principal concern associated with these activities is the potential for erosion due to exposed soil areas and the associated sediment-laden runoff effects on water quality, aquatic ecosystems and environmentally sensitive areas.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection measures will minimize the potential environmental effects of infilling and grading:

- *When grassed areas are encountered during grading, every effort will be made to leave such grassed areas intact.*
- *Areas where little or no vegetation exists can be graded after a light rain when the surface is in an optimum state for compaction, but not after heavy rains which promote runoff conditions.*
- *The elevation of the in filled or graded area will be maintained higher than the ditch it is draining into.*

1.7 Culvert Installation and Stabilization

Outline of Procedure

Culvert construction will include the installation of a steel, concrete or plastic culvert, backfilling around the

culvert, construction of the roadbed, and stabilization of culvert inlets and outlets.

Principal Environmental Concerns

The principal concerns associated with culvert installation and stabilization include the potential erosion of material around the culvert, sedimentation of the water, alteration of the hydraulic regime leading to streambed or bank scouring, and disruption of fish habitat and migration patterns.

Access roads will be approximately 10 m wide to accommodate the turbine erection cranes, maintenance vehicles and heavy equipment for larger repairs/replacements. In order to access the wind turbine sites, it will be necessary to construct access roads across various open drains. Some drains/watercourses will need to be crossed by the turbine access roads. In most cases, culverts of approximately 13 to 15 m in width will be required to accommodate the crossing of the watercourses/drains by the access roads. In some cases to accommodate a wider turning radius for the cranes, culverts of 20 to 30 m wide may be required in order to accommodate vehicular access and construction traffic across the drain while maintaining unimpeded flow within the drain.

There will be the need to cross the North Channel with a submarine cable to facilitate the transmission connection. It is therefore expected that navigable waterways will be traversed and that a determination by Transport Canada will be sought prior to construction.

Environmental Management Measures

Where there is the potential for effects to watercourses including drains from the construction of the turbines and watercourse crossings, the following will be taken into consideration:

- the *Ontario MOE Stormwater Management Planning and Design Manual* (2003);
- the *Ontario Provincial Standards and Specifications (OPSS 182, 518 & 577)*;
- the *Ontario MOE Stormwater Pollution Prevention Handbook (Part I);* and the *Part II – Pollution Prevention and Flow Reduction Measures Fact Sheets*;
- the *Ontario MNR Guidelines on Erosion Control for Urban Construction Sites* (1989); and
- the *MNR Technical Guidelines- Erosion and Sediment Control* (1989).

To provide source controls and minimize adverse impacts, the following drainage mitigation will be followed:

- *Minimize disturbance of existing vegetation outside ditching and grassed slopes where regrading is required;*
- *Minimize time exposure of un-vegetated soils;*
- *Maximize length of overland flow through to points where storm water leaves the site;*
- *Complete an erosion assessment on all new and existing ditches to determine the need for additional erosion protection;*
- *Top of bank barriers (e.g. silt fencing) are to be put in place for any construction activity that is in proximity to watercourses;*

- *Where ditch regrading is required, where appropriate, utilize flat bottom ditches in lieu of 'V' ditches to reduce velocities and erosion potential, promote peak flow attenuation and provide short-term storm water storage.*
- *Use of in-line erosion control measures such as erosion blanket, rip rap, straw bale, rock flow checks and vegetated buffers, thereby mitigating high flow velocities and excessive erosion/sedimentation;*
- *Stream banks are to be stabilized and restored to their pre-construction condition immediately following construction activity. This is particularly important in erosion prone areas such as steep sloped stream banks;*
- *Each watercourse crossing is to be assessed in advance and the most appropriate mitigative measures determined. Alternative watercourse crossing locations should be considered it the proposed crossing location appears to be particularly sensitive to erosion;*
- *Any stockpiled materials are to be stored and stabilized away from watercourses;*
- *Ensure all materials placed within the flood line are clean and free of silt and clay size particles. All materials must meet applicable regulations governing placement of fill in water bodies;*
- *Ensure that all materials and equipment used for the purpose of site preparation and the completion of any work is operated and stored in a manner that prevents any deleterious substance from entering the water;*
- *Refuelling and handling of potential hazardous substances are to be done away from watercourses;*
- *Sediment and erosion control measures are to be left in place until all disturbed areas have been stabilized;*
- *The sediment control plan be designed and implemented to mitigate impacts associated with construction of the project - to prevent suspended sediment, mud, debris, fill, rock dust, etc. from entering downstream watercourses. Areas disturbed by work must be minimized. Silt fences/curtains, sediment traps, check dams must be installed as appropriate;*
- *Measures are to be in place to minimize mud tracking by construction vehicles, and to ensure timely cleanup of any tracked mud, dirt and debris along local roads and areas outside of the immediate work area where the above sediment controls would not be in place;*
- *Work is to be suspended if excessive flows of sediment discharges occur, and, any appropriate action should be immediately taken to reduce sediment loading;*
- *If it is necessary to de-water foundation excavations, prior to its discharge to a watercourse, the water is to be discharged to a settling pond, filter bag, or vegetated buffer strip of adequate size, to filter out suspended sediment;*
- *Temporary mitigation measures are to be installed prior to commencement of any site clearing, grubbing, excavation, filling or grading works and maintained on regular basis, prior to and after runoff events. Any accumulated materials are to be cleaned out during maintenance and prior to their removal. All disturbed areas on land to be restored to natural conditions should be re-vegetated as soon as conditions allow preventing erosion, and restoring habitat functions. Land based measures must not be removed until vegetation has been re-established to a sufficient degree (or surface soils stabilized using other measures) so as to provide adequate erosion protection to disturbed work areas; and*
- *Timbers spaced to allow water flow and then covered with mats will be used for wet water crossings. This process will not hinder or block natural water flow.*

In addition to the general environmental protection measures described above, the following protection

measures will minimize the potential environmental effects of culvert installation and stabilization:

- *Culverts will be installed parallel to the watercourse, and located along a section of the watercourse that is straight and of uniform gradient.*
- *Culvert size and design will be based on peak flows, and will allow for sufficient depth of flow and appropriate water velocities for fish passage.*
- *Fill slopes will be stabilized to ensure that roadbed materials do not enter the watercourses.*
- *Gabions, rip rap, or rocks of sufficient size to prevent erosion, will be placed around culvert inlets and outlets.*
- *Gabions, rip rap, filter fabric, or rocks used for stabilization will completely cover road fill, gravel and other unstabilized materials around culvert inlets and outlets.*
- *Stabilization material will be clean and non erodible.*

1.8 Installation of Underground Collection Cables

Outline of Procedure

Electrical collection lines connecting the wind turbines to the substation will be overhead until within 100 m (or some suitable distance) of the turbine whereby an overhead to underground terminal pole will be placed and the underground electrical lines will be placed in trenches approximately 1 m deep where possible and covered with fill.

Principal Environmental Concerns

The principal concern associated with the installation of underground cables is the potential for erosion due to exposed soil areas and the effects of sediment-laden runoff on surface water quality. This could disturb fish habitat.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection measures will provide the erosion control measures for streamside activities:

- *Any excavation or grading during the construction of the site will be conducted in a manner that ensures the minimum amount of disturbance necessary.*
- *Access roads will be used, where possible, for all equipment, including cable reels, line trucks, and tensioning equipment.*
- *Erosion and sedimentation control measures will be in place prior to any grubbing activity.*
- *In extremely erodible areas, hay or straw mulch will be used as required for protection.*
- *Silt or sediment control fences will consist of woven synthetic fiber fabric attached to wooden posts.*
- *Silt fences will not be used in watercourses.*

- *Where a vegetation buffer between erodible slopes and water bodies is less than 15 m, an engineered silt fence will be constructed to control silt runoff and the silt fence will be placed along the down gradient perimeter of the construction area.*
- *Replanting will occur upon completion of cable-laying operations to maintain bank stabilization.*

1.9 Handling, Storage, and Use of Aggregate Materials

Outline of Procedure

Handling of aggregate materials is required for the foundation construction of each turbine. Outdoor storage piles are often used in operations that use minerals in aggregate form, largely due to the need for frequent material transfers.

Principal Environmental Concerns

The principal concern associated with these activities is the potential for erosion due to exposed soil areas and the associated sediment-laden runoff effects on water quality, aquatic ecosystems and environmentally sensitive areas. Storage piles can be left uncovered and dust emissions may occur from disturbances to the piles. Handling, storage, and use of aggregate materials can result in any of the following environmental impacts:

- *Cross-contamination can occur if adjacent aggregate stockpiles are allowed to overlap.*
- *Underlying soil may be disturbed with the use of a front-end loader for moving aggregates from a stockpile.*
- *Mixing of aggregates can result from dumping the wrong size aggregate in a bin or pile.*
- *Leaves and other contaminants may also fall into the stockpile.*
- *Leakage can occur through or around bulkheads in storage bins.*
- *Vegetation may grow in the stockpile if left alone and unused for an extended period of time.*
- *Soil admixing, compaction, and stoniness can occur as a result of grading, heavy traffic, and excavation activities.*

Environmental Management Measures

These measures apply to the handling, storage and use of aggregate material. The following conditions apply:

- *Aggregate will not be stored within the buffer zone of a wetland or watercourse (i.e., aggregate will not be stored within 30 m of a wetland or watercourse). In circumstances where landowners will not permit the use of alternate locations the buffer zone will be reduced to a minimum of 10 m.*
- *All sand, aggregate, soil, or other materials in place or in stockpiles must be contained to prevent materials from producing dusty conditions and from cross contamination, as determined necessary by the Environmental Monitor.*

- *Sand and soil stockpiles will be bermed and sloped (and seeded with non-invasive, herbaceous, native species, if abandoned) to minimize runoff. If stockpiles are not needed immediately, temporary erosion and sediment control devices will be installed and regularly maintained.*
- *Stripping of topsoil separately from the subsoil, approximately 10-15 cm, will occur to minimize the potential for soil admixing.*
- *Soil compaction will be avoided by limiting the traffic flow on access roads.*
- *Stoniness will be avoided by removing any noticeable stone concentration to an approved location.*

1.10 Concrete Pouring Operations

Outline of Procedure

Concrete will be required to construct the foundations of the turbines, approximately 15-17 m in diameter, and 1-1.5 m thick. This section contains measures to minimize adverse effects that may result from concrete pouring activities.

Principal Environmental Concerns

Liquid wastes from uncontrolled release of wash water which may contain hazardous materials such as cement, concrete additives and form oil. This wash water may be harmful to fish. Cement is alkaline and wash water from spoiled concrete or from the cleaning of the mixer trucks and pipe delivery systems can be expected to have high pH and high total suspended solids ("TSS") concentration. Similarly, spoiled concrete or wash water would contain additives and agents, some of which are toxic to aquatic species. Aggregates, particularly the finer sand fractions, washed from spoiled concrete or discharged in water to the environment may result in direct fish and wildlife mortality and/or habitat destruction.

Environmental Management Measures

The following measures are intended to minimize the potential for wash water and uncured concrete to enter water bodies:

- *Form oil may be used sparingly to allow forms to separate from concrete following curing.*
- *Only the chutes of concrete trucks will require on-site cleaning of wet concrete to permit their storage for transport. The volume of water used and extent of washing will be kept to a minimum.*
- *Washing of chutes on-site will occur at a designated location that will permit containment of the wash water in a settling pond away from any subsurface drains, streams or storm drains. If such a system cannot be located on-site, then the wash area should permit containment of the wash water so that it can be disposed of off-site at the ready mix plant.*
- *Washing of the drum at the end of a day's delivery will occur at the ready-mix concrete plant.*
- *No chemicals will be used in the washing of concrete trucks or forms on-site.*
- *Aggregate used in the production of concrete will not be stored on-site and concrete will not be produced on-site.*

- *In the event that water from the wash water containment area requires release to the environment, the effluent will be tested prior to release as required by applicable regulations.*
- *If concrete is mixed on site, drainage from the concrete production area and aggregate storage area, and wash water from the cleaning of batch plant mixers, mixer trucks, conveyors, and pipe delivery systems will be directed to a settling pond for control and treatment, as appropriate. Effluent will be treated as appropriate before release to receiving waters, or alternatively, effluent will be recycled for reuse after treatment. Solids which accumulate in a settling pond will be removed on a regular basis to ensure the settling pond remains effective.*

1.11 Surveying

Outline of Procedure

Surveying includes gathering all the information required for the design and identification of a property or the right-of-way of a specific section of road. This includes cutting centerline and cross-section offsets of sufficient width to provide a clear line of sight for survey equipment and access to the site for soils testing equipment.

Principal Environmental Concerns

Disturbance to terrestrial and watercourse/wetland habitats and species are the primary environmental concerns associated with surveying.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection measures will minimize the potential environmental effects of surveying:

- *The cutting of survey lines will be kept to a minimum. Where possible, alternate areas not requiring cut lines will be used.*
- *Whenever possible, cutting lines to the boundary between treed and open areas will be avoided.*
- *Survey lines will be limited in width to that which is absolutely necessary for line of sight and not more than 1.5 m.*
- *As required, trees and shrubs will be cut no more than 300 mm above the ground.*
- *All trees not exactly on survey lines will be left standing and trees partly on line will be notched (notch not to exceed 1/3 tree diameter) instead of removal, to allow sighting.*
- *Trees will be felled in a way that damage to standing trees adjacent to the survey line is minimized. Trees will be felled away from and not into or over a wetland/watercourse.*
- *Slash will not be placed or left in wetlands/watercourses. Any debris material removed from a wetland/watercourse and adjacent areas will be disposed of, or placed in a manner such that it cannot enter a wetland/watercourse.*
- *Felled trees having a top diameter of 8 cm or more will be cut in lengths and piled for reuse as merchantable timber. Non-merchantable timber will be chipped and spread outside the buffer zone of*

a wetland or watercourse (i.e., greater than 30 m from a wetland or watercourse). In circumstances where landowners will not permit the use of alternate locations the buffer zone will be reduced to a minimum of 10 m.

- *When surveying construction layouts, areas that will be cleared do not require strict adherence to the above, except trees, shrubs and areas to be saved or left natural as noted on the plans or marked in the field.*
- *Vehicles will yield the right-of-way to wildlife and no attempt to harass or disturb wildlife will be made by any person.*
- *There will be no cutting in areas designated as environmentally sensitive by the Environmental Monitor.*
- *ATVs will remain within the right-of-way except as approved by the Environmental Monitor.*
- *No heavy equipment or motorized vehicles will enter the areas designated as environmentally sensitive by the Environmental Monitor.*
- *The extent of activities in environmentally sensitive areas will be minimized, including the restriction of walking to established walking paths if available.*
- *Petroleum products will be handled, stored, and disposed of in a manner that will minimize the potential for spills.*
- *Fuelling of equipment will not occur within the Buffer Zone of a watercourse/wetland or other environmentally sensitive areas.*

1.12 Equipment Movement

Outline of Procedure

A variety of equipment is required to complete the many components of site development and road construction.

Principal Environmental Concerns

The environmental concerns associated with equipment movement are the potential impacts on aquatic ecosystems and water quality, as well as disturbance to environmentally sensitive areas.

Environmental Management Measures

In addition to the general environmental protection measures described above, the following protection measures will minimize the potential environmental effects of equipment movement:

- *Imported equipment will be thoroughly cleaned before it arrives into Ontario in order to prevent the introduction of exotic plant species.*
- *Equipment and vehicles will only operate on cleared right-of-ways or areas designated for construction activities in the Plans/Drawings.*

- *Routine maintenance of machinery will be performed off-site as much as possible. Some heavy equipment, such as the cranes, will be maintained on-site due to the challenges involved in moving the equipment.*
- *The Contractor will make daily inspections of hydraulic and fuel systems on machinery, and leaks will be repaired immediately. All leaks will be reported to the Environmental Monitor and the Construction Manager.*
- *Construction equipment will not enter Buffer Zones of wetlands/watercourses or environmentally sensitive areas.*
- *If there is soil (not rock) in the lay-down areas used for storage of turbine parts adjacent to the turbine foundations, the soil will be aerated and loosened after use to counteract the compaction caused by the equipment. The vegetation will be allowed to return to a natural state.*
- *Erosion control measures will be monitored during construction activities within the right-of-way and any areas associated with Project construction activities. Where damage to these erosion control measures is observed, they will be promptly repaired to prevent siltation of wetlands/watercourses or other environmentally sensitive areas.*

2.0 ENVIRONMENTAL PROTECTION MEASURES - MAINTENANCE ACTIVITIES

2.1 Structure Maintenance and Cleaning

Outline of Procedure

Repair and replacement of damaged or deteriorated superstructure and substructure components are undertaken as required to ensure their structural integrity. Cleaning is undertaken to prevent the accumulation of dirt and debris which may restrict normal movement on the structure and/or retain moisture or chemicals, leading to structural component deterioration. Potential activities could include cleaning, lubrication, and painting.

Principal Environmental Concerns

There is concern for aquatic species due to direct mortality and loss of aquatic habitat. The primary concern is the release of materials and siltation into the aquatic environment such as abrasives and protective coatings. Lubrication materials may contain petroleum compounds, which are potentially toxic to aquatic species.

Environmental Management Measures

In addition to the general environmental protection measures described in Section 3.0, the following protection measures will minimize the potential environmental effects of structure maintenance and cleaning:

- *All waste generated in the removal of damaged and deteriorated components will be collected for proper disposal.*
- *All materials, where possible, will be reused. Non-salvageable materials will be disposed of at a provincially approved location.*
- *All necessary precautions will be taken to prevent discharge or loss of any harmful material or substance into a watercourse.*
- *All empty containers of paint, solvents, and cleaners will be disposed of in an appropriate manner at a provincially approved location.*
- *If sandblasting is required, it will be done in an off-site maintenance shop.*
- *If on-site sandblasting is necessary, screens or traps will enclose the area to be sandblasted. Sandblasting will be performed over a surface which allows the sand or residue to be collected upon completion of sandblasting (i.e. plastic or plywood).*
- *Sandblasting will not be performed in high wind conditions.*
- *Sensitive features (i.e. rare plants, watercourses, environmentally sensitive habitats) identified during construction will be protected during maintenance activities.*

2.2 Road Maintenance

2.2.1 Grading

Outline of Procedure

Grading is used to reshape unpaved roads to maintain a proper crown and remove ruts, potholes and washboard conditions. Grading helps to maintain proper drainage and keeps road surfaces stable.

Principal Environmental Concerns

Grading loosens the top of the exposed road, leaving more potential for erosion of the surface. If not conducted properly, grading can inhibit controlled drainage of runoff. Dust is generated during grading processes.

Environmental Management Measures

Grading measures as outlined earlier in this EMP will be implemented.

2.2.2 Ditch Maintenance and Shouldering

Outline of Procedure

Ditching is undertaken to affect drainage of the roadbed and to correct deficiencies such as erosion; nonconformity in grade, line, or cross section of ditch; water ponding on road; and restrictive vegetative growth that impedes drainage of the roadbed.

Principal Environmental Concerns

The principal concern associated with these activities is the potential for erosion due to exposed soil areas and the associated sediment-laden runoff effects on water quality, aquatic ecosystems and environmentally sensitive areas.

Environmental Management Measures

In addition to the general environmental protection measures described earlier in this EMP, the following protection measures will minimize the potential environmental effects of ditch maintenance and shouldering:

- *A Buffer Zone will be maintained between the end of ditching and all wetlands/watercourses.*
- *A check dam will be maintained at the end of the ditch (where the ditch meets the Buffer Zone). Additional erosion control structures will be installed further up the ditch as required.*
- *Natural drainage will be maintained whenever practical.*

- *Sediment deposited in the ditch will be removed when it reduces the capacity of the channel. Removed material and sediment will be disposed of at a location outside the Buffer Zone of a wetland/watercourse or other environmentally sensitive area, and such that it cannot wash into a wetland/watercourse.*
- *Suitable material will be used when needed to fill in washouts, depressions, and the like on foreslopes or backslopes. To ensure stabilization, the ditch may be hay mulched, hand seeded, hydroseeded or lined with jute matting, depending on the erosion potential.*
- *Petroleum contaminated material encountered in the ditch will be reported to the Environmental Monitor and the Construction Manager.*
- *Sensitive features (i.e. rare plants, watercourses, environmentally sensitive habitats) identified during construction will be protected during maintenance activities.*

2.2.3 Surfacing

Outline of Procedure

For the purposes of this EMP, surfacing refers to the placement of aggregate on an unsealed road surface for stabilization or to restore grades, and to shape shoulders.

Principal Environmental Concerns

When handling and placing aggregate, there is potential for sedimentation of the aquatic environment and for dust impacts on air quality.

Environmental Management Measures

In addition to the general environmental protection measures, the following protection measures will minimize the potential environmental effects of surfacing:

- *Any aggregate placement will be conducted in such a manner to ensure road surface drainage flows from the centre of the surface to the drainage control structures (i.e., ditching), as appropriate.*
- *Any aggregate materials placed must be compacted to reduce moisture penetration.*
- *As required, dust will be controlled.*
- *Sensitive features (i.e. rare plants, watercourses, environmentally sensitive habitats) identified during construction will be protected during maintenance activities.*

2.3 Snow Removal

Outline of Procedure

Snow removal and application of sand and/or de-icing agents (i.e., salt) may be required during the winter months to maintain safe conditions for maintenance activities.

Principal Environmental Concerns

Excessive salt use can cause saline runoff into watercourses. Excessive sand use can contribute to sediment-laden runoff into watercourses and may cause blockages in drainage structures.

Environmental Management Measures

In addition to the general environmental protection measures described earlier in this EMP, the following protection measures will minimize the potential environmental effects of Snow Removal, Sanding and De-icing.

- *A service provider will be used for snow and ice removal on roads. Best Management Practices as described in Environment Canada's "Best Management Practices for Salt Use on Private Roads, Parking Lots and Sidewalks" will be followed.*
- *The use of sand, salt and combinations thereof, will be minimized to that which is necessary to ensure the safety of the maintenance staff. Sand application will be the primary means of maintaining safe driving conditions. Salt will only be used as necessary.*
- *Prior to salt application, as much snow as possible will be removed from the road through plowing.*
- *Salt application will be targeted to areas requiring treatment in order to minimize the volume of salt used and the amount of salt lost to adjacent areas.*
- *Snow removed from access roads and site surfaces will not be dumped within the Buffer Zone of a watercourse/wetland or other environmentally sensitive area.*

3.0 SPECIFIC ENVIRONMENTAL PROTECTION MEASURES

3.1 Erosion Control

The study area contains many small lakes and streams. In general, the majority of watercourses flowing off McLean's Mountain within the study area flow to the Sucker Creek and/or the Perch Creek systems, which both flow to the North Channel of Lake Huron. Watercourses flowing easterly from the east side of McLean's Mountain flow toward Strawberry Channel. On the south side of the study area, westerly watercourses generally flow toward the North Channel via Perch Lake and easterly watercourses generally flow toward Bass Lake near Sheguiandah.

It will be necessary to cross several watercourses with the turbine access roads and electrical lines. For the roads crossings, culverts will need to be installed so as to not obstruct the flow of water from access road construction. In most cases, culverts of approximately 13 to 15 m in width will be required to accommodate the crossing of the watercourses/drains by the access roads. In some cases to accommodate a wider turning radius for the cranes, culverts of 20 to 30 m wide may be required.

There is also the potential for the movement of construction equipment across the water courses and erosion effects from construction activity in the vicinity of surface water (e.g. to construct the 115 kV transmission line). These temporary disturbances may include downstream sediment transport and bed and bank disturbance and will be minimized as much as possible through the selection of the appropriate crossing techniques and culvert design determined in consultation with the DFO and MNR.

There will be the need to cross the North Channel with a submarine cable to facilitate the transmission connection. It is therefore expected that navigable waterways will be traversed and that a determination by Transport Canada will be sought prior to construction.

Mitigation Measures

Timing: Attempts will be made to construct new crossings and improve existing drain crossings when the ditch is dry. For applicable coldwater watercourses, crossings will be consistent with the coldwater timing restrictions. For ditches which have standing water at the time of construction, in stream sediment control will be installed prior to any construction equipment initiating work. These features should be removed immediately following completion of all in stream or stream bank disturbance, including installation of the culvert and revetment. Vegetation removal should be kept to a minimum to provide bank stability following culvert installation.

Sediment: Adequate sediment and erosion control during construction along with re-vegetation of disturbed areas will be necessary to avoid potential effects of construction to downstream habitat. Sediment and erosion control systems should be maintained repaired and not removed until the site is suitably stabilized.

Equipment: All equipment for culvert installation should arrive on site in a clean condition and maintained to prevent fluid leaks (gas, oil, lubricants, hydraulic fluids). All equipment should operate on the land with

minimal disturbance to the ditch banks. Refueling, servicing, equipment maintenance and associated materials for equipment operation should be stored away from the ditch bank with appropriate containment systems in the event of accidental spills.

Placement: Culverts should be embedded in the substrate, a minimum 10% embedment of the pipe diameter below the drain bottom, to ensure there is no loss of habitat through the culvert section. The culvert will eventually silt into match upstream and downstream grades as this area is extremely flat. In an open water course setting, culverts will provide refuge in low flow and cover from predators for any of the resident fish population.

Approvals: Any work within waterways that contain fish habitat or potential fish habitat will require a letter of advice notifying the Department of Fisheries and Oceans when work is to be initiated and completed.

Outline of Procedure

During construction, site preparation work and use of heavy construction vehicles at the site will result in exposed solids, susceptible to erosion. Control of erosion and potential sedimentation of receiving water bodies is one of the most critical environmental management concerns for this Project. Erosion control is first priority in preventing these impacts. The amount and duration of exposed soil will be kept to a minimum. Erosion control methods will be applied where there is the potential for erosion due to rain, flowing water, steep slopes, and highly erodible soils. Preventing erosion at the source reduces the amount of sediment that needs to be managed by downstream sediment control measures. It is also important that sediment controls are in place to prevent sediment from leaving the site.

Principal Environmental Concerns

Exposed soil will result from site preparation activities such as clearing, grubbing, grading and ditching. Precipitation, flowing water, steep slopes, or highly erodible soils will increase the potential for erosion. The principal environmental concern is the associated sediment-laden runoff and the resulting effects on water quality, aquatic ecosystems and environmentally sensitive areas such as wetlands.

Environmental Management Measures

In addition to the general environmental protection measures described earlier in this EMP, the following protection measures will provide the erosion control measures.

General

Where there is the potential for effects to watercourses including drains from the construction of the turbines and watercourse crossings, the following will be taken into consideration:

- *the Ontario MOE Stormwater Management Planning and Design Manual (2003);*
- *the Ontario Provincial Standards and Specifications (OPSS 182, 518 & 577);*

- *the Ontario MOE Stormwater Pollution Prevention Handbook (Part I); and the Part II – Pollution Prevention and Flow Reduction Measures Fact Sheets; the Ontario MNR Guidelines on Erosion Control for Urban Construction Sites (1989); and*
- *the MNR Technical Guidelines- Erosion and Sediment Control (1989).*

To provide source controls and minimize adverse impacts, the following drainage mitigation will be followed:

- *Minimize disturbance of existing vegetation outside ditching and grassed slopes where re-grading is required;*
- *Minimize time exposure of un-vegetated soils;*
- *Maximize length of overland flow through to points where stormwater leaves the site;*
- *Complete an erosion assessment on all new and existing ditches to determine the need for additional erosion protection;*
- *Top of bank barriers (e.g. silt fencing) are to be put in place for any construction activity that is in proximity to watercourses;*
- *Where ditch re-grading is required, where appropriate, utilize flat bottom ditches in lieu of 'V' ditches to reduce velocities and erosion potential, promote peak flow attenuation and provide short-term storm water storage;*
- *Use of in-line erosion control measures such as erosion blanket, rip rap, straw bale, rock flow checks and vegetated buffers, thereby mitigating high flow velocities and excessive erosion/sedimentation;*
- *Stream banks are to be stabilized and restored to their pre-construction condition immediately following construction activity. This is particularly important in erosion prone areas such as steep sloped stream banks;*
- *The watercourse crossing is to be assessed in advance and the most appropriate mitigative measures determined. Alternative watercourse crossing locations should be considered it the proposed crossing location appears to be particularly sensitive to erosion;*
- *Any stockpiled materials are to be stored and stabilized away from watercourses;*
- *Ensure all materials placed within the flood line are clean and free of silt and clay size particles. All materials must meet applicable regulations governing placement of fill in water bodies;*
- *Ensure that all materials and equipment used for the purpose of site preparation and the completion of any work is operated and stored in a manner that prevents any deleterious substance from entering the water;*
- *Refuelling and handling of potential hazardous substances are to be done away from watercourses;*
- *Sediment and erosion control measures are to be left in place until all disturbed areas have been stabilized;*
- *The sediment control plan be designed and implemented to mitigate impacts associated with construction of the project - to prevent suspended sediment, mud, debris, fill, rock dust, etc. from entering downstream watercourses. Areas disturbed by work must be minimized. Silt fences/curtains, sediment traps, check dams must be installed as appropriate;*
- *Measures are to be in place to minimize mud tracking by construction vehicles, and to ensure timely cleanup of any tracked mud, dirt and debris along local roads and areas outside of the immediate work area where the above sediment controls would not be in place;*

- *Work is to be suspended if excessive flows of sediment discharges occur, and, any appropriate action should be immediately taken to reduce sediment loading;*
- *If it is necessary to de-water foundation excavations, prior to its discharge to a watercourse, the water is to be discharged to a settling pond, filter bag, or vegetated buffer strip of adequate size, to filter out suspended sediment (this activity would require a Certificate of Approval under the OWRA from MOE. In addition, should dewatering activities exceed a rate of 50,000 litres per day, a PTTW would be required as well); and,*
- *Temporary mitigation measures are to be installed prior to commencement of any site clearing, grubbing, excavation, filling or grading works and maintained on regular basis, prior to and after runoff events. Any accumulated materials are to be cleaned out during maintenance and prior to their removal. All disturbed areas on land to be restored to natural conditions should be re-vegetated as soon as conditions allow preventing erosion and restoring habitat functions. Land based measures must not be removed until vegetation has been re-established to a sufficient degree (or surface soils stabilized using other measures) so as to provide adequate erosion protection to disturbed work areas.*
- *The OMNR in-water construction-timing window (July 1 to September 30) should be implemented for the summer months when work can be completed in the dry or when resident fish communities in permanent systems have completed their annual reproductive activities.*
- *Compensation measures, where required, should involve riparian plantings, bank stabilization through bioengineering, or the construction of in-stream fish habitat features and/or the removal of blockages/barriers (this is a possibility along the shoreline at the mouths of some tributaries).*

The majority of road crossings over small creeks and/or drains are handled by installing an appropriately-sized culvert by open cutting creek/drain beds to properly install at an acceptable elevation to ensure proper fluvial function and fish passage. Standard mitigation measures to address typical negative impacts resulting from construction activities of these kinds are presented above.

For reference, please refer to the Department of Fisheries and Oceans' ("DFO") Operation Statements for "Overhead Line Construction" and "Isolated or Dry Open-Cut Stream Crossings" for more detailed information on environmental mitigation and protection appropriate to these types of watercourse crossing. Provided the listed conditions in the Operational Statements are met, review and approval by DFO is not likely required.

The aquatic features within the study area are generally a mixture of natural and altered channel systems, low-lying wet pockets/wetlands and overland swales and drainage ditches. Many of them are considered coldwater systems; however, a few are significantly degraded by unrestricted cattle access and poorly installed/degraded road/farm path culverts.

Structures/Products

- *Silt or sediment control fences will consist of woven synthetic fibre fabric attached to wooden posts.*

- *Erosion control structures or check dams will be constructed in accordance with Ontario Provincial Standards for Roads and Public Works in partnership with the Ontario Ministry of Transportation (MTO).*
- *In extremely erodible areas, hay or straw mulch will be used as required for protection.*
- *Erosion and sedimentation control measures will be in place prior to any grubbing activity.*
- *Erosion control structures will be installed as directed by the Environmental Monitor, Site Supervisor or Construction Manager.*
- *Silt fences will not be used to control sedimentation within a ditch or watercourse.*
- *Where erosion control within a drainage ditch is required, geotextile wrapped straw bales will be installed to provide a check dam and prevent downstream sedimentation. Some rock fill or rip rap may be installed of the downstream side of the check dam to secure the structure during heavy rainfall events.*

Maintenance

- *The Contractor will maintain the erosion control structures in a functional condition as long as necessary to contain sediment from run-off, from time of installation until a sufficient vegetative cover growth (>90% cover) has been established.*
- *All erosion control structures and sediment control fences will be inspected before, during and following each rainfall event and at least daily during periods of prolonged rainfall. Any damage arising from major storm events will be repaired as soon as possible to the satisfaction of the Site Supervisor.*
- *Retained sediment will be removed when it has accumulated to a level of half the height of the fence/barrier and disposed at least 30 m away from any wetland or watercourse in a manner that prevents it from entering a wetland or watercourse. In circumstances where landowners will not permit the use of alternate locations the buffer zone will be reduced to a minimum of 10 m.*

3.2 Air Quality and Dust Control

Outline of Procedure

The construction phase of the project consists mainly of heavy construction work. There can be significant dust generation that may have a substantial temporary impact on local air quality. Dust emissions often vary substantially on a daily basis at construction-sites depending on the level of activity, the specific operations, and the prevailing meteorological conditions. In addition, to a lesser degree emissions during construction will be associated with combustion gases from heavy vehicles, which produce particulate-containing exhaust consisting of a variety of contaminants. The typical contaminants associated with construction activities include carbon monoxide (CO), nitrogen oxides (NO_x), carbon (CO_2), hydrocarbons (HC), total suspended particulate (TSP), and fine and respirable particulates (PM_{10} and $PM_{2.5}$).

Principal Environmental Concerns

The on-site construction activities could impact ambient air quality due to vehicular emissions. There are a

variety of activities that can lead to the generation of contaminant emissions, primarily of particulate matter, on the construction-site. The primary potential sources include exhaust gas emissions due to incomplete combustion from diesel compression engine, road dust, wind erosion on storage piles, material handling, material transport; and truck loading / truck unloading. There are also emissions of combustion gases and products of incomplete combustion from the exhaust of on-site vehicles and equipment. The table below shows typical output ranges of emissions from diesel engines, depending on the age and technology of the engines.

Typical Emissions from Diesel Engines (Nett Technologies)

CO vppm	**HC** vppm	**PM** vppm	**NO_X** vppm	**SO_2** vppm
5 - 1,500	20 - 400	0.1 0.25	50 - 2,500	10 - 150

Environmental Management Measures

The following measures will be implemented, to the extent possible, to control air emissions from construction activities:

- *Use well-maintained heavy equipment and machinery, preferably fitted with muffler/exhaust system baffles, engine covers;*
- *Motorized equipment should meet design specifications for emission controls and conform to provincial Drive Clean standards where appropriate;*
- *Comply with operating specifications for heavy equipment and machinery;*
- *Minimize operation and idling of gas-powered equipment and vehicles, in particular, during smog advisories – this is to be strictly monitored;*
- *Minimize vehicular traffic on exposed soils and stabilize high traffic areas with clean gravel surface layer or other suitable cover material;*
- *Minimize mud tracking by construction vehicles along access routes and areas outside of the immediate work site, and ensure timely cleanup of any tracked mud, dirt and debris;*
- *Cover or otherwise contain loose construction materials that have potential to release airborne particulates during transport, installation or removal; and*
- *Spray water to minimize the release of dust from gravel and exposed soils. Use environmentally-friendly chemical dust suppressants (e.g. Petro-Canada's Dust Suppressant Fluid 65 [DSF65]) only where necessary on problem areas.*

3.3 Noise Control

Outline of Procedure

Noise generated at the site during construction activities, will be largely attributable to operation of heavy construction vehicles as well as activities associated with turbine assembly and site preparation. This section contains measures to minimize noise emissions that may result from construction activities.

Principal Environmental Concerns

The construction phase of the proposed wind farm has the potential to be a noise source, contributing to the ambient acoustic environment of the region. This noise is mainly produced from the operation of construction equipment and vehicular activity. Construction activities will result in noise emissions in the surrounding environment. Noise associated with operation of heavy equipment will be in the range of 80-90 dBA at the source. Unmitigated, these noise emissions can disturb wildlife and may also interfere with the enjoyment of property for residents in the area.

Environmental Management Measures

The following measures will be implemented, to the extent possible, to control noise from construction activities:

- *All site activities will be carefully planned and performed in such a manner that noise is minimized.*
- *The frequency and/or duration of noise producing activities will be minimized wherever possible.*
- *All heavy construction equipment will be maintained in accordance with the manufacturer's specifications and equipped with appropriate mufflers and other noise control equipment to minimize noise where appropriate.*
- *Contractors will comply with the restrictions on hours of work for the site as determined by any applicable bylaws.*
- *All Project vehicles will be properly maintained and muffled to reduce noise emissions.*
- *The Contractor will ensure idling of construction vehicles is limited.*
- *The routing of truck traffic through residential areas will be controlled during the maximum period of activity.*
- *If complaints arise due to noise from truck traffic, acceptable alternate routing may be evaluated by the Contractor and the Municipality and implemented accordingly.*

3.4 Lighting Control

Outline of Procedure

Lights may be associated with equipment operation requirements and general lighting of work areas.

Principal Environmental Concerns

Excessive light emissions may cause a public disturbance in the vicinity of the project area, particularly during regular public off-work hours. Some lighting can also affect migratory paths of birds and lead to increased bird mortalities.

Environmental Management Measures

- *Minimum amount of aviation lighting required by Transport Canada ("TC") should be used, and TC should be consulted to see if white strobe lights with a minimum number of flashes per minute can be used.*
- *Strong lights, such as sodium vapor lights which are often used for security at substation buildings, should be avoided or shielded.*
- *Building lights will be positioned such that the direction of light is opposite to that of any residences, where possible.*
- *Where nuisance to local residents is an issue, scheduling of specific activities may be directed by the Environmental Monitor.*
- *Area lighting will be positioned and directed so as not to cause glare to approaching traffic.*
- *Building and area lighting will be directed toward the ground wherever possible.*

4.0 ENVIRONMENTAL PROTECTION MEASURES - MATERIALS, EQUIPMENT, FACILITIES

4.1 Petroleum, Oils, Lubricants, and Other Hazardous Materials

Outline of Procedure

A variety of potentially hazardous materials will be in use or stored for construction and maintenance activities for the proposed wind farm. Potentially hazardous materials routinely used include: *POLs, hydraulic fluids, acetylene, paints and solvents.* The procedures and requirements of the WHMIS program will be in place to protect employees and are generally applicable to the protection of the environment. These WHMIS procedures and requirements reinforce the proper handling, storage, and control of hazardous or toxic materials thereby reducing the potential for accidental release and consequent potential environmental effects.

Principal Environmental Concerns

The major concern regarding the use of these substances is their uncontrolled release to the environment through accidental spillage, and subsequent adverse effects on terrestrial, aquatic and marine habitat and species, soil, groundwater quality and human health and safety. The following protection measures are intended to minimize the potential for any POL spills on soil, vegetation, surface water, and groundwater.

Storage of Petroleum, Oil, Lubricant and Chemical Handling

All necessary precautions to prevent and minimize the spillage, misplacement or loss of fuels and other hazardous materials shall be taken. All Acts and Regulations pertaining to special substances shall be followed.

The delivery, storage, use and disposal of these hazardous materials will be handled only by trained personnel in accordance with government laws and regulations. The following precautions will be taken in handling POLs and chemicals:

- *The transport of fuel will be conducted in compliance with the Transportation of Dangerous Goods Act.*
- *Mobile fuelling trucks will be used to minimize the requirements for onsite storage of POLs.*
- *Diesel fuel and gasoline may be stored on site in limited quantities. Drums as required for one day's use will be on site, and drums will be delivered on a daily basis. Fuel drums will be stored upright on a deck with drip trays for the collection of spilled substances.*
- *Where possible, vehicle maintenance will be performed off site, at a nearby commercial fuelling station, in order to minimize the amount of lubricants and oils stored on site. On-site POL storage will be in a ventilated, lockable steel container. The container will be equipped with galvanized steel drip trays for the collection of spilled substances.*

- *The on-site POL storage container shall be located on level terrain, at least 100 m from any water body or wetland.*
- *Spill decks will be used for transferring products to smaller containers.*
- *No POL storage will occur in sensitive areas (e.g., near wetlands, watercourses or wells).*
- *Fire extinguishers and a spill kits will be located near POL storage areas.*
- *POL storage areas will be identified by signs, and "No Smoking" signs will be displayed at all POL storage sites and refueling areas.*
- *Smoking will not be permitted within 50 m of any POL storage area. On-site signage will indicate the location of smoking areas.*

POL and Chemical Handling Measures
▪ Equipment used will be mechanically sound with no oil or gas leaks. The Contractor shall undertake frequent inspection of equipment and repair leaks immediately. ▪ Fuelling, storage and servicing of vehicles and construction equipment is not allowed within 30 m of a watercourse, drainage ditch, areas with a high water table, or exposed and shallow bedrock. ▪ Spill clean-up materials shall be accessible and maintained in the areas of fuel and chemical storage. Any spilled fuel or lubricants shall be promptly cleaned up and disposed of in accordance with Ontario MOE requirements (MOE Spills Action Centre - 1-800-268-6060). ▪ No equipment shall be washed within 30 m of a watercourse. ▪ All tanks shall be protected from collision damage by the use of snow fencing to alert operators, or by the placement of barriers to impede equipment movement near the tank. ▪ Handling and fuelling practices shall ensure that contamination of groundwater will not occur. ▪ Fuel storage areas and transfer lines shall be clearly marked or barricaded to prevent damage from vehicles. ▪ If drums are stored on their sides, the drums shall be stored so that the bungs are in the 9" and 3" position, on level ground and prevented from rolling. ▪ Drum storage areas shall be marked or fenced with temporary fence to avoid impacts. ▪ Day-use quantities can be stored upright or on the side as required. Drip pans lined with absorbent pads shall be used beneath taps. ▪ All stained soil resulting from the use of chemicals or fuels shall be cleaned-up and disposed of prior to leaving the work area. ▪ Waste oils and lubricants will be retained in a closed container, and disposed of in an environmentally acceptable manner.

Equipment Fuelling

Only equipment that is not easily transported will be refueled on site. All other vehicles and equipment will be refueled at a central fuelling station:

When refueling equipment, operators will:

- *Use designated fuelling locations where practical;*
- *Use drips trays;*
- *Use leak free containers and reinforced rip and puncture proof hoses and nozzles;*
- *Be in attendance for the duration of the procedure; and*
- *Seal all storage container outlets except the outlet currently in use.*

Fuelling must be done at least 30 m from a wetland or water body. The Construction Manager will make daily

inspections of hydraulic and fuel systems on machinery and leaks will be repaired immediately. All spills will be reported to the MOE Spills Action Centre (1-800-268-6060). Servicing of equipment will not be allowed within 100 m of a wetland, watercourse or drainage ditch. Fuelling attendants will be trained in the requirements under the Fuel and Hazardous Material Spills Contingency Plan in this EMP.

POL Waste Disposal

- *Waste POLs will be stored in a ventilated, lockable steel container. The container will be equipped with galvanized steel drip trays for the collection of spilled substances.*
- *Waste solvents and oils will be stored separately.*
- *All used oil and petroleum products will be removed as required and disposed of in an acceptable manner in accordance with government regulations, and requirements.*
- *Waste oil will be collected separately and offered for recycling or stored for collection by an appropriate special waste collection and disposal company.*
- *Greasy or oily rags or materials subject to spontaneous combustion will be deposited, and kept, in an appropriate receptacle. This material will be removed from the work site on a regular basis and will be disposed of in an approved existing waste disposal facility.*
- *POL waste disposal will be the responsibility of the Contractor.*

Spills Response

Various lubricants, oils ad fuels will be required during the operations period. Although unlikely, any leakage of oils from the turbines would be captured within the containment system. Spills response activities during the operations will be governed by this EMP. Legislation of relevance to spills management and response include:

- *Environmental Protection Act;*
- *Fisheries Act;*
- *Gasoline Handling Act;*
- *Ontario Pesticides Act;*
- *Ontario Water Resources Act; and,*
- *Transportation of Dangerous Goods Act.*

Federal and Provincial legislation place the responsibility for spill prevention and mitigation on the owner or controller of products or materials that can be spilled. Spills are defined under these Acts, as, but not limited to:

- *Spills from containers including drums and tanks;*
- *Spills resulting from breaks in hydraulic or transfer hoses or piping; and*
- *Spills resulting from traffic accidents and fire fighting.*

In accordance with these Acts, NPI has an obligation to:

- *Prevent, eliminate or remediate an adverse affect resulting from a spill; and*
- *Report the spill to NPI and the Ontario MOE (Spills Action Centre; Tel: 1-800-268-6060).*

NPI and its contractors shall reduce the likelihood of spills by implementing effective spill prevention measures such as the careful handling and proper storage of the products in use. In the event of a spill, the procedures detailed below shall be followed to facilitate a quick response.

Spills Response Measures
▪ The individual who discovers a leak or spill shall immediately attempt to stop and contain the release. ▪ Any spill or leak shall be reported immediately to NPI. ▪ NPI shall immediately report the release to the MOE Spills Action Centre (1-800-268-6060). ▪ NPI will have the authority to take appropriate action without unnecessary delay. ▪ NPI shall assume the overall responsibility of coordinating a cleanup and maintaining this contingency plan current and up-to-date. NPI shall, in consultation with regulatory authorities: o Deploy on-site personnel to contain the spilled material using a dyke, pit, absorbent material or booms, as appropriate; o Assess site conditions and environmental impact of various clean up procedures; o Choose and implement appropriate clean up procedure; o Deploy on-site personnel to mobilize pumps and empty drums (or other appropriate storage) to the spill site; o Apply absorbents as necessary; o Dispose of contaminate debris, cleaning materials, and absorbents by placing in an approved disposal site; and, o Take all necessary precautions to ensure that the incident does not reoccur. ▪ NPI shall submit a written report to appropriate regulatory authorities as required by applicable legislation. ▪ In order to respond to accidental releases, the following resources shall be made available on-site in an appropriate location to allow for immediate use: o Absorbent material (i.e., sorbent pads, Sorb-All, vermiculite); and o Protective equipment, shovels, rakes, tool kit, buckets and drums, stakes and tarpaulins.

4.2 Solid Waste Disposal

Outline of Procedure

During site preparation, construction, and maintenance, solid waste will be generated. Waste streams have been provisionally classified as domestic waste, paper, card board, wood and scrap steel and metals. This section contains measures for waste minimization, recycling and disposal.

Principal Environmental Concerns

Solid waste if not properly controlled and disposed of, can be unsightly and cause human safety and health concerns. Uncontrolled hazardous waste can contaminate soils, surface and groundwater, and can be toxic to vegetation, fish and wildlife if ingested in sufficient quantities.

Environmental Management Measures

The following protection measures will minimize the potential environmental effects of solid waste disposal:

- *Waste produced during the construction of the McLean's Mountain Wind Farm will be sorted as per the requirements of the Ontario "Waste Watch" Program.*
- *Domestic waste from temporary office quarters will be gathered on a regular basis and stored in closed containers until recycled or disposed of as per the requirements of the Ontario Waste Watch Program.*
- *Food waste will be stored in a manner that ensures wildlife will not be attracted and will be removed from the site on a daily basis.*
- *On-site temporary disposal areas for surplus material will be designated and will be located a minimum of 30 m from a wetland or watercourse. In circumstances where landowners will not permit the use of alternate locations the buffer zone will be reduced to a minimum of 10 m.*
- *The Contractor will, with the prior approval of the Site Supervisor, designate and use areas for the transfer and limited temporary storage of hazardous materials and special wastes. These sites will be properly labeled and appropriately controlled, and will be located a minimum of 30 m from a wetland or watercourse.*
- *All surplus materials, rubbish, waste materials, and construction debris will be removed from the site upon completion of construction of the project.*
- *All waste will be handled in accordance with relevant provincial and federal requirements.*
- *Waste material will not be dumped on-site. In such case as waste materials are inadvertently dumped, the Construction Manager (or designate) will immediately act to have the dumped material cleaned up and removed.*
- *No waste or debris will be permitted to enter any watercourse.*
- *Only material approved by the Environmental Monitor and the Site Supervisor will be disposed of or reused onsite (e.g., clean fill materials).*
- *Run-off from a disposal/storage area will not be allowed to enter a watercourse.*

4.3 Sewage Disposal

Outline of Procedure

Work area facilities for personnel will have sewage collection systems that will comprise temporary toilet and washing facilities or hook-ups to permanent facilities.

Principal Environmental Concerns

In most cases, it is not feasible to install permanent sewage treatment facilities at work sites. Employees will require toilet and washing facilities. The release of untreated sewage is a concern to human health, drinking water quality, and freshwater and marine ecosystems.

Environmental Management Measures

The following protection measures will minimize the potential environmental effects of sewage disposal:

- *Temporary or permanent facilities will be developed in compliance with Ontario's Environmental Protection Act to ensure that sewage effluent is not released untreated to the environment.*

Temporary Sewage Disposal

- *During the initial stages of site development and where it is not feasible to install sewage treatment facilities, portable and/or temporary toilets and wash cars will be developed with holding tanks.*
- *The holding tanks will be pumped and emptied at the treatment facilities, as required.*

Permanent Sewage Disposal

- *Where sewage facilities are required, developments will proceed, in accordance with*
- *Ontario's Environmental Protection Act, for a temporary or permanent sewage collection and treatment system (if required).*

5.0 CONTINGENCY PLANS FOR UNPLANNED EVENTS

5.1 Emergency Response Plan

Employee Training Program

NPI will develop and an operations training program to ensure personnel receive appropriate training in relation to operation and maintenance programs, environmental, health, and safety procedures, and emergency response plan. Training will cover issues such as:

- *Accident reporting;*
- *Chemical and hazardous materials handling;*
- *Fall and arrest protection;*
- *Eye, ears, head, hands, feet, and body protective equipment;*
- *First aid training and equipment;*
- *Equipment operation and hazards;*
- *Fire prevention and response;*
- *Lockout and tag out procedures;*
- *Scaffolds and ladders;*
- *Fire preparedness and response;*
- *Natural disasters (i.e., extreme weather events);*
- *Hazardous materials and spill response;*
- *Medical emergencies; and*
- *Rescue procedures.*

Training should begin as initial staff is hired during the pre-operational mobilization period. There should also be on-going training for personnel as well as specific training sessions for new hires.

5.2 Erosion Control Failure

Outline of Procedure

Control of erosion and potential sedimentation of receiving water bodies is one of the most critical environmental management concerns for this Project. Erosion control methods will be applied where there is the potential for erosion due to rain, flowing water, steep slopes and highly erodible soils. This program contains measures to prevent failure of erosion control structures.

Principal Environmental Concerns

The principal environmental concern is the associated sediment-laden runoff and the resulting effects on water quality, aquatic ecosystems and environmentally sensitive areas such as wetlands.

Environmental Management Measures

The following measures will be implemented to minimize the potential environmental effects in the event of erosion control failure.

Prevention:

- *Erosion control measures will be implemented as described earlier in this EMP, or as deemed necessary by the Construction Project Manager.*
- *Supplies for any emergency response will be on hand at all times. This may include, but not be limited to, straw bales, filter fabric and silt curtains.*

Emergency Response Action Plan:

- *If siltation of the nearby watercourses is observed, notify the Construction Project Manager and identify the source of the siltation. Siltation indicates preventative measures have been ineffective.*
- *Suspend any construction operations contributing to the problem.*
- *Isolate, contain, and control the source using measures such as straw bales or brush mats. Erosion control structures will be fixed immediately.*
- *If the release has affected, or has the potential to affect, a sensitive area (i.e., a wetland or watercourse), the Construction Project Manager or Environmental Monitor will contact and consult with the appropriate regulatory authorities (e.g., OMNR, Fisheries and Oceans Canada) as required for notification and planning.*
- *To ensure that erosion and sediment control measures are in effective working order, their condition will be monitored periodically and prior to, during, and following storm events.*
- *Accumulated sediment will be removed once it reaches a depth of one-half the effective height of the control measure or a depth of 300 mm immediately upstream of the control measure.*
- *For all erosion control measures, accumulated sediment will be removed as necessary to perform maintenance repairs.*
- *Accumulated sediment will be removed immediately prior to the removal of control measures.*
- *The sediment removed will be deposited in an area that is approved by the Construction Project Manager and will not result in erosion and runoff into a watercourse.*

5.2 Fuel and Hazardous Materials Spills

Outline of Procedure

This Fuel and Hazardous Material Spills Contingency Plan presents a detailed response system to deal with accidents such as the release of POLs or other hazardous materials. The objectives of the Plan are to minimize the following:

- *danger to persons;*
- *pollution of land and water;*

- *size of affected area; and*
- *degree of disturbance during clean-up.*

Principal Environmental Concerns

The day-to-day operations of construction equipment, machinery and vehicles, as well as the transfer of fuel from storage containers to these, offer the potential for fuel spills. Other hazardous material products include hydraulic fluids, lubricating oil, solvents, anti-freeze, and paint. Fuels and other hazardous materials can be damaging to vegetation, soil, surface water, groundwater, human health, wildlife and aquatic organisms. Please see **Appendix 2** for the required arrangement for a static refueling point.

Environmental Management Measures

Prevention of Fuel and Hazardous Materials Spills

The following measures will be implemented to minimize the potential environmental effects in the event of a fuel or hazardous material spill:

- *Hazardous materials will be handled only by personnel who are trained and qualified in the handling of these materials, and only in accordance with manufacturer's instructions and government regulations. The WHMIS program will be implemented in accordance with the Ontario Occupational Health and Safety Act and Regulations.*
- *All employees involved with hazardous materials will be trained in the use of safety equipment, spill prevention equipment and emergency response procedures.*
- *Hazardous materials will be stored and handled in accordance with applicable provincial and federal regulations, codes and guidelines.*
- *Storage of hazardous materials will not occur in environmentally sensitive areas, such as wetlands or watercourses. Hazardous material containers will be properly labeled in compliance with the requirements of WHMIS.*
- *Material Safety Data Sheets (MSDS) will be available for all hazardous materials in use or stored on-site.*
- *A Fuel and Hazardous Material Spill Contingency Plan has been developed below.*
- *Designated personnel will be trained in the procedures and responsibilities outlined in the Contingency Plan.*
- *All hazardous materials will be removed and disposed of in an acceptable manner in accordance with government regulations and requirements. Hazardous materials may be removed from the site by an appropriate special waste collection and disposal company.*
- *Contaminated materials will be separated from uncontaminated materials and disposed of at approved waste disposal facilities.*
- *Reduce the need for hazardous substances by substituting for less harmful ones.*
- *Incorporate appropriate preventative and response measures and construction practices.*
- *Providing environmental awareness training to contractors and workers involved in the Project. Training will include the handling, clean-up, reporting and disposal of contaminated material.*

- *Maintaining appropriate spill response equipment in a readily accessible location.*
- *Reporting all spills to applicable authorities (e.g., 24-hour emergency reporting system at the MOE Spills Action Centre (1-800-268-6060).*
- *The inspection of equipment (e.g., construction vehicles, exhaust systems) by the site personnel to ensure that vehicles with obvious fuel or oil leaks do not enter the project area.*

Best management practices prescribe the presence of spill kits on location and on the vehicles. Spill management procedures as outlined in the contingency plan will be followed when a spill occurs. Spill kits are mandatory on site. Any discharge will be cleaned immediately and authorities notified (e.g. OMNR, Department of Fisheries and Oceans).

Contingency and Response Plan

- *If it is safe to do so, the individual who discovers the leak or spill will immediately attempt to stop and contain the leak or spill.*
- *Any spill or leak must be reported immediately to the Construction Project Manager or designate.*
- *The Construction Project Manager will immediately report the spill to the MOE Spills Action Centre 24-hour Report Line (1-800-268-6060).*
- *A Spill Report Form will be filled out and will include:*

    - *a description of the source, including the name of the owner or operator;*
    - *the nature, extent, duration and environmental impact of the release;*
    - *the cause or suspected cause of the release;*
    - *any remedial action taken or to be taken to prevent a recurrence of the leak or spill;*
    - *The site Contractor will have the full authority to take appropriate action without unnecessary delay. The Spill Report Form will be filled out immediately following the discovery of the spill or leak, by the Contractor, and forwarded to the Environmental Monitor; Spill Reports will be made available to the OMNR upon request; and,*
    - *The Contractor will assume the overall responsibility for coordinating the clean-up and maintaining this contingency plan current and up-to-date.*

- *The Contractor will, in consultation with the regulatory authorities (if warranted):*
    - *deploy on-site personnel to contain the spilled material using a dyke, pit, or absorbent material;*
    - *assess site conditions and environmental impact of various cleanup procedures;*
    - *choose and implement an appropriate cleanup procedure;*
    - *deploy on-site personnel to mobilize pumps and empty drums (or other appropriate storage) to the spill site;*
    - *dispose of all contaminated debris, cleaning materials, and absorbents by placing in an approved disposal site; and take all necessary precautions to ensure that the incident does not recur; and,*
    - *The Contractor, with approval by the Environmental Monitor, will send a completed Spill Report Form to the OMNR, as soon as possible, and no later than 30 days after the spill.*

Spill Cleanup Resource List

During construction, the following resources will be available at an appropriate location in readiness to respond to accidental releases of fuels and/or hazardous materials:

- *Absorbent materials (i.e., sorbent pads, Sorb-All, peat moss);*
- *Small equipment such as shovels, rakes, tool kit, sledgehammer, buckets, stakes, tarpaulins, one empty drum, and protective equipment; and,*
- *Refer to the contact list of this EMP which contains the spill response information.*

5.3 Archaeological and Heritage Resources

Outline of Procedure

Archaeological/heritage resources are defined as known archaeological sites, designated historic sites, and heritage structures. These resources are considered important as they are recognized by the Province and form part of a collective body of information used to understand and define the Provincial heritage.

The geographical extent of any adverse effects will be the entire resource and adjacent areas associated with heritage resources that occur within the Project footprint. The magnitude of construction effects on unknown heritage resources will be high, as clearing and excavation activities will expose the resource. This effect will be immediate and irreversible. If unknown resources are encountered during either the construction or operation phase, they will be affected, and effects will be site-specific. However, the potential for significant loss of knowledge would be minimized through the initiation of a contingency plan for affected resources.

In addition to these resources, although much less likely, there is the potential for human remains to be encountered during construction. This plan will guide the Municipality and/or their contractors and subcontractors in how to respond in the event that a potential archaeological resource is encountered during construction activities.

Principal Environmental Concerns

These features represent a valuable cultural resource, and uncontrolled disturbance could result in loss of or damage to these resources and the information represented by them.

Environmental Management Measures

The following measures will be implemented to minimize the potential environmental or cultural effects in the event of the discovery of heritage resources

Preventing Archaeological and Heritage Resource Encounters

- *All areas containing known historic or archaeological resources will be avoided where possible, and will be flagged or otherwise clearly marked to indicate that the area has elevated archaeological potential and /or significance.*
- *All mechanized vehicles/equipment will remain within the existing site roads except where required for clearing and other construction activities. Vehicles and equipment will avoid areas marked as having elevated archaeological potential.*

Contingency and Response Plan

- *All work will cease in the immediate area of the discovery until such time as the Environmental Monitor, having consulted with provincial authorities, advises those involved as to the disposition of the discovery and authorizes a resumption of the work.*
- *Archaeological materials encountered will be reported to the Environmental Monitor with the following information:*
    - *nature of activity resulting in the discovery;*
    - *nature of the material discovered;*
    - *the precise location of the find; and*
    - *names of persons witnessing the discovery.*

All heritage resources, including archaeological objects and sites of archaeological or historical interest or significance discovered on the site, will be deemed to be the property of the Crown and will not be disturbed. All precautions will be taken to prevent employees or other persons from removing any artifacts or damaging sites, as personnel may be held liable by prosecution for all contraventions. All human remains will be reported directly to the local police.

5.4 Wildlife Encounters

Outline of Procedure

This program contains measures to minimize interactions that Municipal and Contractor personnel may have with wildlife during Project construction.

Principal Environmental Concerns

Encounters with wildlife may result in distress for both the animal and the employee. Serious injury could result to site workers in some instances. Threats to personnel include encounters with wildlife especially animals with young and rabid animals. Bites from any animals are potentially dangerous. Wildlife encounters have the potential to distress animals to the point of altering feeding and breeding behavior. Physical injury or death to wildlife could also occur.

Environmental Management Measures

Personnel Training

Personnel will be advised of the appropriate measures to use in the event of a wildlife encounter. Personnel will be instructed in the correct and sanitary method of garbage disposal in designated disposal locations; this will minimize wildlife encounters.

Prevention

The following waste disposal recommendations will minimize the attraction of wildlife:

- *Keep work area clean of food scraps and garbage.*
- *Transport waste to an approved landfill on a regular basis.*

Contingency and Response Plan

- *All personnel will report the presence of wildlife to the Construction Project Manager.*
- *When wildlife sightings are reported to the Construction Project Manager, the Construction Project Manager will initiate any reasonable action to reduce the chance of disruption or injury.*
- *Should disruption or injury to the wildlife occur, the Construction Manager will contact the on-call Conservation Officer.*
- *In the case of wildlife encounters in sensitive areas, and for consultation on appropriate action to be taken for any encounter, the Construction Manager will contact the on-call Conservation Officer.*
- *No attempt to harass wildlife will be made by any person at the work site.*
- *Equipment and vehicles will yield the right-of-way to wildlife.*
- *If dead animals are encountered (including birds or bats), they will be removed and disposed of, as soon as possible, in consultation with the local Provincial Wildlife Officer (or, in the case of a pet, the Ontario Humane Society). All handling of bird carcasses will be in accordance with the MBCA salvage permit. If Species at Risk ("SAR") species carcasses are found they will be sent to the Ontario Region Canadian Wildlife Service ("CWS") office with suitable permitting as advised by the Canadian Wildlife Service.*
- *In the case of encounters with injured or diseased wildlife at the work site (including birds or bats), the Construction Manager will contact the on-call Conservation Officer. No attempt will be made to harass the animal, and no person at the work site will come into direct contact with the animal.*
- *Injured birds and other wildlife will be transported to the Wild at Heart Wildlife Refuge Centre in Sudbury (11 White Rd. – Lively, ON Canada P3Y 1C3 - mail@wahrefugecentre.org – 705-692-4478) which has been operating for over 20 years as a non-profit and registered charity, has provided veterinary treatment and rehabilitation to wild animals that are orphaned, sick or injured, so that they may be reintroduced into the wild. The centre's volunteers treat up to 500 animals per year, including songbirds, raptors, shorebirds, waterfowl, small mammals, and orphaned large mammals.*

- *If an injured or dead bird or bat is encountered, the following information will be recorded: date and time it was found, injury sustained (if identifiable), cause of injury (if known), and species. This information will be kept on file for incorporation into the post-construction bird monitoring program.*

5.5 Fires

Outline of Procedure

Activities related to construction could result in a fire that could spread to the surrounding area. Alternatively, a fire started off-site could spread into the Project area. This Contingency Plan contains measures for fire prevention as well as response action plans.

Principal Environmental Concerns

Fires could result in terrestrial habitat alteration, and direct mortality of wildlife. Fire fighting chemicals and spilled materials could enter aquatic habitat and adversely affect biota and habitat. Fires also have the potential to adversely affect air quality and could pose risks to human health and safety.

Environmental Management Measures

The following measures will be implemented to minimize the potential for causing a fire and the potential environmental effects in the event of a fire.

Personnel Training

All persons working on the site will be trained in the use of on-site firefighting equipment, fire prevention and response.

Prevention

- *All flammable waste will be disposed of on a regular basis.*
- *There will be no smoking within 50 m of flammable product storage or usage. Areas for disposal of smoking material will be clearly posted.*
- *Firefighting equipment, sufficient to suit on-site fire hazards, will be maintained in proper condition and to the manufacturer's standards.*

Contingency and Response Plan

- *Notify nearby personnel.*
- *On-site personnel will take immediate steps to extinguish the fire using appropriate equipment.*
- *Notify the Environmental Monitor and Construction Manager.*
- *If the fire cannot be contained, contact the NEMI Fire Department at **9-1-1**.*
- *In case of related medical emergencies, emergency medical assistance will be requested from **9-1-1**.*

Decommissioning Program

The design life of the wind turbines is estimated to be approximately 30 years, but it is possible that the turbines could continue to operate at the same location after the design life either through major turbine overhauls or with the replacement of the turbines with newer models.

Should decommissioning become necessary, NPI would follow the standard industry accepted practices in effect at that time. Such practices include the removal of facilities, recycling of suitable materials (e.g., metal and parts), reuse of components and equipment in other facilities, conversion of buildings to other uses, and/or rehabilitation of the site areas. This would include the removal of the turbines bases to a depth of approximately 1 m or bedrock and backfilling with a final layer of top soil. Similarly, access road base material would be removed and the areas returned to their former state (e.g., agriculture on natural habitat).

Health and Safety Plan

The Project has been designed and will be constructed, operated and decommissioned using applicable standards and industry best practices. Equipment will be inspected regularly and maintained to prevent any potential health or safety issues.

Accidents and malfunctions with short-term impacts may occur. More serious impacts are considered to be highly unlikely.

6.0 ENVIRONMENTAL INSPECTION AND MONITORING

6.1 Bird Monitoring Program Overview and Mitigation Measures

Dillon completed numerous surveys between 2004-2008 for the purpose of documenting bird usage of the study area during all seasons. The specific target species or groups of these surveys and the methods used were the result of issues identified during a background information review and local knowledge of the area.

Overall, a total of 14 349 individual birds were observed during surveys, which were made up of 105 species. High numbers were observed for a select few groups including: landbirds (10 176 [70.8%]), and waterbirds (2 455 [17.1%]). The latter is primarily a result of high numbers of Ring-billed Gulls.

During spring bird surveys in 2005 and 2008, gulls and landbirds such as sparrows, crows, ravens and warblers made up the majority of species numbers. These species use both grassland and forest habitat and may be displaced by turbine placement. Additionally, a Sharp-tailed Grouse lek was identified in a field within the study site.

Breeding bird surveys in 2007 and 2008 revealed that forest habitats supported the greatest number of species in the study area. In woodland areas, among the most abundant species were Red-eyed Vireos, Song Sparrows, American Robins and Ovenbirds. In marsh areas, a few pairs of Sandhill Cranes were seen nesting, however this portion of Manitoulin Island does not appear to support the larger numbers seen outside of the study area. Little information is available to predict the effects of turbines on Sandhill Cranes, but it is anticipated that they will behave similarly to geese and waterfowl and will be fairly adaptable to the turbines if they are spaced widely apart.

During fall migration the largest numbers observed were flocks of American Pipits. These flocks were seen frequently during surveys foraging in fields and along roadways. A few other landbird species such as European Starlings, Red-winged Blackbirds and American Crows were also recorded in high numbers. No large migration of hawks in the project area was observed.

In the winter, approximately 300 individuals were recorded during survey studies. Although 15 species were reported, half of the individuals observed were Common Ravens and Black-capped Chickadees.

Species at risk or other conservation concern species observed in the study area did not occur in any significant numbers. Impacts likely to remain in some capacity include some potential for interaction between BCR 13 Open Country and Forest habitat birds. It is recommended that, where possible, construction occur outside of the core breeding period for birds in the area.

Mitigation Measures

The potential for effects on wildlife and wildlife habitat has been reduced through the siting of turbines away from sensitive habitat. Mitigation measures to be implemented were discussed with OMNR staff. From these discussions and as guided by the new Ontario Regulation 359/09 setbacks were developed.

A Setback has been provided for the following natural or sensitive feature:

- *30m Watercourse Setback;*
- *120m River/Stream Setback;*
- *55m Non Participating Lot Setback;*
- *55m Road Setback;*
- *120m Wetland Setback;*
- *120m Life Science ANSI Setback;*
- *305m Perch Lake Setback;*
- *550m Residence Setback; and*
- 150 m Unknown Stick Nests Setback

It is recommended that no vegetation clearing take place during the core breeding season of May 9 to July 23. If clearing does take place during this period, it is recommended that a qualified biologist conduct nest searches in areas to be cleared and identify nests, which require protection until young have fledged. Based on this nest search an appropriate buffer will be provided for each nest based on an initial determination by the biologist on site.

6.2 Bat Monitoring Program Overview and Mitigation Measures

Natural Resource Solutions Inc. ("NRSI") conducted bat monitoring on the McLean's Mountain study area in 2008 during late July and September. Additional monitoring was conducted in August 2009 to ensure overlap with peak periods of bat movement, for the fall season. The level of bat monitoring that was conducted was based on recommendations from Sudbury district MNR (2008) and the Espanola district MNR (2009). The total number of stations, including one elevated station, within the study area was also approved by local MNR staff.

Collection and review of background information on biological features of the study area and vicinity have occurred since work commenced in July 2008, and have continued until the completion of this report. Background collection and review included frequent reference to Natural Heritage Information Centre ("NHIC"), Species at Risk Act, and liaison with knowledgeable local naturalists and agency staff.

The proposed 2008 work program was submitted to Bruce Richard (MNR District Planner) and Jim Brinsmead (MNR Management Biologist) on July 17, 2008 by Caroline Walmsley (NRSI). Following review of this document and mapping, MNR Biologist Jim Brinsmead provided comments (dated July 28, 2008) on the work program, and suggested the number of monitoring nights and number of stations (7), including one station elevated to a height of 30m. On August 10, 2009 the proposed 2009 work program was submitted to Caleigh Sinclair (Espanola District MNR) by Caroline Walmsley (NRSI). Ms Sinclair provided comments (dated August 24, 2009) on the work program. These comments were taken into consideration by NRSI staff and the work programs were revised prior to the monitoring periods.

Based on the habitat and landscape features present within the study area and the placement of 7 monitoring stations, 3 radar stations and 7 point count locations, data collected by NSRI adequately characterizes bat populations and activity patterns within McLean's Mountain study area. Data has been collected in such a

way to allow for accurate comparison with post-construction monitoring results and easy study replication during the operational phase of this wind facility to determine the extent of impact.

Based on the results from the 2008 and 2009 monitoring period, the MMWF is found to have a relatively low level of bat activity.

Mitigation Measures

It is recommended that a 200 m buffer be placed around large water bodies which are expected to be an attractant to bats in the project area. As noted previously, additional August bat survey work will be conducted to meet MNR survey protocol requirements. Consultation with the MNR has already occurred regarding this. In addition to the 1 year of pre-construction bat monitoring that was conducted, the OMNR bat guideline document indicates that at least two years of post-construction monitoring will be required from May through September. NPI will enter into discussions with the OMNR regarding the need for post-construction mortality monitoring for bats for this project.

6.3 Species at Risk and BCR 13 Program Overview and Mitigation Measures

Outline of Procedure

Extensive fieldwork has confirmed that SAR occur in the project area, and historical records indicate the potential presence of several others. Mitigations (e.g. setbacks from natural features) have been implemented to reduce possible impacts to these species. However, some potential interaction with these species during and post-construction may occur. This section outlines measures to be implemented during construction and operation of the wind farm. Species at risk considered in the development of the program include:

- Houghton's goldenrod (*Solidago houghtonii*) Federally Special Concern, Provincially Threatened
- Blanding's turtle (*Emydoidea blandingii*) Federally and Provincially Threatened
- Massasauga rattlesnake (*Sistrurus catenatus*) Federally and Provincially Threatened
- Loggerhead shrike (*Lanus ludovicianus*) Federally and Provincially Endangered
- Canada warbler (*Wilsonia canadensis*) Provincially Special Concern
- Common nighthawk (*Chordeiles minor*) Federally and Provincially Special Concern
- Chimney swift (*Chaetura pelagica*) Provincially Special Concern
- Short-eared owl (*Asio flammeus*) Federally and Provincially Special Concern
- Golden-winged warbler (*Vermivora chrysoptera*) Federally Threatened, Provincially Special Concern

Other species, such as the 17 BCR 13 priority birds that were observed during fieldwork were also considered during the development of program. The implementation of this program during the construction and operational phases of the project will help mitigate mortality as well as track possible interactions with these species.

Principal Environmental Concerns

Species at risk as well as other sensitive species may be impacted by the construction and/or operation of the wind farm. These impacts vary depending on the species and their utilization of the study area. In some cases impacts may result in mortality (e.g. collisions) or displacement as a result of infrastructure placed in key habitat.

Houghton's Goldenrod

Though not observed during botanical surveys, the potential exists that individuals or colonies of Houghton's goldenrod may occur in the project area at planned turbine and access road locations and thus be disturbed or removed during construction. This species is usually found in damp or wet inter-dunal areas, and on alvar habitats that are flooded in the spring, but become dry through the growing season (COSEWIC 2005a). Though potential habitat exists for this species, the majority of areas with alvar characteristics have been disturbed through cattle grazing.

Blanding's Turtle and Massasauga Rattlesnake

Blanding's turtle was not observed at any point during fieldwork conducted from 2004-2008. Potential breeding habitat exists at Perch Lake and other small wetlands in the project area. (MNR has recent records for this species at Perch Lake). Blanding's turtles usually construct nests in loose sand and organic soil but may also use roadside gravel, and nests are usually constructed within approximately 400 meters of a water body. However, it is also recognized that Blanding's turtle is a mobile species and can disperse up to 7km from wetlands, though it is more likely to be found in closer proximity to wetland habitats (i.e. within 1km) (COSEWIC 2005b).

Massasauga rattlesnake was not observed at any point during fieldwork conducted from 2004-2008. Records for this species in the project area date from the mid 1980's, though the species is known to currently occur on Manitoulin Island outside of the Study Area (Eric Cobb MNR SAR Biologist, Personal Communication). Massasaugas can inhabit a wide variety of habitats but generally require open areas to bask for thermoregulation. Hibernacula are often located at damp or water saturated sites and massasaugas are known to associate with wetlands, particularly near river mouths (COSEWIC 2002).

In general, turbine locations and access roads will maintain a setback of 120m from wetlands, avoiding impacts to potential hibernacula and the potential nesting sites for herptile SAR during construction. A small number of planned turbines locations are within the 120m wetland buffer including turbine numbers 3, 6, 11, 17 and 39. In addition, a 305m setback will be provided for Perch Lake. The construction of access roads and turbines outside of wetlands/Perch Lake and their buffers will not impede corridor connections with other seasonal habitats. However, potential nesting along access road edges, dispersal and basking behaviours will likely still pose a risk to Blanding's turtle and massasauga rattlesnake during the construction and operational phases of the project.

Avian SAR and BCR 13 Birds

Concerns have been identified regarding potential mortality effects to SAR birds as well as the risk of disturbance impacts on the 17 BCR 13 priority species that were observed during fieldwork. Results show 8 forest species, 7 open country species and 2 marsh/water species BCR 13 bird species occur in the study area. A full list of the BCR 13 priority species observed in the Study Area can be found in Table 7 (p.28) of the

Bird Study Report, Appendix D in the ESR, and in Section 6.9 of the ESR. Additionally, species such as sharp-tailed grouse, upland sandpiper and Wilson's snipe have been identified as being susceptible to impacts due to their aerial flight displays.

Environmental Management Measures

Houghton's Goldenrod

Prior to construction, trained individuals will conduct a search for Houghton's goldenrod, during the month of August when this species is most easily identified (Eric Cobb MNR SAR Biologist, Personal Communication), in areas where appropriate habitat exists at proposed access road and turbine sites. This includes turbines 1, 4, 5, 9, 10, 13, 15, 16, 17, 19, 25, 26, 28, 31 and 32 and the access roads associated with these turbines. In the event that Houghton's goldenrod individuals are found on a road allowance or turbine site, options for mitigation will include, slightly modifying the proposed road or turbine location; in instances where moving an access road and/or turbines is unfeasible, NPI will apply for the appropriate permit under section 17, subsection 2, of Ontario's Endangered Species Act, 2007 to transplant affected individuals or collect seeds to establish plants at an alternate location that is agreeable to the MNR.

Blanding's Turtle and Massasauga Rattlesnake

Pre-Construction

Pre-construction surveys will be conducted at proposed access road and turbine locations in areas that contain potentially suitable hibernacula and nesting features. These habitat features would be most likely to be found at turbines 3, 6, 11, 17, and 39 which are located within the 120m wetland setback but could also include turbines 19, 27, 29, 31, 34, 40 and 41 which are all located adjacent to wetland or stream features but remain outside the 120m setback. In addition, sections of access roads planned for turbines 3, 6, 13, 21, 27, 29, 31, 34, 39, 40 and 41 cross or come close to wetland and stream features.

Pre-construction surveys for potential Blanding's turtle nest sites will include visual encounter surveys and terrestrial habitat searches adapted from the MNR's Wildlife Monitoring Programs and Techniques for Ontario document (Konze and McLaren 1997) and will occur during the first three weeks of June, when the species is breeding and most active in Ontario (COSEWIC 2005b). Guidelines developed by the Massasauga Recovery Team (2005) will be used to assess the presence of potential massasauga rattlesnake habitat features associated with the turbines identified above. Massasauga surveys will be conducted during late April to early May, as the snakes tend to spend much of their time basking near hibernacula sites and would be most conspicuous at this time.

In the event that active nesting sites or hibernacula are found in future road allowance or turbine site, options for mitigation will be considered including: moving the proposed road or turbine as feasible; or if moving access roads and turbines is unfeasible, applying for a permit under section 17, subsection 2 in Ontario's Endangered Species Act, 2007 and fulfilling obligations of this permit.

Construction and Operation

Fencing will be placed around turbine construction zones within 120m of wetland habitats to prevent herptiles from entering. In the event that a herptile SAR is observed in the construction zone and needs to be relocated, the MNR will be notified for direction. The stockpile of construction materials and equipment will be located in specific areas outside of the 120m wetland buffer zone.

Construction and maintenance workers will be educated in identification of Blanding's turtles and massasauga rattlesnakes and habitat areas with a higher potential occurrence of these species. Access roads will be used intermittently at low speeds by maintenance, environmental monitoring and operational personnel. Implementation of specially posted speed limits for construction and maintenance vehicles in areas within a specified distance of wetland habitats and the use of signage to alert personnel of the potential presence of these species will be implemented to further reduce the likelihood of negative impacts. Personnel will avoid handling herptile SAR and all instances of road kill will be immediately reported the MNR.

Avian SAR and BCR 13 Birds

Pre-Construction

Additional monitoring will be completed in the study area for common nighthawk and Wilson's snipe, prior to construction. Monitoring will consist of evening point count surveys between mid April to the end of May, where turbines are within 500m of appropriate habitat.

Construction and Operation

The majority of the concerns related to Avian SAR and BCR 13 birds are being monitored as part of the Avian Post-construction Monitoring Plan, which is appended. The following details information relevant to the operation of the wind farm.

Construction and maintenance personnel will be educated in the identification of SAR bird species that may occur in the Study Area, including which habitat these species prefer. Observations of these species during the operation of the wind farm will be provided to EC and the MNR as they occur.

Destruction and disturbance of active migratory bird nests (with eggs or young birds) as well as wounding and/or killing protected species, which includes the birds discussed above, is prohibited under the *Migratory Birds Convention Act (MBCA)* (1994) and the provincial *Fish and Wildlife Conservation Act* (1997). Vegetation clearing for the construction of the McLeans Mountain Wind Farm during the core breeding bird period could impact nesting birds, resulting in a contravention to the *MBCA, Species at Risk Act* and/or the *Endangered Species Act*. To protect birds and comply with relevant federal and provincial legislation, all vegetation removal should be completed outside of the bird-breeding season from May 9th to July 23rd. Although discouraged, any vegetation removal during this breeding period will require a nest search by a qualified Avian Biologist prior to clearing the area. Nest discovered will receive a protective buffer zone.

In general, if bird SAR are discovered nesting close to turbines or if observed mortality impacts for any avian

SAR are found to occur, EC and the MNR will be consulted to establish the appropriate mitigative responses. The potential need for operational modifications can be discussed with the MNR and will be considered on a turbine by turbine basis, based on areas of concern identified through existing knowledge at the time and as deemed economically feasible. Actions taken in response to the mortality of a SAR or other sensitive species identified above will depend on species involved, behaviour implicated (migration, foraging etc.) and geographical extent of the observed mortality, as agreed upon by the relevant agencies.

6.4 Post-Construction Monitoring for the McLean's Mountain Wind Farm

NPI has prepared a post construction avian and bat monitoring program, which is provided in Appendix 4. Environment Canada/CWS and the Ontario MNR will be consulted regarding the scope of the program.

Terrestrial Habitat/Wildlife

Terrestrial habitat/wildlife in the area could be affected through disturbance effects from the operation of heavy equipment in the area. As the study area is actively farmed, it is expected that many species have become adapted to the operation of heavy machinery. Nevertheless, NPI will take reasonable measures to ensure that construction equipment is kept in good working condition and that excessive noise and air emissions from machinery is avoided.

Accidental spills could also affect habitat. NPI will be required to ensure that should a spill of a hazardous material occur (e.g. fuel), that the spill would be quickly responded to as per the requirements of the Spills Contingency Plan.

Any replanted and reclaimed areas will be inspected one year after their planting to ensure that they are established.

Aquatic Habitat/Surface Water

It is expected that monitoring activities relating to aquatic habitat will be confirmed through the ongoing permitting process with the MNR and DFO. The monitoring of aquatic habitat will occur at different levels. During construction, NPI will ensure that the watercourse is crossed in an appropriate manner and that committed mitigation measures (e.g. erosion/sediment control) are being implemented and are effective. Some water quality sampling may be undertaken to ensure the effectiveness of the implemented measures. Weather conditions will be monitored to ensure that watercourses are being crossed at appropriate times so as to avoid in-water works during high flow events as much as feasible.

Site rehabilitation measures such as vegetation plantings in the riparian zone and fish habitat compensation measures (if required) will be monitored to ensure that they have been implemented correctly and inspected after the following year spring melt period. Corrective action will be taken should the rehab works not be effective.

All culverts will also be inspected on a frequent basis during construction to ensure that they are conveying

water flow and not resulting in upstream flooding (either through blockage from debris or because of their under sizing).

Pasture Land

Potential effects on pasture soil as a result of the project include: soil compaction, increased stoniness soil subsidence after trench refilling and soil erosion. The movement of construction equipment such as the erection cranes has the potential to compact soils in pasture areas. Soil compaction will be monitored and where necessary it will be decompacted. Trench areas will be monitored for excessive stoniness and soil subsidence. Stones may need to be removed and additional soil added to some sections of the refilled trench. The Class of this land is expected to be below Class 3.

Areas that have had topsoil removed and then replaced will be inspected to ensure that topsoil/sub soil layer mixing has not occurred. Through sampling, if soil mixing has occurred, appropriate measures will be put in place to correct this.

Construction Disturbance Effects

During the construction period, there is the potential for disturbance effects such as a noise and dust. It is expected that standard construction practices will minimize these effects as much as feasible. NPI will advertise in the community a contact number should residents wish to voice a complaint regarding the construction process and/or to obtain more information. NPI will respond to these calls and address the problem.

Roads

The use of local roads by the construction equipment has the potential to affect the road bed/condition. The roads will be returned to their preconstruction condition. The roads will be monitored after heavy rain events during the construction period and road repairs made if required. This will include new access points and roadside drain crossings.

Community Liaison and Follow-up

NPI will provide information releases to the community if new issues arise or if the community has specific concerns. Company representative contact information will be available to the public to address concerns and questions during operations. Stakeholder consultation and communications activities going forward could potentially include:

- *Project update bulletin or bulletins as required, mailed or hand-delivered to keep area residents apprised of the progress of construction, dates and timings of any traffic disruptions connected with the project and any other matters that may affect or be of interest to area residents and other project stakeholders;*
- *Creation of a Community Benefit Fund, whereby landowners and community member will have input into funding priorities;*
- *Newspaper notices regarding traffic disruptions and construction timings of interest;*
- *Personal consultations as requested or if warranted by project activity;*
- *Meetings with municipal and other local and provincial government authorities;*
- *NPI may hold another community public information centre to present the final proposed transmission line route if required; and*
- *Ongoing consultations and meetings with project landowners.*

7.0 KEY CONTACT LIST

The following section lists key organizations and/or individuals that may be contacted during emergency situations and regarding regulatory issues, followed by the Project Contact List. This list will be posted in the base of each turbine, and it will be carried by maintenance personnel during the operation phase of the project.

Agency	Area	Phone Number
Emergency Contacts		
Ambulance/Police/Fire/Rescue		**9-1-1**
RCMP/OPP		**9-1-1**
Regulatory and Municipal Contacts		
Ontario Ministry of Environment	Paula Allen Environmental Planner/ EA Coordinator Ministry of the Environment 199 Larch Street, Suite 1201 Sudbury ON P3E 5P9	705-564-3273
Ministry of Transportation Ontario (MTO)	Sudbury 159 Cedar Street 5th Floor, Suite 503 Sudbury, ON P3E 6A5	705-564-7722
Association of Worker's Compensation Board of Canada	Customer Liaison Officer	905-542-3633
Department of Fisheries and Oceans	Fisheries and Oceans Canada Ontario Area 867 Lakeshore Road	905-336-4595

	Burlington Ontario L7R 4A6	
Environment Canada (EC) / Canadian Wildlife Service (CWS)	Bird / Bat Conservation Officer	1-800-668-6767
Ministry of Natural Resources (OMNR)	Ms. Caleigh Sinclair Espanola District Office Ministry of Natural Resources 148 Fleming Street, 2nd Floor Espanola, ON, P5E 1R8	705-869-1330
Environmental Emergencies and Spills		
Local Hospitals with Emergency Services	Sudbury Regional Hospital 700 Paris Street, Sudbury, ON, P3E 3B5	1-866-469-0822
MOE Spills Action Centre	24-hour Report Line	1-800-268-6060
Project Contacts		
Development Manager	**TBD**	
Environmental Monitor	**TBD**	
Site Supervisor	**TBD**	
Construction Manager	**TBD**	

8.0 REFERENCES

Cadman, M.D., D. A. Sutherland, G. G. Beck, D. Lepage, and A. R. Couturier. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature. 728 pages.

COSEWIC 2002. COSEWIC assessment and update status report on the massasauga *Sistrurus catenatus* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 23 pp.

COSEWIC 2005a. COSEWIC assessment and status report on the Houghton's goldenrod Solidago houghtonii in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 17 pp.

COSEWIC 2005b. COSEWIC assessment and update status report on the Blanding's Turtle Emydoidea blandingii in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. viii + 40 pp.

Environment Canada. 2007. Wind Turbines and Birds: A Guidance Document for Environmental Assessment. Final Report. February 2007.

Konze, Karl and McLaren, Margaret. 1997. Wildlife Monitoring Programs and Inventory Techniques for Ontario. Ontario Ministry of Natural Resources. Northeast Science and Technology. Technical Manual TM-009. 139 pp.

Massasauga Recovery Team. 2005. Guidelines for Identifying Significant Habitat, and Significant Wildlife Habitat, for the Massasauga in Eastern Georgian Bay and Bruce Peninsula Populations, Ontario. Version 1.0 – July 2005.

Stantec. 2008. Post-Construction Follow-up Plan for Bird and Bat Resources for the Wolfe Island Wind Plant (the "Plan"). Final Draft Report. Report developed among Canadian Renewable Energy Corporation, Environment Canada, Natural Resources Canada, Ontario Ministry of Natural Resources and Ducks Unlimited Canada. November 2008.

APPENDIX 1: ENVIRONMENTAL CHECKLIST

Project Number**:**	Project Name:		
Environmental checklist			
Originated by: Name	Organisation	Date	

1	**Existing Conditions**	**Y**	**N**	**N/A**
1.1	Are areas of contaminated land being protected/remediated properly?			
1.2	Are all underground services identified and excavation permits used?			
1.3	Have existing storage tanks been checked and safely emptied?			
1.4	Is the site reasonably protected from vandalism and dumping?			
1.5	Are procedures in place to prevent fires on site?			
1.6	Are all survey monuments protected?			
1.7	Are existing communication lines protected?			
1.8	Are land improvements further than 500 yards from water tanks?			
1.9	Is Archaeological Monitoring being carried out in accordance with the requirements of the "Cultural Resources Construction Monitoring and Construction Plan"			
2	**Site Drainage**			
2.1	Is surface and foul water drainage independent and identified?			
2.2	Is there sufficient surface water drainage?			
2.3	Are pad sites rehabilitated for drainage?			
3	**Deliveries**			
3.1	Are material deliveries being correctly supervised?			
4	**Storage**			
4.1	Are all static fuel and oil storage units located in suitable bunds?			

4.2	Are all fuel bowsers bunded or double-skinned?			
4.3	Are all fuel bowsers secured in sensible locations?			
4.4	Is all subcontractors work, plant and materials secure?			
4.5	Are all chemicals stored in accordance with the material data sheets?			
4.6	Is fuel delivery manual and are all valves locked when not in use?			
4.7	Do all tanks display their contents and other warning notices?			
4.8	Is a competent contractor removing all storage tanks off site?			
5	**Waste Management**			
5.1	Is waste being stored in designated areas away from watercourses?			
5.2	Are all skips on site covered and being replaced when full?			
5.3	Is all waste being disposed of quickly and correctly?			
5.4	Is "special waste" being identified and disposed of correctly?			
5.5	Are copies of consignment notes being kept in the job book?			
5.6	Are all fuel/oil leaks properly removed?			
5.7	Has sewage been properly disposed in portable toilets?			
6	**Earthworks**			
6.1	Does excavation drainage prevent silty water reaching watercourses?			
6.2	Are temporary stockpiles protected from silt/dust loss?			
6.3	Are roads being kept free of excess mud or dust?			
6.4	If silty water exists is it being treated prior to meeting a watercourse?			
6.5	Are excavated and demolition materials being re-used?			
6.6	Are all blasting activities being adequately controlled?			
6.7	Are the requirements of the SWPPP being followed?			
6.8	Are the requirements of the Pollutants Discharge Elimination Systems permits being followed?			
6.9	Are the requirements of the Temporary Air Quality permits being met?			
7	**Plant**			

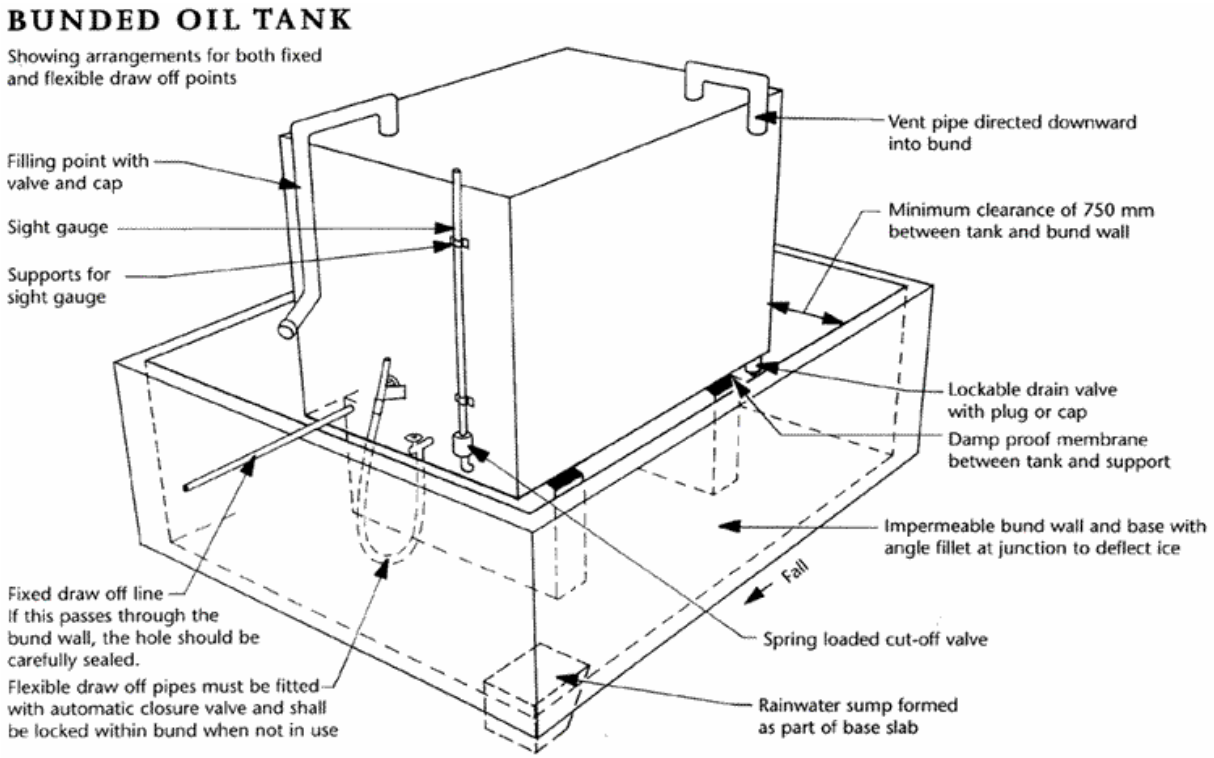
7.1	Is refueling of plant taking place in a clean and controlled way?			
7.2	Does all site plant appear to be in good condition and free from leaks?			
7.3	Is plant servicing taking place over a well-maintained drip-tray?			
7.4	Are plant operators aware of the sites environmental responsibilities?			
8	**Concrete**			
8.1	Are concrete trucks washing out in the agreed locations?			
8.2	Is cement or mortar being allowed to enter watercourses?			
8.3	Is site batching in accordance with the agreed method statement and permits?			
8.4	Are the requirements of the sand and gravel permit being met?			
9	**Emergencies**			
9.1	Is site personnel trained and able to perform emergency procedures?			
9.2	Are the relevant environmental emergency numbers widely posted?			
9.3	Are there adequate fire precautions in operation?			
9.4	Has Owner been notified of any Emergencies within 24hrs?			
10	**Wildlife**			
10.1	Is wildlife protected from becoming trapped/injured in the works?			
11	***Site Restoration and Reclamation***			
11.1	Are areas disturbed by construction being kept to a minimum?			
11.2	Has a site reclamation plan been agreed for all construction facilities?			
11.3	*Are there measures to stop introduction and spread of noxious plants?*			
11.4	*Has the use of pesticides complied with Applicable laws?*			
12	***Installation***			
12.1	*Are all leaks being promptly repaired?*			
12.2	*Has all work met proper requirements?*			
13	***Final Job Book***			

13.1	Is the Job Book being developed during the construction period?			
14	***Personnel Reprimands***			
14.1	Has personnel been reprimanded for failure to comply with above?			

N.B. If the answer to any of the questions on the previous page are "No," then please confirm what further preventative measures will be taken to prevent any environmental problems from occurring. Should any environmental concerns specific to the site not be covered in the above document please detail the steps necessary to mitigate possible problems, below.

APPENDIX 2: FUEL AND OIL STORAGE (STATIC REFUELING POINT)

The required arrangement for a static refueling point is shown below:



Bund design for storage tanks of up to 25m^3 capacity can be found in a report produced by the Construction Industry Research and Information Association (CIRIA):

CIRIA Report 163 "Construction of bunds for oil storage tanks" ISBN 0 86017 468 9

APPENDIX 3: SUMMARY OF EMERGENCY SERVICES

(to be developed prior to Construction)

APPENDIX 4: AVIAN MONITORING

Avian and Bat DRAFT Post-Construction Monitoring Plan: McLeans Mountain Wind Farm, Northland Power Inc.

Renewable Energy Approval (REA)
Draft Submission Package

January 18, 2010

09-1983

Submitted to:

Northland Power Inc.

Submitted by

Dillon Consulting Limited

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1.0 INTRODUCTION

Northland Power Inc. (NPI) 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. This wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity. Based on the REA Regulations, we understand this project to be a "Class 4" wind facility. The project area covers approximately 8,200 hectares, which is illustrated in **Figure 1,** along with the proposed wind farm layout. The project location is largely rural in nature with the major land cover being pasture and forest.

The major project components include:

- VESTAS V90 – 1.8 MW Wind turbines;
- 690V /34 kV step up transformers (located in the nacelle of each turbine);
- 34 kV collection system to link the wind turbines to the substation. While these lines are expected to be primarily above ground there may be sections of the line where buried cables would be preferable. The buried cable would extend out from the base of the wind turbine tower for a minimum distance of 50 meters. This would be determined in the final design for the project);
- Substation (to step up the electric output from 34 kV to 115 kV);
- A 10.3 km, 115 kV single circuit transmission line;
- A switching station at the point of connection with the provincial grid;
- Turbine access roads;
- Four (4) meteorological towers (which are already installed and operating);
- Staging areas for assembly of wind turbines, only during construction; and
- A temporary concrete batch plant (only required if concrete cannot be sourced through local suppliers)

With a total of 43 - 1.8 MW VESTAS turbines, the wind farm will have an installed capacity of 77 MW.

In developing this post-construction monitoring plan, protocols outlined in several guidance documents provided by Environment Canada (EC) and the Ministry of Natural Resources (MNR) were consulted including:

- *Wind Turbines and Birds – A Guidance Document for Environmental Assessment* (EC 2007a);
- *Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds* (EC 2007b);
- *Wind Turbines and Birds – A Background Review for Environmental Assessment* (EC 2007c);
- *Guidelines to Assist in the Review of Wind Power Proposals – Potential Impacts to Birds and Bird Habitats* (MNR 2006a);
- *Wind Turbines and Bats: Bat Ecology Background Information and Literature Review of Impacts* (MNR 2006b); and,
- *Guidelines to Assist MNR Staff in the Review of Wind Power Proposals – Potential Impacts to Bats and Bat Habitats* (MNR 2007).

This draft plan has been designed by NPI to evaluate the accuracy of the predicted environmental impacts on birds and bats and to meet requirements set out in both the *Canadian Environmental Assessment Act*, and Regulation 359/09. EC and the MNR are being consulted to confirm this monitoring strategy. Once their input is received, this plan will be finalized.

Kerns *et al* (2005), Erickson *et al* (2003) and Stantec (2008a) were also consulted in developing statistical analysis methods for searcher efficiency, carcass removal testing and calculation of corrected fatality counts.

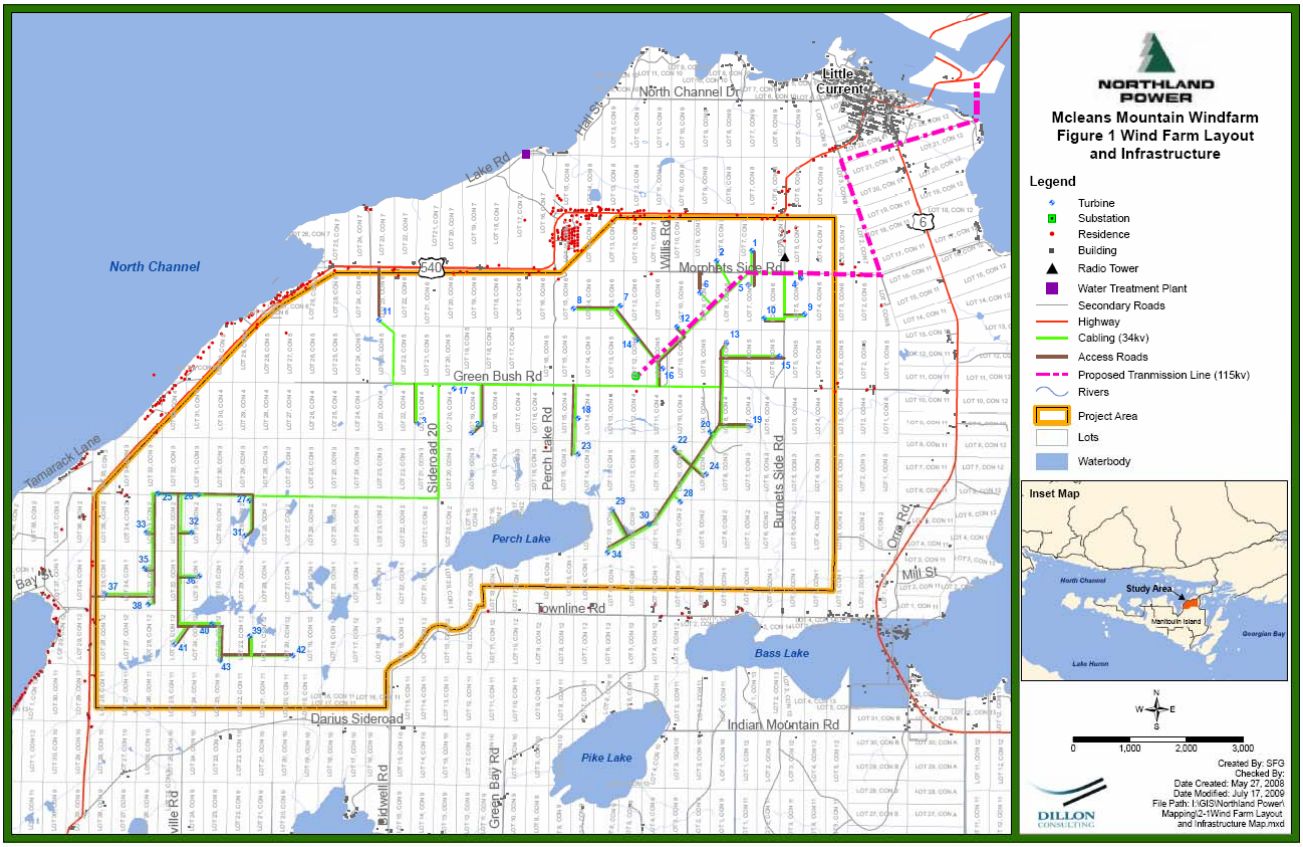


Figure 1: McLeans Mountain Wind Farm Layout/Project Area Location.

1.1 Project Area Features Relating to Birds and Bats

The project area is located close to the north shore of Manitoulin Island (closest turbine is about 1.5 km away from the shore) and the North Channel of Lake Huron, which separates the Island from the Ontario mainland. The Manitoulin Island North Shore Important Bird Area (IBA) is located to the northwest of the Project, with a portion of this IBA overlapping the west end of the Study Area. This IBA is well known as a migration staging area for waterbirds, particularly red-necked grebes during the fall and early winter. Despite the location of this IBA nearby, low numbers of waterbirds have been observed during migration field surveys in the Study Area and this group of birds is considered to be at very low risk of suffering impacts. In addition to the nearby IBA, several Species at Risk have been recorded breeding in the Study Area including loggerhead shrike, common nighthawk and Canada warbler. Due to the proposed size of the wind farm and the historical occurrences of breeding Species at Risk, the Project has been determined to have a Very High sensitivity with regards to birds and has been assigned a Category 4 Level of Concern based on criteria provided by EC (EC 2007a).

The project area has been assigned a Sensitivity Rating of 3 (High) in relation to bats, based on criteria provided by the MNR (MNR 2007). The major concern for the project area is the proximity to the North Channel shoreline, the presence of a forested ridge feature and the potential for these features to concentrate migrating bats. The closest turbine to the North Channel shoreline is approximately 1.5 km away.

Details of bird and bat pre-construction surveys are provided in sections 6.6 and 6.7, and Appendices D and E, of the Environmental Study Report (ESR) respectively (part of the current Renewable Energy Approvals (REA) Package). As stated in these sections, the expected level of impact to all guilds of birds and bats, after protection and mitigation measures have been implemented, is considered to be low. A list of setbacks protecting sensitive natural features and habitats is provided in Table 1, Item 1 of the concordance table outlining project fulfilment of REA requirements.

Concerns that have been identified and will require specific monitoring include:

- Potential mortality effects to birds and bats in the project area (ESR Sections 6.6.2 and 6.7.2).
- Potential risk of disturbance impacts to the 17 BCR 13 priority species that were observed during fieldwork in the Study Area (which includes 8 forest species, 7 open country species and 2 marsh/water species) and other sensitive species occurring, including sharp-tailed grouse, upland sandpiper and Wilson's snipe. A full list of the BCR 13 priority species observed in the Study Area can be found in Table 7 (p.28) of the Bird Study Report, Appendix D in the ESR, and in Section 6.9 of the ESR.

Species or groups that were determined to be of limited concern, and therefore not requiring specific monitoring, include:

- Fall migration of raptors, waterbirds and sandhill cranes (ESR Sections 6.6.2).
- Species at Risk not observed during surveys including short-eared owl and golden-winged warbler; Canada warbler, common nighthawk and chimney swift, which were rarely observed; and loggerhead shrike which was historically observed in 1999 and 2000 (ESR Section 6.9).

Because large wind farm facilities are a relatively new addition to Ontario's infrastructure, large datasets with multiple years of study relating to environmental impacts do not exist to inform the accurate prediction of impacts. To address this uncertainty an adaptive monitoring and management plan has been developed. In the event that unexpected negative impacts occur, employment of this plan will allow for flexibility in the operation of the wind farm in an attempt to reduce these negative impacts and the likelihood of their future occurrence.

2.0 PROJECT TEAM

Table 1: Post Construction Environmental Monitoring Team

Staff	Role
Don McKinnon	Dillon Consulting Limited – Project Manager
Michael Enright	Dillon Consulting Limited – Natural Environment Coordinator
Dave Restivo	Dillon Consulting Limited – Field Ornithologist
Richard Baxter	Dillon Consulting Limited – Field Ornithologist

Don P. McKinnon MES, MCIP –is an Associate and Senior Environmental Planner at Dillon with over 19 years of experience. Don has worked in many parts of Canada and internationally, and has extensive experience with Environmental Assessments. Don has direct experience in the preparation of EIAs for wind power project facilities having been involved in more than ten wind farm projects.

Michael Enright, BSc. (Hons) - is a Terrestrial Biologist with fourteen years of education and professional employment in the biological sciences. During this time, Michael has acquired an in-depth knowledge of natural systems and their protection under the various levels of the legislative framework. He has been involved in numerous Environmental Assessments and developed environmental solutions for multi-disciplinary projects. Michael has been the Project Manager or environmental coordinator for nine wind energy projects.

David Restivo, BSc. (Hons), CEPIT - is a Biologist with over five years of professional experience conducting biological assessments including avian surveys. Prior to working with Dillon, David worked with Bird Studies Canada conducting migration monitoring studies on the shores of Lake Erie. David has been involved in avian surveys for three wind power projects.

Richard Baxter, BSc. - is a Biologist with over three years of professional experience conducting biological assessments including avian surveys. Prior to working with Dillon, Richard worked with Ducks Unlimited Canada as a Biological Technician, the University of Alberta as a Research Assistant on a cavity nester study and with Bird Studies Canada conducting migration monitoring studies on the shores of Lake Erie. Richard has been involved in avian surveys for four wind power projects.

3.0 POST-CONSTRUCTION MONITORING PLAN

3.1 The Need for Monitoring - Bird and Bat Mortality at Wind Farms in North America

Birds

Data available from studies of wind farms in North America indicate that the number of passerine birds killed due to blade strikes is not numerically significant in terms of population effects. Estimates of total passerine fatalities from a review of 14 studies of North American wind farms vary considerably, however on a per turbine and per MW basis, fatality rates are similar (Arnett et al 2007). Annual fatality rates ranged from 0 at a Searsburg, Vermont wind farm (Kerlinger 1997 *in* Arnett et al 2007) to 11.7 birds/MW/year at Buffalo Mountain, Tennessee (Nicholson 2003 *in* Arnett et al 2007). Most studies indicate that passerine fatalities occur throughout the wind farm facility, with no relationship to specific features within the facility. In general, fatalities occur throughout the year but are most common from April to October (Arnett et al 2007). It appears that certain seasons pose a higher risk to birds at specific facilities; for example spring migration at Buffalo Ridge, Minnesota (Johnson et al 2002 *in* Arnett et al 2007) and fall migration at Stateline, Washington (Erickson et al 2004 *in* Arnett et al 2007).

The highest recorded raptor fatality rates relating to wind power facilities have occurred in California at a few specific sites that were designed and constructed with little thought given to impacts on avian resources. Outside of California, studies of 14 newer generation wind farm facilities in North America indicate that the mean fatality rate for raptors was 0.03 raptors per turbine and 0.04 raptors per MW. These studies occurred over at least a one-year period and included correction for scavenging and searcher efficiency (Arnett et al 2007).

Several studies on wind farms in Ontario have been performed which can provide more area specific context for the McLeans Mountain Wind Farm project. James (2003) reported finding 3 bird carcasses in association with the single turbine present near the Lake Ontario shore at Pickering, with monitoring conducted throughout 2002. James and Coady (2004) reported finding 2 bird carcasses in association with the single turbine present at Exhibition Place in Toronto, over 11 weeks of monitoring during the spring and fall of 2003. James (2008) estimated a range of 0.41-2.6 native birds/turbine/year at the 66 turbine Erie Shores Wind Farm near Port Burwell. For the Erie Shores project, all but 4 individual turbines had estimates of below 1 bird/turbine/year. For raptors a mortality estimate of 0.04 raptors/turbine/year was

observed at Erie Shores. Natural Resource Solutions Inc. (2008a) estimated an annual mortality rate for birds at 0.39 birds/turbine (0.26 birds/MW) at the 126 turbine Prince Wind Power Project (Stantec 2008a). Stantec Consulting Ltd (2008b) estimated an annual mortality rate for birds at 1.4 birds/turbine (0.9 birds/MW) at the Melancthon 1 Wind Plant, based on 12 weeks of post construction monitoring during the spring and fall of 2007 (Stantec 2008a).

Bats

Large numbers of bat fatalities have been reported at some wind energy facilities in North America. In general, bat fatalities at wind farms are higher than at other man made structures. Estimates of bat fatalities from 21 studies located at 19 wind farms in North America range from 0.9-53.3 bats/MW/year. The highest bat fatality rates have been found to occur near forested ridges. Bat fatalities appear to be higher in late summer and early fall, with migratory species like hoary bat, eastern red bat and silver haired bat being most susceptible. Bat activity and associated wind farm mortality appear to be higher on nights with low wind speeds (Arnett et al 2007).

3.2 Methods

Post-construction monitoring for birds and bats will be done concurrently to improve efficiency of fieldwork. Therefore, the methods outlined below are designed to address both faunal groups. The work being proposed will be refined through consultation with Environment Canada and the MNR. The current program as present herein is designed to monitor the most sensitive seasonal periods for each species or group of concern as identified in the ESR, including:

- Bird and bat mortality monitoring through spring, summer and fall, due to the possibility of mortality resulting from wind farm operation.
- Disturbance effects monitoring for BCR 13 priority species and other sensitive species due to the potential for disturbance to forest and open country species.

Personnel conducting fieldwork will be skilled at identifying all species birds, both by sight and sound, and all species of bats by sight, that are likely to occur in the project area. Detailed monitoring methods, including duration and frequency, are outlined below. See **Table 2** for a summary of proposed post construction monitoring effort.

3.2.1 Bird Mortality Monitoring

As this project has been assigned a Category 4 Level of Concern in relation to birds according to EC's guidance criteria, it will be subject to the highest level of effort to assess environmental effects. Surveys will include two years of carcass searching and post-construction mortality monitoring around turbines during the spring migration period (6 weeks from the last two weeks of April through to the end of May), the summer breeding season (a 6 week search period from

the beginning of June to mid July) and the fall migration period (an 8 week search period from early September to late October).

Protocols used to perform carcass searches will follow those set out in EC's *Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds* (EC 2007b). Carcass searches will be performed by trained technicians, under the guidance of an experienced biologist, and will be limited to open areas such as access roads and turbine pads, within 80 m of the turbine base. As this is a large project, a subset of one third of the 43 turbines will be selected for each sampling event (groups of 14, 14 and 15). The subset of turbines will be rotated every two weeks so that each turbine will be sampled at least twice per week during each two week sampling period. Subsets of turbines will be spread throughout the Study Area, rather than selecting closely grouped turbines, to ensure adequate geographic coverage.

For each carcass found, the following data will be recorded: date and time, state of decomposition, extent and type of injury, species if possible, distance and direction from the turbine, GPS location of carcass and substrate on which the carcass was found. Information will also be gathered for wind speeds and direction on each night preceding searches, extending to the last search event.

Scavenging Rate Trials

Scavenging rate trials will be performed to estimate the proportion of carcasses that were scavenged before the search period. Trials will be conducted twice during each season in each monitoring year, and will use native species that are freshly dead or frozen (and were freshly dead prior to being frozen). Carcasses will be laid out in a search area with their location marked by GPS in advance of a search being conducted. Technicians will wear gloves to avoid getting human scent on the test specimens, which could bias results. Carcasses can be laid out in varying time intervals before a search, or can be resurveyed multiple times to test for carcass persistence. Carcasses should be laid out for trials at each turbine that will be searched, with a small number used (1 to 2 specimens) at each site. Carcasses should be distributed on substrates in proportion to the availability of these substrates. Scavenger trials will be repeated during each survey year, as efficiency of scavengers may change among years. Presence or absence of scavenging, and degree of scavenging if present, will be recorded for trial specimens.

The rate of carcass removal by scavenging will be calculated using the following equation:

$$R_s = (n_{visit1} + n_{visit2} + n_{visit3})/ (n_{visit0} + n_{visit1} + n_{visit2})$$

Where:

R_s = Rate of scavenging
n_{visit0} = Number of carcasses originally placed
n_{visit1} - n_{visit3} = Number of carcasses remaining on visit 1 through 3

Searcher Efficiency Trials

Because individual surveyors will have different search success rates, searcher efficiency trials will be conducted once per year as required by EC's guidelines. Each searcher will be tested and if survey personnel changes, searcher efficiency trials will be repeated as needed. Carcasses will be laid out in random locations at a search location on the night before a search period and will have their location marked by GPS. A small number will be used (1 to 2 specimens) for a test at various locations; however overall at least twenty carcasses should be used over each season Native species will be used in searcher efficiency tests so that searchers are not aware that they are trial specimens. The date, time and location that test specimens were planted will be recorded, as will the date it was searched for and whether or not it was retrieved. The condition of the carcass when it was retrieved will also be recorded.

The following equation will be used to calculate searcher efficiency:

$E_s = C_f/C_p$

Where:

E_s = Searcher efficiency
C_f = Carcasses found
C_p = Carcasses placed

Calculating corrected number of bird and bat fatalities will then be done using the following formula:

$C = c/[(E_s)(R_s)(P_s)]$

Where:

C = Corrected number of carcasses
c = Number of carcasses found
E_s = Searcher efficiency
R_s = Rate of scavenging
P_s = Percentage of area searched

3.2.2 Bat Mortality Monitoring

As the project area has been assigned a Sensitivity Rating of 3 (High) according to the MNR's *Guidelines to Assist in the Review of Wind Power Proposals – Potential Impacts to Bats and Bat Habitats* (MNR 2007), at least two years of post-construction monitoring will be required from May to September to assess impacts to bats. The major associated risk for the project area is the proximity to the North Channel shoreline and the presence of forested Niagara Escarpment ridge features, which may concentrate migrating bats.

Bat mortality monitoring will be conducted, as is recommended in the MNR's *Guidelines to Assist in the Review of Wind Power Proposals – Potential Impacts to Bats and Bat Habitats*

(MNR 2007) and using the same protocol as listed above for bird mortality monitoring. Bat mortality data will be collected along with bird mortality data using the same methods, to improve efficiency.

Any bats encountered outside of the sensitive seasons of late summer and early fall (i.e. spring, early summer) will also be collected and recorded.

During carcass searches, technicians will use protective gear (gloves, tools etc.) and ensure that they have updated rabies pre-exposure vaccination. Biological waste will be disposed of in a way that will not pose a risk to public or environmental health, and that will comply with appropriate legislation. Mortality monitoring can be focused on turbines that are in close proximity to landscape features that are likely to concentrate bats (e.g. riparian areas, larger woodlots and buildings). For example, pre-construction monitoring found the highest bat passage rate near the monitoring station BAT-004 in the north of the Study Area, on Greenbush Road east of Side Road 20, which was located along the fence line of an oldfield/wetland area with trembling aspen, shrubs and grasses. This monitoring station was also located south of the forested ridge feature in the Study Area (NRSI 2008b).

3.2.3 Disturbance Effects Monitoring

3.2.3.1 BCR 13 Priority Species and Sensitive Species Monitoring - Forest and Grassland Species

It is likely that some forest and open habitat (grassland/pasture) will impacted as areas are cleared for turbines and there is the possibility that some BCR 13 priority birds as well as other sensitive species (e.g. sharp-tailed grouse) may experience some displacement depending on the proximity of their habitat to the turbines. Appendix A of this report summarizes BCR birds and species at risk observed in the Study Area and their location relative to turbines within 500m of the observation. Environment Canada has also indicated specific concern with respect to the removal of interior forest habitat and Canada warblers.

Post construction monitoring will include breeding surveys of open and forested habitats at select turbines to assess displacement of the above species. Paired ten-minute point counts will be used at each turbine with each point count being located at a specified distance from the turbine (e.g. 100m and 300m). Point counts will record birds in distance bands of 0-50m and 51-100m from the station.

Monitoring possible effect of the sharp-tailed grouse lek observed in the study area will be conducted in April at sunrise. Observations will collect behavioural information and number of individuals to assess concerns surrounding the possible displacement of this species.

Monitoring of other species identified as a concern and observed during surveys (e.g. common nighthawk and Wilson's snipe) are being monitored during additional pre-construction activities, which are summarized in Section 6.3 of the Environmental Management Plan.

3.2.3.2 Species at Risk

Construction and Operational staff will be made aware of the potential for occurrence and identification of avian SAR and any future observations of these species in the Study Area will be communicated to the MNR and EC. Species to be aware of include Canada warbler, loggerhead shrike, common nighthawk, short-eared owl, golden-winged warbler and chimney swift.

Table 2: Post Construction Monitoring Summary for Birds and Bats.

Monitoring	Timing	Sampling Protocol	Sampling Frequency
Spring Migration: Bird and Bat	Last two weeks of April to the end of May	Sunrise carcass searching/mortality monitoring	Twice weekly
Summer Breeding: Bird and Bat	Beginning of June to mid July	Sunrise carcass searching/mortality monitoring	Twice weekly
Fall Migration: Bird and Bat	Early September to late October	Sunrise carcass searching/mortality monitoring	Twice weekly
BCR 13 Priority Species Monitoring - Forest and Grassland Species	Beginning of June to mid July	Point counts and area searches at locations where potential displacement from turbines has been identified.	Twice weekly

4.0 REPORTING

Reporting of fieldwork results will be submitted annually, and results will be expressed both in terms of fatalities/turbine/year and fatalities/MW/year, to enable comparison between studies. Reports will include comparisons between projected annual avian mortality rates for the McLeans Mountain Project and rates reported at other projects throughout North America (e.g. as summarized in Arnett et al 2007). If these projected annual mortality rates fall within the low or middle ranges of reported rates, no immediate mitigation is needed. However, if mortality rates approach the higher end of the reported scale as described below, NPI will consult with the relevant agencies as needed to determine the reasons for the high mortality rates, adjust monitoring and/or to develop possible mitigation measures.

If a potentially serious negative effect is observed during monitoring, NPI will notify the relevant agencies during the survey period. If needed, NPI may take action prior to contacting the relevant agencies. Specific thresholds that will trigger the need for notification are outlined in **Table 3** below.

Table 3: Observed Mortality Thresholds Triggering Notification of Relevant Authorities

Species group	Single Mortality Event	Observed Mortality Rate	Number of Mortalities Observed During Surveys (sampling 18 turbines)
General Birds	33 or more observed[a]	11.7 fatalities/MW/year[b]	18 fatalities observed over 3 weeks
Raptors	1 or more observed	0.09 fatalities/MW/year[c]	1 fatality observed over 3 weeks
Bats		20 fatalities/turbine/year[d]	20 fatalities observed over 3 weeks
Species at Risk	Any mortality	Any mortality	Any mortality

[a] - the largest single mortality event observed at a wind farm in North America, at the Mountaineer site (Kerlinger and Kerlinger 2004).
[b] - the highest recorded rate in North America observed at the Buffalo Mountain Facility in Tennessee (Arnett et al 2007).
[c] - the highest recorded in North America, outside of California, from the Stateline Facility in Oregon (Arnett et al 2007).
[d] - the highest documented bat mortality in Ontario (Stantec 2008a).

5.0 ADAPTIVE MONITORING AND MANAGEMENT

In general, if observed mortality impacts for any group of birds, bats and/or Species at Risk are found to exceed thresholds noted in **Table 3** above, EC and the MNR will be consulted to establish the appropriate mitigative response, which could include: conducting research with the goal of identifying the factors leading to the observed mortality rate; conducting more frequent surveys; increasing reporting frequency; and operational modifications.

If bats are experiencing disproportionate mortality, and rates are near the higher reported levels, NPI may consider installation of ultrasonic deterrent devices. However, as yet this technology has limited ability to effectively deter bats from areas as large as a turbines blade-sweep radius (Szewczak and Arnett 2008). Increasing the wind speed required to start a turbine on specific turbines having a high associated mortality could occur, as bats tend to be active at lower wind speeds (Arnett et al 2007).

If a review of environmental conditions unrelated to the wind farms operation is unable to shed light on increased mortality rates, then further action will be required. This could include blade feathering, and if necessary, shutting down specific problem turbines.

Blade feathering involves adjusting the pitch of the turbine blade such that reduced aerodynamics precludes efficient turbine operation. Blade rotation would be slowed and energy output reduced. This approach would be used to manage the turbine operation during specific time periods or weather conditions considered a high risk for bats or birds.

Turbine shut down would include the temporary removal of a turbine from service, stopping production of power. This action could be taken during a set period (and could occur during certain times of the day), such as a core seasonal migration window, and turbine operation would resume after the period of high risk has passed (EC 2007a).

These actions will be considered on a turbine by turbine basis, based on areas of concern identified through the monitoring program and as deemed economically feasible. Actions taken in response to mortality events will depend on species involved, behaviour implicated (migration, foraging etc.) and geographical extent of the observed mortality, as agreed upon by the relevant agencies.

6.0 SUMMARY

The project area for NPI's McLeans Mountain Wind Farm has been designated as having a Very High Sensitivity, Category 4 Level of Concern with respect to birds, and a Sensitivity Rating of 3 (High) with respect to bats. These sensitivity ratings trigger the need for this post-construction monitoring plan as stipulated in EC and MNR guideline documents. The potential for bird and bat mortality, the recent presence of breeding Species at Risk and the presence of BCR 13 priority species in forest and open country habitats are the main focus of this post-construction monitoring program. Post-construction monitoring is planned for two years after the wind farm is in operation. EC and the MNR will be kept up to date on monitoring results through annual reporting and will be notified of unexpected negative environmental effects. Mitigation measures have also been outlined for unexpected negative environmental effects that may occur but cannot be explained by factors unrelated to the wind farms operation.

7.0 REFERENCES

Arnett, E.B. 2007. Impacts of Wind Energy Facilities on Wildlife and Wildlife Habitats. Wildlife Society Technical Review.

Bird Studies Canada (BSC). 2005. Migration and Nesting Dates for Ontario's Bird Species. Accessed December 11 2008. http://www.ofnc.ca/birding/bbanestdates.html

Dillon Consulting. 2009a. Northland Power Inc. McLeans Mountain Avian Report.

Dillon Consulting. 2009b. Environmental Screening Report/Environmental Impact Statement.

Environment Canada. 2007a. Wind Turbines and Birds: A Guidance Document for Environmental Assessment. Final Report. February 2007.

Environment Canada. 2007b. Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds. Final Report. February 19, 2007.

Environment Canada. 2007c. Wind Turbines and Birds: A Background Review for Environmental Assessment. Draft Report. April 2, 2007.

Erickson, W.P., B. Gritski and K. Kronner. 2003. Nine Canyon Wind Power Project Avian and Bat Monitoring Report, September 2002-August 2003. Technical report submitted to Energy Northwest and the Nine Canyon Technical Advisory Committee.

Erickson W.P., J. Jeffrey, K. Kronner and K. Bay. 2004. Stateline Wind Project Wildlife Monitoring Final Report: July 2001-December 2003. Western Ecosystems Technology, Inc. Cheyenne, Wyoming, and Northwest Wildlife Consultants, Inc. Pendleton Oregon. Western Ecosystems Technology Inc. Cheyenne, Wyoming, USA

James, R.D. 2003. Bird Observation at the Pickering Wind Turbine. Ontario Birds. 21(2):84-97.

James, R.D and G. Coady. 2004. Bird Monitoring at Toronto's Exhibition Place Wind Turbine. Ontario Birds. 22: 79-89.

James, R.D. 2008. Erie Shores Wind Farm, Port Burwell Ontario: Fieldwork Report for 2006 and 2007 During the First Two Years of Operation. Report to Environment Canada, Ontario Ministry of Natural Resources, Eris Shores Wind Farm LP – McQuarrie North American, and AIM PowerGen Corporation.

Johnson, G.D., W.P. Erickson, M.D. Strickland, M.F. Sheppard and S.A. Sarappo. 2002. Collision Mortality of Local and Migrant Birds at a Large-scale Wind Power Development on Buffalo Ridge Minnesota. Wildlife Society Bulletin 30:879-887.

Kerlinger, P. 1997. A Study of Avian Fatalities at Green Mountain Power Corporations Searsburg, Vermont Wind Power Facility – 1997. Prepared for Vermont Department of Public Service, Green Mountain Power Corporation, National Renewable Energy Laboratory and Vermont Environmental Research Associates.

Kerlinger, J. and P. Kerlinger. 2004. A Study of Bird and Bat Collision Fatalities at the Mountaineer Wind Energy Center, Tucker County, West Virginia: Annual Report for 2003. Curry and Kerlinger, LLC, Mclean, New Jersey USA.

Kerns, J., W.P. Erickson and E.B Arnett. 2005. Chapter 2: Bat and Bird Fatality at Wind Energy Facilities in Pennsylvania and West Virginia. *in* E.B. Arnett, Technical Editor, Relationships Between Bats and Wind Turbines in Pennsylvania and West Virginia: an Assessment of Bat Fatality Search Protocols, Patterns of Fatality, and Behavioural Interactions with Wind Turbines. A Final Report Submitted to the Bats and Wind Energy Cooperative. Bat Conservation International. Austin Texas.

Natural Resource Solutions Inc. 2008a. 2007 Bird and Bat Mortality Monitoring: Prince Wind Power Project. Report prepared for Brookfield Power, Gatineau Quebec.

Natural Resource Solutions Inc (NRSI). 2008b. McLeans Mountain Wind Farm 2008 Bat Monitoring. Report Prepared for Northland Power Inc. June 2008.

Nicholson, C.P. 2003. Buffalo Mountain Wind Facility Bird and Bat Mortality Monitoring Report: October 2001-September 2002. Tennessee Valley Authority, Knoxville Tennessee, USA.

Ontario Ministry of Natural Resources. 2006a. Guidelines to Assist MNR Staff in the Review of Wind Power Proposals – Potential Impacts to Birds and Bird Habitats. Draft Report. October 2006

Ontario Ministry of Natural Resources. 2006b. Wind Turbines and Bats: Bat Ecology Background Information and Literature Review of Impacts. December 2006.

Ontario Ministry of Natural Resources. 2007. Guidelines to Assist in the Review of Wind Power Proposals – Potential Impacts to Bats and Bat Habitats. Developmental Working Draft. August 2007.

Stantec. 2008a. Post-Construction Follow-up Plan for Bird and Bat Resources for the Wolfe Island Wind Plant (the "Plan"). Final Draft Report. Report developed among Canadian Renewable Energy Corporation, Environment Canada, Natural Resources Canada, Ontario Ministry of Natural Resources and Ducks Unlimited Canada. November 2008.

Stantec Consulting Ltd. 2008b. Melancthon 1 Wind Plant: Post-construction Bird and Bat Monitoring Report: 2007. Report Prepared for Canadian Hydro Developers, Inc. Guelph, Ontario.

Szewczak, J.M. and E.B. Arnett. 2008. Field Test Results of a Potential Acoustic Deterrent to Reduce Bat Mortality from Wind Turbines. Bats and Wind Energy Cooperative.

APPENDIX A

BCR 13 Priority Species and Sensitive Species in Proximity to Turbines

Table A1: Bird Conservation Region 13 and other potentially sensitive birds observed in the study area during fieldwork summarized by habitat guild with turbines located within 500m of observation.

Habitat Guild	Primary Nesting Habitat	BCR 13 Species	Total Observed In Study Area 2007	Total Observed In Study Area 2008	2007 Breeding Survey. Turbine #'s located within 500m of observation	2008 Breeding Survey. Turbine #'s located within 500m of observation
BCR 13 Priority Species						
Forest	Deciduous Woodland	Wood Thrush	2	0	20, 22	
		Baltimore Oriole	1	0	6	
		Rose-breasted Grosbeak	3	2	14, 19	21, 24, 28
		Red-shouldered Hawk	0	1		
		Canada warbler	0	4		11
		Eastern Wood-Pewee	28	6	1, 6, 12, 13, 14, 16, 18, 19, 20, 23	30
	Early Successional	Black-billed Cuckoo	2	0	13, 19, 20	
	Mixed Woodlands	Northern Flicker	15	14	7, 8, 14, 18, 19, 20, 22, 23, 24, 28, 30	3, 11, 17, 24, 25, 28, 32, 33, 35, 36, 38
Open Country	Agricultural	Bobolink	7	0	6, 12, 19, 20	
		American Kestrel	0	1		
		Eastern Meadowlark	5	1	1, 19	17
		Savannah Sparrow	127	7	1, 2, 6, 7, 8, 13, 19, 20	11, 17, 18
		Vesper Sparrow	0	5		18, 28, 36
	Early Successional	Brown Thrasher	2	12	19, 20	18, 24, 25, 26, 27, 28, 31, 32, 33, 36
		Eastern Kingbird	15	2	2, 6, 12, 13	24, 28
Marsh/Water	Lakes/Ponds/Rivers	Belted Kingfisher	1	3		28, 30
	Marsh	Northern Harrier	7	0	1, 13, 19, 20	
Other Sensitive Species						
Open Country	Burned/Logged Areas	Sharp-tailed Grouse	2	0	Note: Lek observed during 2005 surveys in the vicinity of turbine 19.	
	Agricultural	Upland Sandpiper	1	15		22, 24, 28, 15
	Woodlands	Common Nighthawk	0	2		27, 31
Marsh/Water	Marsh	Wilson's Snipe	0	9		11, 24, 25, 26, 28, 32, 33, 36

Decommissioning Plan Report

Supplementary Information for the Decommissioning Plan Report Under the Renewable Energy Approval (REA) Requirements, Ontario Regulation 359/09 for Class 4 Wind Facility

1.0 Introduction

Northland Power Inc. (NPI) 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. This wind farm is expected to consist of approximately 43 wind turbines that will generate about 77 MW of electricity. Based on the REA Regulations, we understand this project to be a "Class 4" wind facility. This *Decommissioning Plan Report* is written in accordance with Ontario Regulation 359/09 – Renewable Energy Approval (REA) under the *Green Energy Act*. The project will require approval under Ontario Regulation 359/09 – REA under the *Green Energy Act*. This report is one component of the Renewable Energy Approvals documentation. Other reports written under the REA process will include:

1. Project Description Report;
2. Consultation Report;
3. Design and Operations Report;
4. Construction Plan Report; and,
5. Wind Turbine Specifications Report.

As per REA the current project is classified as a Class 4 Wind Facility making it subject to the level of reporting described above. NPI has fulfilled most of the REA requirements through the McLean's Mountain Wind Farm Environmental Screening Report/Environmental Impact Statement (ESR) released in July 2009. The McLean's Mountain Wind Farm 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. NPI is relying on the previously completed Environmental Study Report to fulfill much of the REA reporting requirements. The MOE advised that this is an acceptable approach for this project. NPI has fulfilled other requirements of REA by providing a Natural Heritage Summary, a Water Bodies Summary, and a Cultural Heritage Summary in accordance with the requirements of the Green Energy Act, 2009.

2.0 The Proponent

Northland Power Inc. (NPI) is a developer, owner and operator of power generation and the proponent of the "McLean's Mountain Wind Farm Wind Farm Project". NPI's development activities include building, owning and operating wind energy facilities. In the course of developing these wind energy Projects, NPI meets various environmental approval requirements and obtains regulatory approvals that vary depending on the jurisdiction, project capacity and site location.

The NPI contact is:

Full Name of Company:	*Northland Power Inc.*
Address:	*30 St. Clair Avenue West, 17th Floor* *Toronto, Ontario M4V 3A1* *Canada*
Telephone:	*office: (705)-368-0303* *mobile: (705)-271-5358*
Prime Contact:	*Rick Martin, Project Manager*
Email:	*rickmartin@northlandpower.ca*

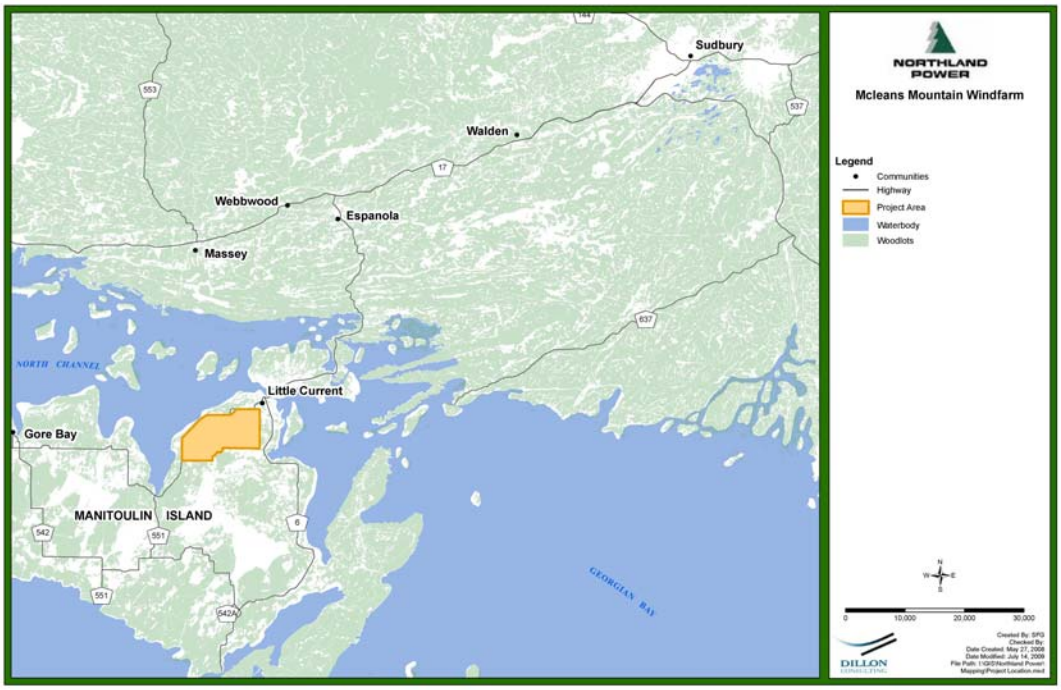
Dillon Consulting Limited is the prime contractor for the preparation of this Decommissioning Plan Report. The Dillon contact is:

Full Name of Company:	*Dillon Consulting Limited*
Address:	*235 Yorkland Boulevard, Suite 800, Toronto, ON M2J 4Y8*
Telephone:	*(416) 229-4646 ext 2335*
Prime Contact:	*Don McKinnon, Associate*
Email:	*dpmckinnon@dillon.ca*

3.0 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 approximately 5 kilometers from the Town of Little Current. Within this broader Project Study Area is the Project Site Area within which the turbines and associated wind farm infrastructure will largely be located. **Figure 1** provides the location of the Project Study Area and illustrates the geographic limits of the Project Site Area.

Figure 1: Location of the Study Area



4.0 Decommissioning Plan Overview

The wind turbine decommissioning process shall be initiated upon the termination of the Leases with the landowners. The primary reason for the leases to be terminated would be the completion of the project's useful life or the end of the power purchase agreement with the Ontario Power Authority.

The decommissioning involves removing the wind turbine generator, equipment, cables, fixtures and all personal property and otherwise restoring the premises to their original condition. If it is agreed upon with the landowner or at the landowner's request, access roads will be left in place for their continued use. Foundations shall be removed to three feet below grade and replaced with topsoil.

All decommissioning work will be performed according to applicable federal, provincial and municipal regulations.

NPI agrees to meet with the landowner prior to the lease expiration date to ensure that NPI performs its obligations to remove its property and restore the premises. Within 12 months

of initiating the decommissioning, NPI will have removed the relevant components from the leased land.

NPI or a contractor selected by NPI will disassemble the wind turbine generators.

The decommissioning of the McLean's Mountain Wind Farm will follow the Ontario Health and Safety Act along with any applicable municipal, provincial and federal regulations and standards. As with the construction, a safety manager will be present on site for the duration of the work.

5.0 Procedures for Dismantling/Demolishing Facility

Properly maintained wind turbines have an expected life of 30 years. At the end of the project life, depending on market conditions and project viability, the wind turbines may be 're-powered' with new nacelles, towers, and/or blades. Alternatively, the wind turbines may be decommissioned.

In the event the project requires decommissioning, the following sequence for the removal of the components will be used:

- Remove Collection and Transmission System including substation and switchyard
- Remove wind turbines
- Partial Removal of Wind Turbine Foundations
- Remove Access Roads

This decommissioning plan is based on current procedures and experience. These procedures may be subject to revision based on new experiences and requirements.

5.1 Wind Turbines

The first stage of the disassembly will be to have wiring crews disconnect the tower from the collection system and disconnect the wiring between turbine sections. A crane will then, supported by a disassembly crew, remove the rotor, nacelle and then the towers section by section. The rotor blades will be removed from the hub once it has been placed on the ground. As the turbine is being disassembled, the various components will be transported off site.

The components will be either sent to a salvaging yard or be reused for another project. As with the construction process, any land that was disturbed or compacted during the decommissioning will be de-compacted and graded. This includes reclaimed areas.

5.2 Wind Turbine Foundations

Once all the turbine components have been cleared from a site, the top four to five feet of the soil around the foundation will be excavated and stockpiled. Once cleared, the top three feet of the foundation will be demolished. The concrete and rebar scrap will be

hauled off site and properly disposed of. Afterwards, the stockpiled soil will be used to replace the now cleared area. The disturbed area will be feathered out and graded. No off site soil is predicted to be needed.

5.3 Access Road Removal

Access roads will be left at landowner's requests or graded to restore terrain profiles (as much as possible), and vegetated.

5.4 Cable Wire and Trench Decommissioning

If environmentally appropriate at the time of decommissioning, the underground cables will be left in place.

Overhead collection and transmission systems will be removed, including conductors and poles.

5.5 Electrical Substation Decommissioning

The substation electrical components (e.g. GSU, cable, cooling equipment, etc) will be either removed as a whole or disassembled, pending reuse or recycling. Once cleared. The gravel around the yard will be reclaimed (unless the land owner wishes to keep the area as is) and the fence removed. As with the turbine foundation, the substation foundation will be excavated and the top 1 m of concrete (or to bedrock) will be demolished and hauled off site to be properly disposed off. The excavated area will then be filled in native soil and will be re-graded.

5.6 Crane Pad Decommissioning

Crane pads will be approximately 60 feet by 40 feet and consist of compacted native material. Approximately 1 foot of base fill is expected to be used for the crane pads. After decommissioning, the crane pad aggregate will be removed and areas will be filled.

6.0 Restoration of Land and Water Negatively Affected by Facility

Once all of the turbines and ancillary facilities are removed, the remaining work to complete the decommissioning of the Project will consist of shaping and grading of the areas to as near as practicable to the original contour prior to construction of the wind turbines and access roads. All areas, including the access roads, transformer pads and crane pads will be restored as near as practical to their original condition with native soils and seeded.

Other than the concrete, which will remain three feet below the soil, no other residual impact is foreseen. The decommissioning will affect the agricultural practices directly around the access roads, substation and turbine locations, but only during their removal. Also, no impacts to terrestrial vegetation and wildlife are expected since all the McLean's Mountain Wind Farm infrastructures will be located exclusively on agricultural land.

The most significant risk to the aquatic environment will be when the access roads near drains or municipal drain crossings are removed. Similar to the construction phase, the plant decommissioning will follow a storm water protection plan that will ensure proper steps are followed to mitigate erosion and silt/sediment runoff.

As with the projects construction, noise levels around the decommissioning work will be higher then average. Proper steps will be followed to minimize this disturbance, such as working only during daylight hours. Also, as with the projects construction, road traffic in the area will increase due to crews and heavy equipment movements.

7.0 Procedures for Managing Waste and Materials

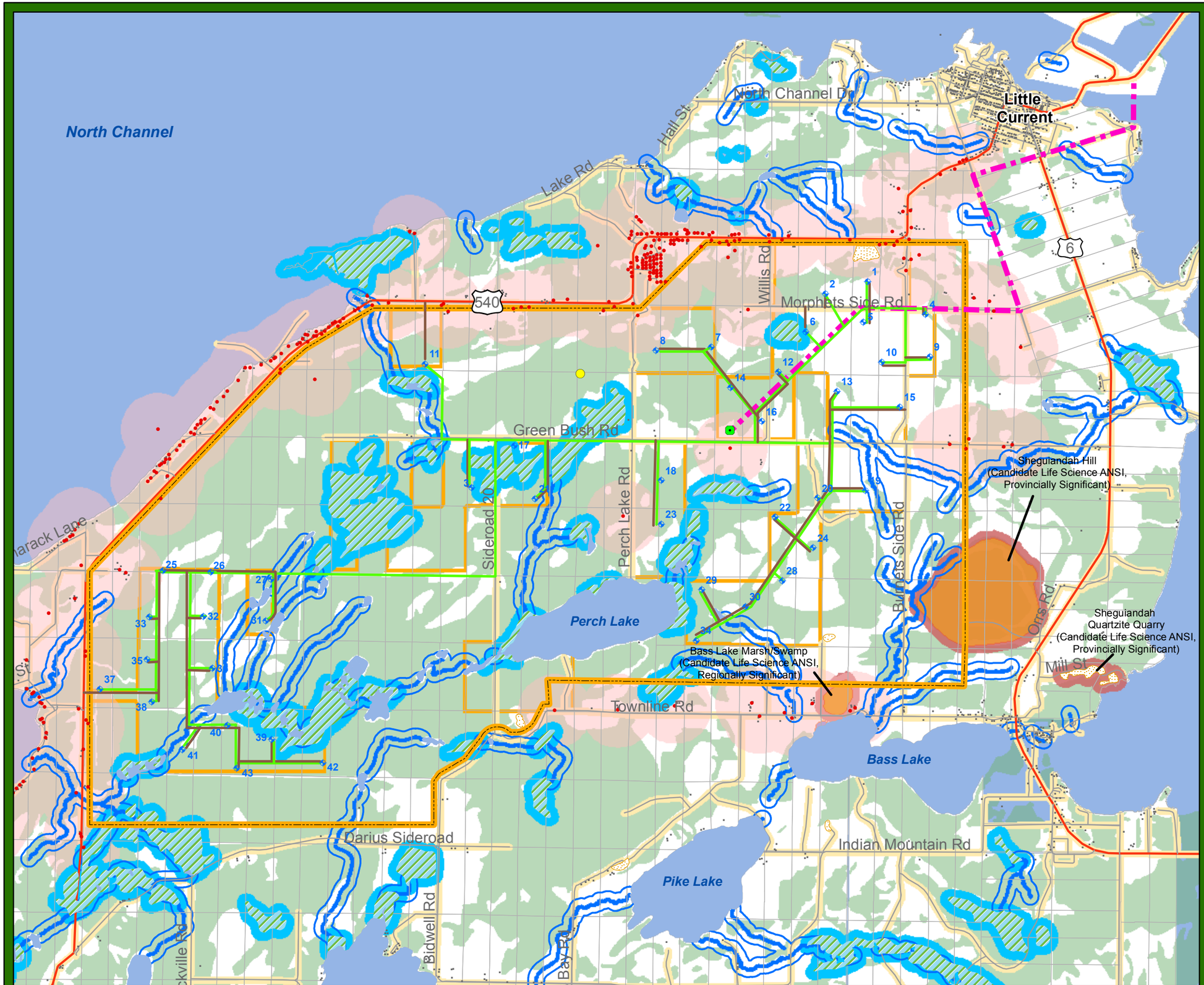
The major components of the wind turbines (tower, nacelle, blades) are modular items that allow for ease of construction and disassembly of the wind turbines during replacement or decommissioning. Each tower is made up of approximately 138 tons of painted steel that is potentially salvageable. The nacelle has an overall unit weight of 52 tons and is constructed of a combination of steel along with various other materials. Portions of the components within the nacelle and generators can also be salvaged for scrap value.

Based on the construction details for the Vestas model V-90 wind turbines and associated tower and components, it is assumed that both the tower and nacelle will yield approximately 80% salvageable materials. Since the hub assembly and bedplate is manufactured steel, it is anticipated that the hub will yield 100% salvageable metallic materials. Copper salvage estimates were derived by assuming 5% of the total tower and nacelle weight consists of salvageable copper bearing materials. Since the rotor/blades are constructed of predominantly non-metallic materials (fiberglass reinforced epoxy and carbon fibers), no salvage for the rotor or blades is currently assumed.

It is assumed that 75% of the aggregate material from the decommissioning of the crane pads can be salvaged for future use as aggregate base course. It is also assumed that 50% of the aggregate base course could be reused as aggregate base course. The remaining materials would be viable for general fill on non-structural fill areas. The geotextile fabric cannot be salvaged.

Section 4

Supplementary Mapping



NORTHLAND POWER

Mcleans Mountain Windfarm
REA Constraints

Legend

- Turbine
- Residence
- Substation
- Building
- Unknown Large Stick Nest
- Secondary Roads
- Highway
- Cabling (34kv)
- Access Roads
- Proposed Tranmission Line (115kv)
- Watercourse
- Project Area
- Lots
- ANSI
- Pit or Quarry
- Waterbody
- Wetland
- Woodlots

REA Constraints

- 30m Watercourse Setback
- 120m River/Stream Setback
- 55m Non Participating Lot Setback
- 55m Road Setback
- 120m Wetlands Setback*
- 120m Life Science Area of Natural and Scientific Interest (ANSI) Setback
- 550m Residence Setback

Notes:
The wind farm layout is draft and subject to revision based on input received from government agencies, Aboriginal communities, landowners and the public.
* All wetlands are assumed to be Provncially Significant

N
W E
S

0 1,000 2,000 3,000

DILLON CONSULTING

Created By: SFG
Checked By: DM
Date Created: May 27, 2008
Date Modified: December 16, 2009
File Path: I:\GIS\091983 - Northland Power\Mapping\REA Constraints.mxd