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VIA ELECTRONIC FILING & COURIER

August 11, 2009

Ms. Kirsten Walli
Board Secretary
Ontario Energy Board
2300 Yonge Street
PO Box 2319, 27th Floor
Toronto, ON
M4P 1E4

Dear Ms. Walli:

**Re: Greenwich Windfarm, LP;
Application for Leave to Construct**

I am writing, on behalf of Greenwich Windfarm, LP, to file with you five paper copies of: (i) an Application for Leave to Construct pursuant to section 92 and subsection 96(2) of the *Ontario Energy Board Act, 1998* ("OEB Act"); and (ii) Notice of Proposal under section 81 of the OEB Act. Both the Application and the Notice of Proposal are included in the enclosed Binder, the latter under Exhibit B, Tab 2, Schedule 1.

Greenwich Windfarm, LP requests that Exhibit E, Tab 2, Schedule 2, Exhibit E, Tab 3, Schedule 3 and Exhibit F, Tab 3, Schedule 2, all of which are included in the Application, be held in confidence by the Board pursuant to Rule 10.01 of the Board's Rules of Practice and Procedure and the Board's Practice Direction On Confidential Filings. The exhibits which the Applicant is seeking to file in confidence comprise engineering drawings and specifications that are proprietary. Public disclosure of these exhibits would, accordingly, be detrimental to the Applicant's competitive position.

Yours very truly,

Helen T. Newland

HTN/ko

Encls.

cc: Mr. Nicholas Muszynski
Renewable Energy Systems Canada Inc.

Mr. George Leing
Renewable Energy Systems America Inc.

Ms. Marcia Emmons
Renewable Energy Systems Americas Inc.

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ONTARIO ENERGY BOARD

IN THE MATTER OF the Ontario Energy Board Act, 1998,
S.O. 1998, c. 15, Sch. B, as amended;

AND IN THE MATTER OF an Application by Greenwich
Windfarm, LP for an order under section 92 and subsection
96(2) of the *Ontario Energy Board Act, 1998*, granting leave
to construct an electricity transmission line and related
transmission facilities.

APPLICATION FOR LEAVE TO CONSTRUCT

1. The Applicant, **Greenwich Windfarm, LP** is a limited partnership constituted under the laws of the Province of Ontario. Currently, Greenwich Windfarm, LP has two general partners: **Greenwich Windfarm Holdings Inc.** and **Greenwich Windfarm GP Inc.** Both general partners are wholly-owned subsidiaries of **Renewable Energy Systems Canada Inc.** ("RES Canada"). RES Canada was incorporated as a Quebec corporation in 2003, with its head office in the City of Montreal. It, in turn, is a wholly-owned subsidiary of **Renewable Energy Systems Ltd.** ("RES"), headquartered in London, England. RES is a member of the Sir Robert McAlpine group of companies, a British, family-owned firm with over 100 years of experience in construction and engineering. It is one of the fastest growing renewable energy development companies in the world and has been at the forefront of the wind energy industry since it was founded in 1982.
2. On January 14, 2009, RES Canada entered into two Renewable Energy Supply III Contracts ("RES III Contract") with the Ontario Power Authority ("OPA") in respect of the sale of electricity from two wind farms that RES Canada intended to construct and operate. This Application is in respect of the transmission facilities associated with one such facility, the Greenwich Windfarm, which will be constructed on 4,000 hectares of Crown Land, approximately 60 kilometres northeast of Thunder Bay, Ontario. RES Canada and the OPA have entered into an agreement, dated August 4, 2009, whereby the OPA, in effect, agrees to the transfer of the RES III Contract in respect of the Greenwich Windfarm from RES Canada to Greenwich Windfarm, LP.
3. Greenwich Windfarm, LP proposes to construct the following transmission facilities to connect the Greenwich Windfarm to the Independent Electricity System Operator ("IESO") – controlled transmission grid:

- (i) the Greenwich Windfarm Substation which will step up the voltage from 34.5 kV to 246 kV and will comprise two equivalent, three-phase 60 Hz 40/50/60 MVA transformer;
- (ii) the Greenwich Windfarm Transmission Line, comprising a double circuit, overhead 230 kV transmission line that will extend from a point of interconnection with the Greenwich Windfarm Substation, approximately 10.3 kilometres, to a point of interconnection with the Greenwich Windfarm Switching Station; and
- (iii) the Greenwich Windfarm Switching Station, comprising two 230 kV breakers and motorized disconnect switches with protection and monitoring provided by multi-function micro-processor based relays.

The above-noted facilities (together, the "Proposed Facilities") are more particularly described in Exhibits C and E.

- 4. The location of each component of the Proposed Facilities is more particularly described in Exhibit D, Tabs 2 and 3.
- 5. Construction of the Proposed Facilities is scheduled to commence in the spring of 2010, with an in-service date of September-November, 2010. Details of the project schedule are provided in Exhibit C, Tab 3, Schedule 1.
- 6. In order to construct the Proposed Facilities, the Applicant requires certain easement rights over two parcels of private lands. RES Canada has obtained the required options for easements and is currently in the process of assigning these to Greenwich Windfarm, LP, pursuant to the assignment provisions therein. RES Canada also holds the executed easement agreements in escrow until such time as the transmission facilities are ready to be constructed. The form of option for easement agreement and form of easement agreement that has been entered into with private landowners are included in Exhibit G, Tab 3, Schedules 2 and 3, respectively.
- 7. In order to construct the Proposed Facilities, Greenwich Windfarm, LP will also require certain Crown land rights. RES Canada has already obtained Applicant of Record status which is a prerequisite to obtaining the necessary Crown rights. Copies of these are included at Exhibit G, Tab 2, Schedules 1 and 2. A more detailed explanation of the Crown rights acquisition process is set out in Exhibit G, Tab 1, Schedule 1.
- 8. The process by which the Proposed Facilities will be connected to the IESO-controlled transmission grid is well underway. The Greenwich Windfarm is in the IESO "committed generation" queue. The IESO issued its Part I System Impact Assessment ("SIA") Report in October 2008, indicating that the proposed connection of the Greenwich Windfarm to the IESO – controlled grid was

acceptable. An updated and joint SIA and Customer Impact Assessment ("CIA") application was submitted to the IESO and to Hydro One in June 2009 to reflect a decision to change the type of turbines that will be used at the Greenwich Windfarm. A Part II SIA is expected to be issued by the IESO in the fall of 2009 followed, thereafter, by the issuance of a CIA by Hydro One.

9. The Greenwich Windfarm is subject to the environmental screening process (Category B) under the Ontario Ministry of the Environment's ("MOE") *"Guide to Environmental Assessment Requirements for Electricity Projects"* (March 2001). A Notice of Commencement for the environmental screening study was issued on October 27th, 2007.
10. An Environmental Screening Report/Environmental Impact Statement ("ESR") was completed by Dillon Consulting Limited ("Dillon") in fulfillment of provincial and federal environmental regulatory requirements. A copy of the ESR is included Exhibit H, Tab 1, Schedule 2.
11. A Notice of Completion of the ESR was released on July 13th, 2009. This Notice triggered the beginning of a 30-day review period which expires on August 11th, 2009. A detailed description of the status of the environmental assessment process is included in Exhibit H, Tab 1, Schedule 1.
12. RES Canada and the applicant, Greenwich Windfarm, LP, have conducted extensive consultation with affected parties, including individuals, government agencies and Aboriginal groups. Details of this consultation effort are included in the ESR at Exhibit I.
13. In the result, Greenwich Windfarm, LP hereby applies to the Ontario Energy Board ("OEB" or "Board") (pursuant to the *Ontario Energy Board Act, 1998* ("OEB Act")) for:
 - (i) leave to construct the Proposed Facilities pursuant to section 92 and subsection 96(1) of the OEB Act; and
 - (ii) approval of the forms of option and easement agreements (included in Exhibit G, Tab 3, Schedules 2 and 3), pursuant to section 97 of the OEB Act.
14. The following are the names of RES Canada's authorized representatives for the purpose of serving documents on the Applicant in this proceeding:

Ms. Helen T. Newland
Fraser Milner Casgrain LLP

Address for personal service
and mailing address:

#3900
1 First Canadian Place
100 King Street West
Toronto, ON
M5X 1B2

Telephone:

416-863-4471

Facsimile:

416-863-4592

E-mail:

helen.newland@fmc-law.com

Mr. Nicolas Muszynski
Renewable Energy Systems Canada Inc.

Address for personal service
and mailing address:

300 Léo-Pariseau, Suite 2516
Montreal, Quebec
H2X 4B3

Telephone:

514-525-2113 ext 223

Facsimile:

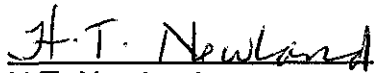
514-524-9669

E-mail

nicolas.muszynski@res-americas.com

Dated August 11, 2009 at Toronto, Ontario

Greenwich Windfarm, LP
by its counsel
Fraser Milner Casgrain LLP

per: 
H.T. Newland

Ontario Energy Board
Preliminary Filing Requirements
For a Notice of Proposal under Sections 80 and 81
Of the *Ontario Energy Board Act*, 1998

INSTRUCTIONS:

This form applies to all applicants who are providing a Notice of Proposal to the Ontario Energy Board (the "Board") under sections 80 and 81 of the *Ontario Energy Board Act*, 1998 (the "Act"), including parties who are also, as part of the same transaction or project, applying for other orders of the Board such as orders under sections 86 and 92 of the Act.

The Board has established this form under section 13 of the Act. Please note that the Board may require information that is additional or supplementary to the information filed in this form and that the filing of the form does not preclude the applicant from filing additional or supplementary information.

PART I: GENERAL MINIMUM FILING REQUIREMENTS

All applicants must complete and file the information requested in Part I.

1.1 Identification of the Parties

1.1.1 Applicant

Name of Applicant Greenwich Windfarm, LP	File No: (Board Use Only)	
Address of Head Office c/o Renewable Energy Systems Canada Inc. 300 Leo-Pariseau, Suite 2516 Montreal, Quebec H2X 4B3	Telephone Number 514-525-2113	
	Facsimile Number 514-524-9669	
	E-mail Address peter.clibbon@res-americas.com	
Name of Individual to Contact Peter Clibbon	Telephone Number 514-524-9669	
	Facsimile Number 514-524-9669	
	E-mail Address peter.clibbon@res-	

	americas.com	
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1.1.2 Other Parties to the Transaction or Project

If more than one attach list

Name of Other Party Greenwich Windfarm LP will construct, own and operate the Greenwich Windfarm and the associated Greenwich Windfarm transmission facilities. No other parties are involved in the project.	Board Use Only	
Address of Head Office	Telephone Number	
	Facsimile Number	
	E-mail Address	
Name of Individual to Contact	Telephone Number	
	Facsimile Number	
	E-mail Address	

1.2 Relationship between Parties to the Transaction or Project

1.2.1	<p>Attach a list of the officers, directors and shareholders of each of the parties to the proposed transaction or project.</p> <p>Greenwich Windfarm, LP has two general partners: Greenwich Windfarm GP Inc. and Greenwich Windfarm Holdings Inc.</p> <p>The following is the list of directors and officers of Greenwich Windfarm GP Inc., a General Partner of Greenwich Windfarm, LP.:</p>
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	DIRECTORS	OFFICERS
	Craig Mataczynski	Craig Mataczynski – President and Chief Executive Officer
	Brian Evans	Brian Evans – Vice President
	Richard Ashby	Matthew Burt – Vice President
		Peter Clibbon – Vice President
		Richard Ashby – Chief Financial Officer and Treasurer
		Marcia Emmons – Secretary
		Hillel W. Rosen – Assistant Secretary
<p>The following is the list of directors and officers of Greenwich Windfarm Holdings Inc., a General Partner of Greenwich Windfarm, LP.:</p>		
	DIRECTORS	OFFICERS
	Craig Mataczynski	Craig Mataczynski – President and Chief Executive Officer
	Brian Evans	Brian Evans – Vice President
	Richard Ashby	Matthew Burt – Vice President
		Richard Ashby – Chief Financial Officer and Treasurer
		Marcia Emmons – Secretary
		Hillel W. Rosen – Assistant Secretary
1.2.2	<p>Attach a corporate chart describing the relationship between each of the parties to the proposed transaction or project and each of their respective affiliates.</p> <p>Please see the attached corporate chart that shows RES Canada's Canadian affiliates.</p>	

1.3 Description of the Businesses of Each of the Parties

1.3.1	<p>Attach a description of the business of each of the parties to the proposed transaction or project, including each of their affiliates licenced under the OEB Act to operate in Ontario for the generation, transmission, distribution, wholesaling or retailing of electricity or providing goods and services to companies licenced under the OEB Act in Ontario ("Electricity Sector Affiliates").</p> <p>Greenwich Windfarm, LP will be the licensed owner and operator of a 99 MW wind farm known as Greenwich Windfarm which will be located in the Municipality of Dorion. The Greenwich Windfarm will be connected to the IESO-controlled grid via the 10.3 kilometre, 230 kV Greenwich Windfarm Transmission Line and associated substation and switching station.</p> <p>Greenwich Windfarm, LP is affiliated with Renewable Energy Systems Canada Inc., the Canadian arm of the RES Group based in the United Kingdom, an international renewable energy company that has built more than 70 wind farms across the world and was recently called one of the U.S. "50 Best Green Companies".</p> <p>Greenwich Windfarm, LP's affiliate, Talbot Windfarm, LP, proposes to construct a 99-MW wind farm near Chatham-Kent, Ontario (the "Talbot Windfarm"). Both Greenwich Windfarm, LP and Talbot Windfarm, LP have applied to the Ontario Energy Board for Generation Licences (EB-2009-0295 and EB-2009-0289,</p>
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	<p>respectively). Talbot Windfarm, LP has also applied to the Board for Leave to Construct the Talbot Windfarm transmission facilities (EB-2009-0290). Greenwich Windfarm, LP expects to file its Leave to Construct the Greenwich Windfarm transmission facilities in the week of August 10, 2009.</p>	
1.3.2	<p>Attach a description of the geographic territory served by each of the parties to the proposed transaction or project, including each of their Electricity Sector Affiliates, if applicable, and the geographic location of all existing generation facilities.</p> <p>Greenwich Windfarm, LP will own and operate a 99-MW wind farm in the Municipality of Dorion, approximately 60 kilometre east of Thunder Bay. The windfarm will be connected to the IESO-controlled grid by means of the 10.3 kilometre, 230 kV Greenwich Windfarm Transmission Line proposed to be constructed, owned and operated by Greenwich Windfarm, LP.</p> <p>As mentioned above, Greenwich Windfarm, LP's affiliate, Talbot Windfarm, LP, will own and operate a similar wind farm located in the municipality of Chatham-Kent, Ontario.</p>	
1.3.3	<p>Attach a breakdown of the annual sales (in C\$, and in MWh) as of the most recent fiscal year end of the existing generation output among the IESO Administered Markets ("IAM"), bilateral contracts, and local distribution companies.</p> <p>To date, neither Greenwich Windfarm, LP nor any of its affiliates have any generation capacity in the Province of Ontario and, accordingly, have no revenue from the sale of electricity in Ontario. The expected in-service date for the Talbot Windfarm is the last quarter of 2010; Greenwich Windfarm is expected to come into service in the September-November 2010 period.</p>	
1.3.4	<p>Attach a list identifying all relevant Board licences and approvals held by the parties to the proposed transaction or project and each of their Electricity Sector Affiliates, and any applications currently before the Board, or forthcoming. Please include all Board file numbers.</p> <p>Talbot Windfarm, LP</p> <ul style="list-style-type: none"> (i) application for Generation Licence (EB-2009-0289); (ii) Notice of Proposal under s. 81 of the OEB Act (EB-2009-0286); and (iii) application for leave to construct transmission facilities (EB-2009-0290). <p>Greenwich Windfarm, LP</p> <ul style="list-style-type: none"> (i) application for Generation Licence (EB-2009-0295); and (ii) an application for leave to construct transmission facilities is being filed concurrently with this Notice of Proposal; a Board file number has not yet been assigned. 	

1.4 Current Competitive Characteristics of the Market

1.4.1	<p>Describe the generation capacity (in MW), within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, prior to the completion of the proposed transaction or project.</p> <p>To date, neither Greenwich Windfarm, LP nor any of its affiliates own or operate any generation facility in the Province of Ontario. Upon completion of the Greenwich Windfarm and the Talbot Windfarm, the RES Group of Companies will have a combined generation capacity of 198 MW in the Province of Ontario.</p>	
1.4.2	<p>Describe the generation market share based on actual MWh production as a percent of the Annual Primary Demand, within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, prior to completion of the proposed transaction or project.</p> <p>Prior to construction and energization of the Greenwich Windfarm, Greenwich Windfarm, LP will have zero percent market share in the Province of Ontario.</p> <p>According to IESO data, the total electricity demand in Ontario in 2008 was 148 TWh. The Greenwich Windfarm is forecast to produce 285.9 GWh per year (based on a capacity factor of 33%). The Talbot Windfarm is forecast to produce an estimated 311.9 GWh annually (based on a capacity factor of 36%). Accordingly, the total annual estimated production for <u>both</u> the Greenwich and the Talbot Windfarms will be approximately 0.4 percent of total Ontario demand or 0.2 percent per project.</p>	

1.5 Description of the Proposed Transaction or Project and Impact on Competition - General

1.5.1	<p>Attach a detailed description of the proposed transaction or project, including geographic locations of proposed new transmission or distribution systems, or new generation facilities.</p> <p>Greenwich Windfarm project will be wholly owned by Greenwich Windfarm, LP. The project will comprise the following:</p> <ul style="list-style-type: none"> (i) the Greenwich Windfarm comprising 43 turbines with a total peak generation capacity of 99 MW; (ii) the Greenwich Windfarm Feeder and Collector System comprising a combination of aboveground and underground 34.5 kV electrical power lines running between the turbines and routed to the Greenwich Windfarm Substation; (iii) the Greenwich Windfarm Substation that will step up the voltage from 34.5 kV to 246 kV and will comprise two HICO equivalent, 3 phase 60 Hz 40/50/60 MVA transformers; 	
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	<p>(iv) the Greenwich Windfarm Transmission Line, comprising a double circuit, overhead 230 kV transmission line that will extend from a point of interconnection with the Greenwich Windfarm Substation, approximately 10.3 kilometres to a point of interconnection with the Greenwich Windfarm Switching Station; and</p> <p>(v) the Greenwich Windfarm Switching Station comprising two 230 kV breakers and motorized disconnect switches with protection and monitoring provided by multi-function micro-processor based relays,</p> <p>All facilities will be located within the Municipality of Dorion or in unorganized territory managed by the MNR.</p>	
1.5.2	<p>Describe the generation capacity (in MW), within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, after the completion of the proposed transaction or project.</p> <p>Greenwich Windfarm, LP will own generation capacity of 99 MW following the completion of the Greenwich Windfarm. Upon completion of the Talbot Windfarm, its affiliate, Talbot Windfarm, LP, will also own 99 MW of generation capacity.</p>	
1.5.3	<p>Describe the generation market share based on anticipated MWh production as a percentage of the Annual Primary Demand, within the Province of Ontario, of the parties to the proposed transaction or project, including each of their respective Electricity Sector Affiliates, after the completion of the proposed transaction or project.</p> <p>Prior to construction and energization of the Greenwich Windfarm, Greenwich Windfarm, LP will have zero percent market share in the Province of Ontario.</p> <p>According to IESO data, the total electricity demand in Ontario in 2008 was 148 TWh. The Greenwich Windfarm is forecast to produce 285.9 GWh per year (based on a capacity factor of 33%). The Talbot Windfarm is forecast to produce an estimated 311.9 GWh annually (based on a capacity factor of 36%). Accordingly, the total annual estimated production for <u>both</u> the Greenwich and the Talbot Windfarms will be approximately 0.4 percent of total Ontario demand or 0.2 percent per project.</p>	
1.5.4	<p>Attach a short description of the impact, if any, of the proposed transaction or project on competition. If there will be no impact on competition, please state the reasons. Cite specifically the impacts of the proposal on customer choice regarding generation, energy wholesalers, and energy retailers.</p> <p>The project will have little to no impact on competition within the Province of Ontario. Customer choice will not be affected, as Greenwich Windfarm is subject to a Power Purchase Agreement with the Ontario Power Authority and the proposed Greenwich Windfarm Transmission Line will be a designated line to connect Greenwich Windfarm to the IESO-controlled grid.</p>	
1.5.5	<p>Provide confirmation that the proposed transaction or project will have no impact on open access to the transmission or distribution system of the parties or their</p>	

	affiliates. If open access will be affected explain how and why.	
	Greenwich Windfarm, LP confirms that Greenwich Windfarm and the Greenwich Windfarm Transmission Line will not affect open access in any way.	

1.6 Other Information

1.6.1	Attach confirmation that the parties to the proposed transaction or project are in compliance with all licence and code requirements, and will continue to be in compliance after completion of the proposed transaction or project.	
	Greenwich Windfarm, LP confirms that it is in compliance with all applicable license and code requirements and will continue to be in compliance after completion of the Greenwich Windfarm.	

PART II: SECTION 80 OF THE ACT – TRANSMITTERS AND DISTRIBUTORS ACQUIRING AN INTEREST IN GENERATORS OR CONSTRUCTING A GENERATION FACILITY

All applicants filing a Notice of Proposal under section 80 of the Act must complete and file the information requested in Part II.

2.1 Effect on Competition

2.1.1	Describe whether the proposed generation output will be primarily offered into the IAM, sold via bilateral contracts, or for own use.	
2.1.2	Provide a description of the generation including fuel source, technology used, maximum capacity output, typical number of hours of operation in a year, and peaking versus base-load character.	
2.1.3	Provide details on whether the generation facility is expected to sign a “must run” contract with the 1ESO.	
2.1.4	Provide details of whether the generation facility is expected to serve a “load pocket”, or is likely to be “constrained on” due to transmission constraints.	

2.2 System Reliability

Section 2.2 must be completed by applicants who are claiming that the proposed transaction or project is required for system reliability under section 82(2)(b) of the Act.

2.2.1	Provide reasons why the proposal is required to maintain the reliability of the transmission or distribution system. Provide supporting studies.	
2.2.2	Discuss the effect of the proposal on the adequacy (ability of supply to meet demand) of supply in the relevant control area or distribution region, citing effects	

	on capacity plus reserve levels in comparison to load forecasts.	
2.2.3	Discuss the effect of the proposal on the security (ability of supply to respond to system contingencies) of supply.	
2.2.4	Provide a copy of the IESO Preliminary System Impact Assessment Report, if completed, and the IESO Final System Impact Assessment Report, if completed. If the IESO is not conducting a System Impact Assessment Report, please explain.	

PART III: SECTION 81 OF THE ACT – GENERATORS ACQUIRING AN INTEREST IN OR CONSTRUCTING A TRANSMISSION OR DISTRIBUTION SYSTEM

All applicants filing a Notice of Proposal under section 81 of the Act must complete and file the information requested in Part III.

3.1 Effect on Competition

3.1.1	<p>Provide a description of the transmission or distribution system being acquired or constructed.</p> <p>Greenwich Windfarm, LP proposes to construct, own and operate the following distribution and transmission facilities:</p> <ul style="list-style-type: none"> (i) the Greenwich Windfarm Collector System comprising a combination of aboveground and underground 34.5 kV electrical power lines running between the turbines and routed to the Greenwich Windfarm Substation; (ii) the Greenwich Windfarm Substation that will step up the voltage from 34.5 kV to 246 kV and will comprise a HICO equivalent, 3 phase 60 Hz 40/50/60 MVA transformer surrounded by a sound-barrier wall; (iii) the Greenwich Windfarm Transmission Line, comprising a single circuit, overhead 230 kV transmission line that will extend from a point of interconnection with the Greenwich Windfarm Substation, approximately 10.3 kilometres to a point of interconnection with the Greenwich Windfarm Switching Station; and (iv) the Greenwich Windfarm Switching Station comprising two 230 kV breakers and motorized disconnect switches with protection and monitoring provided by multi-function micro-processor based relays. 	
3.1.2	<p>Provide details on whether the generation facilities owned by the acquiring company are or will be directly connected to the transmission or distribution system being acquired or constructed.</p> <p>Both the generation facility and the transmission system will be owned by Greenwich Windfarm, LP and will be connected to one another. The proposed Greenwich Windfarm Transmission Line will be a designated line to connect Greenwich Windfarm to the IESO-controlled grid.</p>	

3.1.3	<p>Provide details of whether the generation facility is expected to serve a "load pocket", or is likely to be "constrained on" due to transmission constraints.</p> <p>The Greenwich Windfarm is not expected to serve as a load pocket and is not likely to be "constrained on" due to transmission constraints.</p>	
3.1.4	<p>Provide details on whether the generation facilities are expected to sign a "must run" contract with the IESO.</p> <p>The Greenwich Windfarm will comprise 43 turbines that will run intermittently according to prevailing wind conditions, with a maximum peak total capacity of 99 MW. The Greenwich Windfarm is operated pursuant to a Power Purchase Agreement with the Ontario Power Authority. It is not a "must run" facility.</p>	

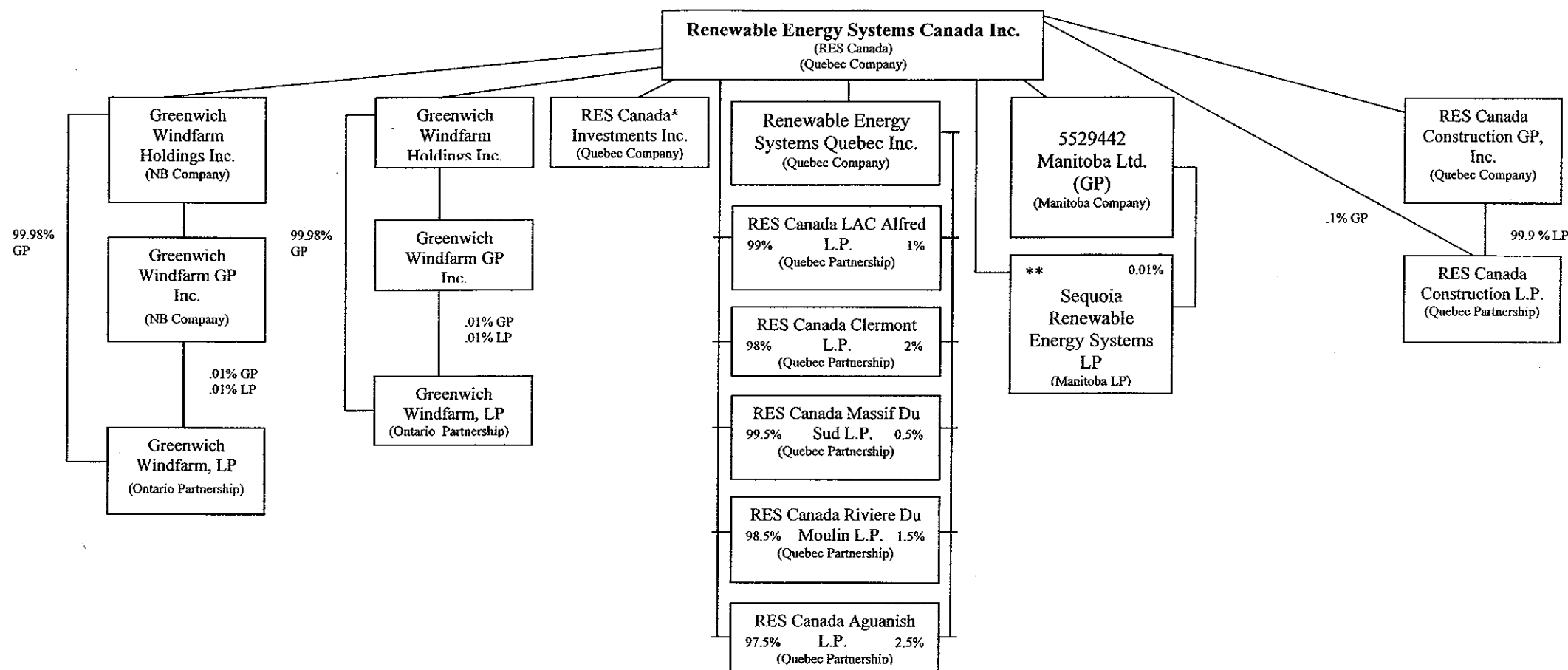
How to Contact the Ontario Energy Board

The Ontario Energy Board is located at:

P.O. Box 2319
2300 Yonge Street, Suite 2701
Toronto, Ontario
M4P 1E4

Telephone:	416-481-1967
Toll Free Number:	1-888-632-6273
Fax:	416-440-7656
Website:	http://www.oeb.gov.on.ca
Board Secretary's e-mail address:	boardsec@oeb.gov.on.ca

RENEWABLE ENERGY SYSTEMS CANADA INC. STRUCTURE CHART



* RES Canada will transfer its LP interest in 5 Quebec Windfarm partnerships to RES Canada Investments, if necessary for financing purposes.

** RES Canada together with a third party, Sequoia Energy Inc., together own 99.99% of Sequoia Renewable Energy Systems LP.

1 **PROJECT SUMMARY - WINDFARM**

2 The Applicant is proposing to construct and operate a 43-turbine, 98.9 MW wind farm
3 (the "Greenwich Windfarm") on approximately 4,000 hectares of Crown land, located
4 partially within the Township of Dorion and partially on unincorporated land. The
5 Greenwich Windfarm will comprise:

- 6 • 43 Siemens SWT-2.3-101 turbines with a nameplate capacity of 2.3 MW
7 each;
- 8 • a 34.5 kV collector system ("Collector System") comprising aboveground
9 as well as buried feeder lines which connect all of the turbines to the
10 centrally located Greenwich Windfarm Substation;
- 11 • access roads connecting the main public road to the turbine locations; and
- 12 • a centrally located storage yard and operations and maintenance building
13 situated next to the Greenwich Windfarm Substation.

1 **PROJECT SUMMARY – DISTRIBUTION AND TRANSMISSION FACILITIES**

2 **Transmission Line**

3 The Applicant proposes to construct a double circuit, overhead 230 kV transmission line
4 that will extend approximately 10.3 km from the Greenwich Windfarm Substation to the
5 Greenwich Windfarm Switching Station. The Greenwich Windfarm Switching Station will
6 in turn be the point of interconnection with an existing double circuit 230 kV
7 transmission line owned and operated by Hydro One.

8 **Collector System**

9 The Collector System will comprise underground 34.5 kV electrical power lines running
10 among the turbines and routed to the Greenwich Windfarm Substation (aboveground
11 lines will be used when it is technically impossible or difficult to bury the lines).
12 Generally, each row of turbines will be interconnected with a combination of
13 underground and aboveground wiring to a local connection point, with each connection
14 point then connected to the substation by an aboveground line running along the main
15 access roads. The Collector System routing will generally follow the access roads.

16 **Substation**

17 The Greenwich Windfarm Substation will step up the voltage from 34.5 kV to 246 kV
18 and will comprise two HICO equivalent, 3 phase 60 Hz 40/50/60 MVA transformers
19 surrounded by fencing. The substation will also house protection and control equipment
20 as required by the *Transmission System Code* and as determined by the
21 interconnection process with IESO and Hydro One.

22 **Switching Station**

23 The Greenwich Windfarm Switching Station will comprise two 230 kV breakers and
24 motorized disconnect switches with protection and monitoring provided by multi-function
25 micro-processor based relays.

26 Both the switches and the breakers will meet the technical specifications and
27 requirements of the Independent Electricity System operator ("IESO") Market Rules and
28 the *Transmission System Code*.

PROJECT SUMMARY – PROJECT SCHEDULE

Greenwich Windfarm, together with the Greenwich Windfarm Substation, the Greenwich Windfarm Transmission Line and the Greenwich Wind Farm Switching Station, are scheduled to be commissioned during the period from September-November 2010. In order to meet this schedule, Greenwich Windfarm, LP has set a number of milestone target dates and is proceeding with a detailed approvals and construction schedule.

Important Milestone Dates are as follows:

- Environmental Screening Report Notice of Completion: Completed
- Release of the Statement of Completion: August 18, 2009
- Certificate of Approval (Air): September 10, 2009
- Obtaining Final Crown Land Rights from MNR October 1, 2009
- Municipal Approvals Process & Zoning: Completed
- IESO System Impact Assessment Completion: September 11, 2009
- Hydro One Customer Impact Assessment Completion: September 29, 2009
- Leave to Construct Obtained: November 6, 2009
- Generator Licence Obtained: October 29, 2009
- Construction Mobilization: May 14, 2010
- Construction Phase: May 14-Nov. 23, 2010
- Greenwich Windfarm Commissioning & Start-Up Sept. 6-Nov. 23, 2010

A more detailed project schedule is included in this Tab on the next page.

The project schedule is based on the current permitting process for wind farms in Ontario. The imminent introduction of a Renewable Energy Approval ("REA") process under the *Green Energy and Green Economy Act, 2009*, will likely introduce some changes to the schedule.

The REA process is not expected to affect any of the interconnection activities for Greenwich Windfarm.

RES - Greenwich Wind Farm
General Schedule

ID	Task Name	Start	Finish	Dr 4, 2008	Dr 1, 2009	Dr 2, 2009	Dr 3, 2009	Dr 1, 2010	Dr 2, 2010	Dr 3, 2010	Dr 4, 2010	Dr 1, 2011	Dr 2, 2011
1	Greenwich Windfarm Permitting	Thu 11/09	Fri 9/17/10										
2	Municipal and CA Approvals	Thu 11/09	Mon 10/12/09										
3	Zoning By-law Amendment (Township of Doron)	Thu 11/09	Wed 2/4/09										
4	Conservation Authority (Lakehead) Generic Regulation Permits	Wed 9/15/09	Tue 9/29/09										
5	Consent for Lease Agreements	Tue 9/1/09	Mon 10/12/09										
6	Road User Agreement	Tue 9/1/09	Mon 10/12/09										
7	Provincial Environmental Screening & CEAA	Thu 11/09	Fri 4/27/10										
8	Release Draft ESR to MNR	Mon 5/25/09	Mon 5/25/09										
9	Public Release of Draft ESR (starts 30 day review period)	Mon 6/6/09	Fri 7/3/09										
10	Public Information Centre	Wed 6/17/09	Wed 6/17/09										
11	Notice of Study Completion	Mon 7/13/09	Mon 7/13/09										
12	30 Day Public Comment Period	Mon 7/13/09	Tue 8/18/09										
13	Statement of Completion	Tue 8/18/09	Fri 10/30/09										
14	First Nations Consultations	Thu 11/09	Tue 9/29/09										
15	MOE Certificate of Approval	Wed 9/15/09	Thu 9/15/09										
16	Clearance under the Heritage Act	Fri 7/24/09	Tue 9/15/09										
17	Batch Plant Permits (Permit to take water and EPA C of A (air))	Wed 7/15/09	Mon 7/20/09										
18	Section 53 Ontario Water Resources Act Certificate of Approval	Mon 7/20/09	Fri 9/18/09										
19	Transportation Permits (e.g. Overweight/Overheight Permit or Special Vehicle	Tue 9/1/09	Mon 10/12/09										
20	TransCan - Aeronautical Obstruction Clearance Permit	Mon 6/1/09	Fri 7/10/09										
21	NorCan Aviation Land Use Proposal	Mon 6/1/09	Fri 7/10/09										
22	Fisheries Act Authorization for Watercourse crossings (or Letter of Intent)	Wed 7/15/09	Tue 9/15/09										
23	EcoENERGY Applications - Notice of Project Application/Technical Project I	Mon 7/13/09	Fri 4/27/10										
24	CEAA Screening	Mon 8/24/09	Thu 11/2/09										
25	MNR Land Use Approval for Crown Lands (needed permitting TBC with	Mon 6/15/09	Thu 11/2/09										
26	Plan of Development (per PL4 10.04)	Mon 6/15/09	Fri 7/24/09										
27	Public Lands Act Work Permits (PL3.03.04)	Fri 8/21/09	Thu 10/1/09										
28	Utility Corridor Authorization (PL4 10.03)	Fri 8/21/09	Thu 10/1/09										
29	Easements (Grants of)	Fri 8/21/09	Thu 10/1/09										
30	Land Disposition Application (PL4 02.01)	Fri 8/21/09	Thu 10/1/09										
31	Roads and Trails work permit under Reg. 453/96 of the Public Lands Act	Fri 8/21/09	Thu 10/1/09										
32	Water Crossings Work Permit under Reg. 453/96 of the Lakes & Rivers Imp	Fri 8/21/09	Thu 10/1/09										
33	Work Permit for Watercourse Crossings under the Public Lands Act	Fri 8/21/09	Thu 10/1/09										
34	Forest Resources License under Section 27 of the Crown Forest Sustainability	Fri 8/21/09	Thu 10/1/09										
35	Overlapping Agreement with Sustainable Forest License holder including sec	Fri 8/21/09	Thu 10/1/09										
36	Approval to commence cutting operations under Section 44 of the Crown Fo	Fri 8/21/09	Thu 10/1/09										
37	Authorization for temporary holding yard for harvested wood	Fri 8/21/09	Thu 10/1/09										
38	Authorization to haul Unloaded Crown Forest Resources	Fri 8/21/09	Thu 10/1/09										
39	Removal of Mine Surface Rights	Fri 8/21/09	Thu 10/1/09										
40	Authority for hunting closure on Crown Lands	Fri 8/21/09	Thu 10/1/09										
41	Burning Permit under Section 5 of Reg. 207/96 of the Forest Fire Prevention	Fri 8/21/09	Thu 11/2/09										
42	Aggregate Permit under Section 34(1) of the Aggregate Resources Act	Fri 8/21/09	Thu 11/2/09										
43	Interconnection	Mon 6/15/09	Fri 9/17/10										
44	IESO Process	Mon 6/15/09	Fri 9/17/09										
45	System Impact Study	Mon 6/15/09	Fri 9/17/09										
46	Submission of SIA form to IESO	Mon 6/15/09	Fri 9/17/09										
47	Preparation of initial requirements for HONI CIA (grant SIA)	Mon 6/15/09	Fri 7/17/09										
48	Preparation of final SIA	Mon 6/15/09	Fri 9/4/09										
49	Notification of Conditional approval by IESO	Mon 9/7/09	Fri 9/1/09										
50	Hydro One connection process	Mon 6/15/09	Fri 9/17/10										
51	Submission of CIA form to HONI	Mon 6/15/09	Mon 6/15/09										
52	Customer impact assessment in Draft form	Mon 7/20/09	Fri 8/7/09										
53	Preparation of planning specifications	Mon 8/10/09	Fri 9/18/09										
54	Preparation and execution of Estimate agreement	Mon 9/21/09	Fri 10/2/09										
55	Customer input and final CIA	Mon 8/10/09	Fri 9/25/09										
56	Connection Estimates by HONI	Mon 10/5/09	Fri 1/22/10										
57	Preparation of CCRA draft	Mon 12/5/10	Fri 2/26/10										
58	Review and execution of CCRA by RES	Mon 3/1/10	Fri 3/26/10										
59	Connection agreement execution (30 days before connection)	Fri 3/26/10	Fri 3/26/10										
60	HONI Construction on infrastructure	Mon 3/29/10	Fri 9/17/10										
61	Backfeed	Fri 9/17/10	Fri 9/17/10										
62	Ontario Energy Board Process	Fri 7/17/09	Fri 11/6/09										
63	Submission of Generator Licence Application	Fri 7/17/09	Fri 7/17/09										
64	Review by Board of Generator Licence Application	Fri 7/17/09	Thu 10/29/09										
65	Obtain Generator license	Thu 10/29/09	Fri 11/6/09										
66	Leave to construct	Mon 8/10/09	Fri 11/6/09										
67	Submission of LTC to OEB	Mon 8/10/09	Mon 8/10/09										
68	Review of LTC by OEB and hearing	Mon 8/10/09	Fri 11/6/09										
69	Grant of LTC	Fri 11/6/09	Fri 11/6/09										
70	Transmission Line and related infrastructure	Mon 11/2/09	Fri 9/17/10										
71	Mobilization	Mon 5/3/10	Fri 5/14/10										
72	Order of substation and other major equipment	Mon 11/2/09	Mon 11/2/09										
73	Construction of substation	Mon 5/17/10	Fri 9/17/10										
74	Installation of Grid transformer in substation	Mon 8/21/10	Fri 8/20/10										
75	Substation ready for energization	Fri 9/17/10	Fri 9/17/10										
76	Construction of Switchyard	Wed 5/19/10	Fri 9/17/10										
77	Construction of overhead line	Wed 6/21/10	Fri 9/17/10										
78	Windfarm Infrastructure	Mon 4/19/10	Tue 11/8/11										
79	Site clearing	Mon 4/19/10	Mon 5/14/10										
80	Road construction	Mon 5/17/10	Fri 9/10/10										
81	Road grading and site restoration	Wed 11/10/10	Tue 11/8/11										
82	Foundation materials and construction	Mon 5/17/10	Fri 9/10/10										
83	Turbine delivery	Mon 8/23/10	Wed 10/13/10										
84	Turbine Erection	Mon 8/23/10	Tue 11/8/10										
85	Turbine commissioning & start-up	Mon 9/6/10	Tue 11/23/10										

1 **PROJECT LOCATION – WINDFARM**

2 The Greenwich Windfarm will be constructed on approximately 4,000 hectares of Crown
3 land located partially within the Township of Dorion and partially on unorganized
4 territory within the District of Thunder Bay. The site is located approximately 60
5 kilometres northeast of the City of Thunder Bay.

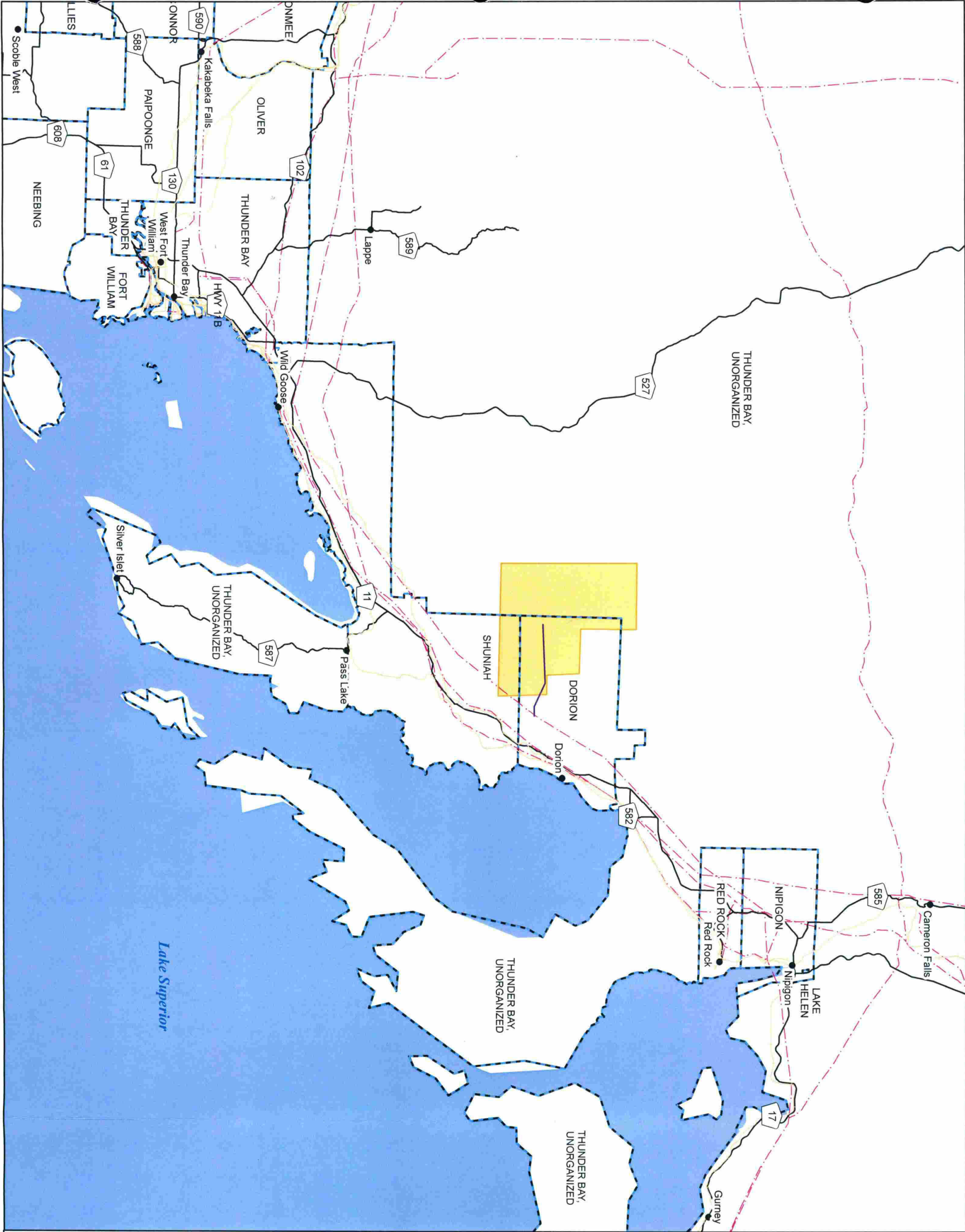
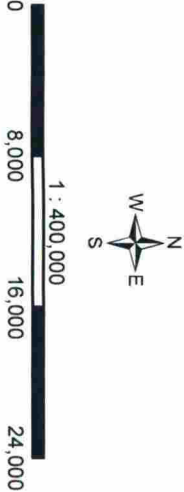
6 An overview map that shows the location of the Greenwich Windfarm, in a regional
7 context, is included at Exhibit D, Tab 1, Schedule 2.



Leave to Construct
Application

Project in Regional Context

- Legend**
- Cities
 - Highway
 - Railway
 - Existing Transmission Lines
 - Proposed Transmission Line
 - Wind Farm Boundary
 - Grid Cells under AOR Status
 - Waterbody



1 **PROJECT LOCATION – SUBSTATION AND SWITCHING STATION**

2 The Greenwich Windfarm Substation will be located on less than one hectare of Crown
3 land, approximately in the middle of the windfarm, adjacent to a public logging road that
4 traverses Greenwich Windfarm.

5 The Greenwich Windfarm Switching Station will be located on less than one hectare of
6 Crown land, adjacent to Hydro One's transmission line, approximately one kilometre
7 south of Ouimet Canyon Road.

8 A detailed map that shows the proposed locations of the Greenwich Windfarm
9 Substation and the Greenwich Windfarm Switching Station is included at Exhibit D, Tab
10 2, Schedule 2.

Greenwich Wind Farm Transmission Line in Relation to Wind Farm

Legend

- Target Turbines
- Expansion Turbines
- Substation
- Switchyard
- Site Compound
- O&M Building
- Batch Plant
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV
- Transmission Line
- Existing HONI 115KV
- Proposed Transmission Line
- MV CIRCUIT Phase I
- MV CIRCUIT Phase II
- Phase I Access Road
- Phase II Access Road
- Contours (5m)
- River/Streams
- Project Boundary
- Grid Cells Under AOR Status
- Forested Areas
- Waterbody

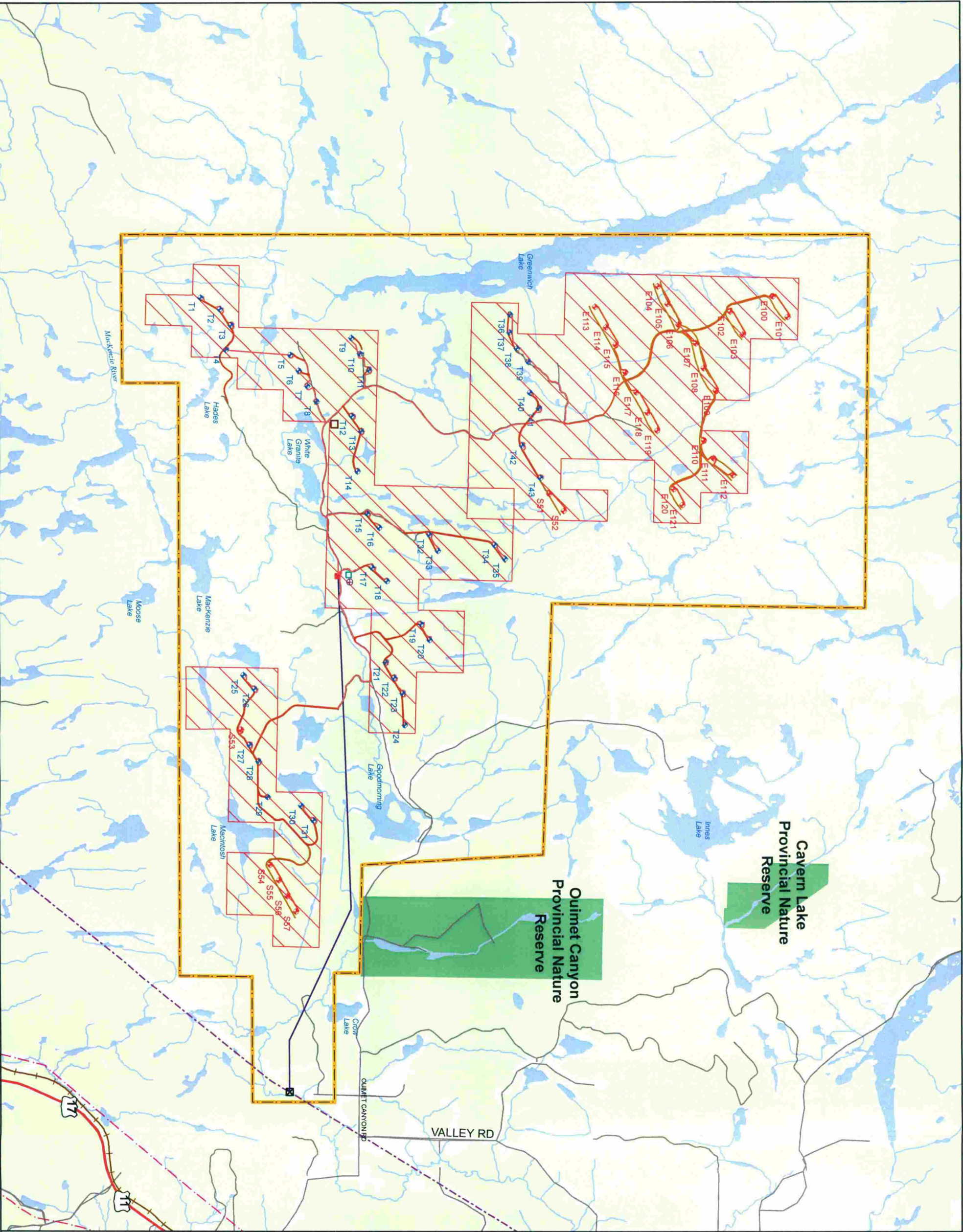
0 1,500 3,000 4,500

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CONSULTING

Created By: SFG
Checked By: DM
Date Created: February 22, 2007
Date Modified: July 8, 2009
File Path: I:\GIS\077384_Greenwich\
2008 Greenwich\mapping\ESR July 2009\
Figure 2.1 Wind Farm Layout.mxd



1 **PROJECT LOCATION – TRANSMISSION LINE**

2 The proposed Greenwich Windfarm Transmission Line will extend from the Greenwich
3 Windfarm Substation, approximately 10.3 km east, to the Greenwich Windfarm
4 Switching Station. The Greenwich Windfarm Switching Station will be the point of
5 interconnection to circuits M23L and M24L of the existing Hydro One transmission line
6 running west of Highway 17.

7 The route of the proposed Greenwich Windfarm Transmission Line is shown in the map
8 located at Exhibit D, Tab 3, Schedule 2. The particular route was chosen with
9 consideration for topographical features and the environmental constraints shown in
10 Figure 6.2 of the Final ESR included at Exhibit H, Tab 1, Schedule 2.

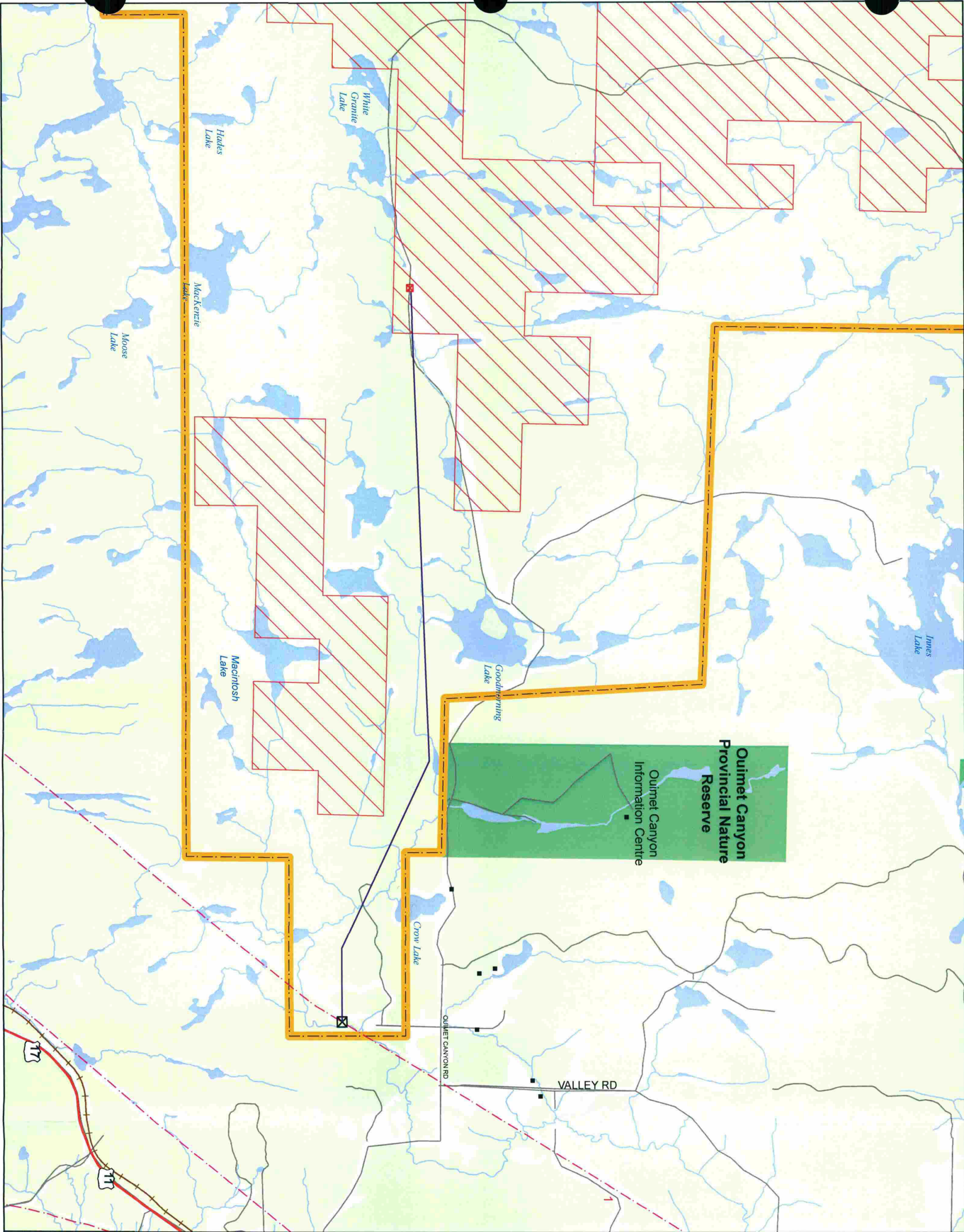
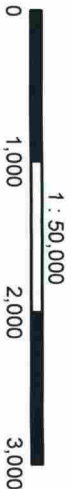


Leave to Construct
Application

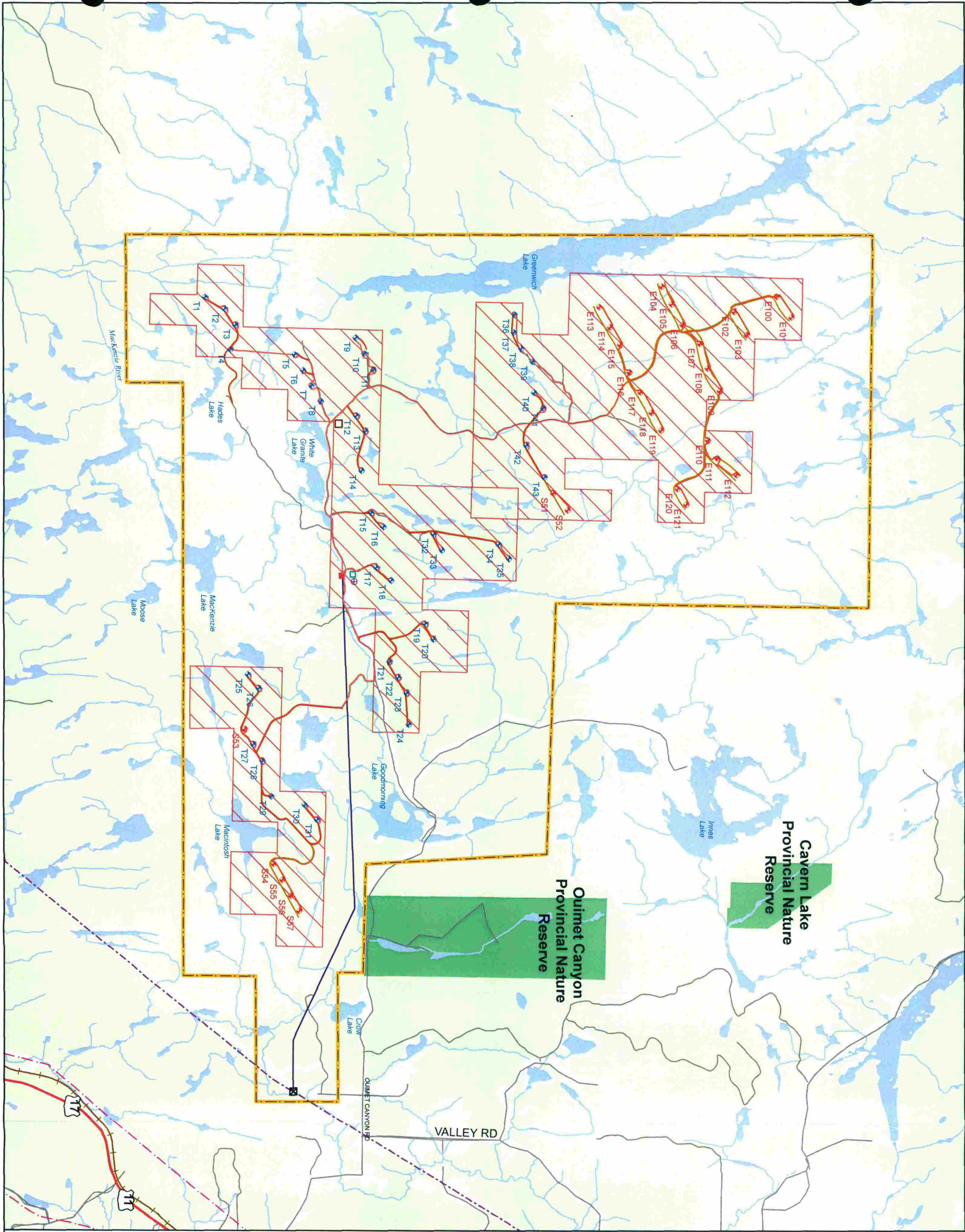
Transmission Line Route

Legend

- Substation
- Switchyard
- Receiver
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV Transmission Lines
- Proposed Transmission Line
- River/Streams
- Wind Farm Boundary
- Grid Cells under AOR Status
- Forested Lands
- Waterbody

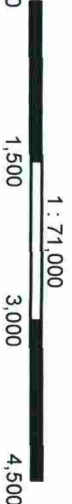


Greenwich Wind Farm Schematic of Windfarm Layout



Legend

- Target Turbines
- Expansion Turbines
- Substation
- Switchyard
- Site Compound
- O&M Building
- Batch Plant
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV
- Transmission Line
- Existing HONI 115KV
- Transmission Line
- Proposed Transmission Line
- MV CIRCUIT Phase I
- MV CIRCUIT Phase II
- Phase I Access Road
- Phase II Access Road
- Contours (5m)
- River/Streams
- Project Boundary
- Grid Cells Under AOR Status
- Forested Areas
- Waterbody



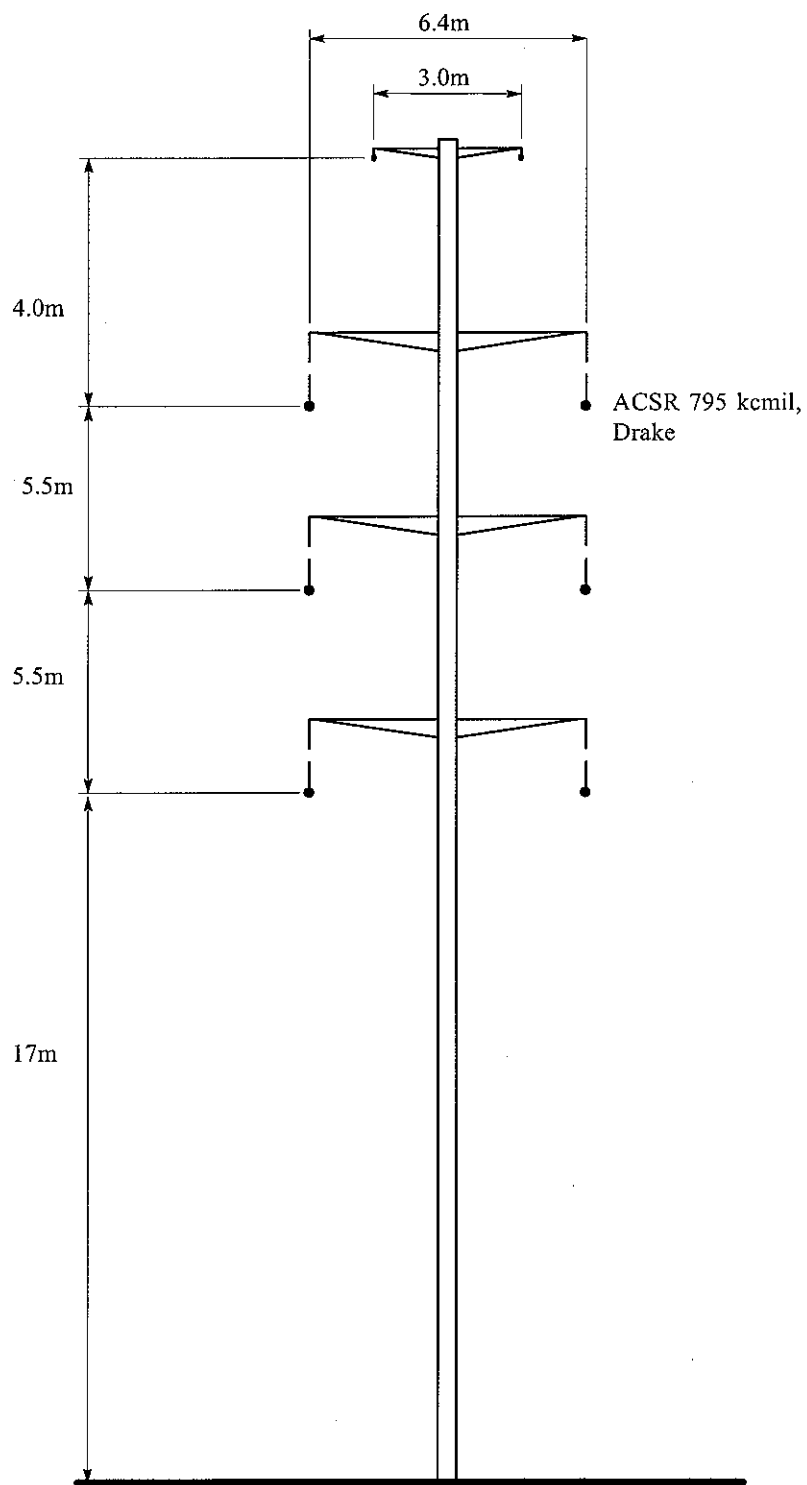
1 **FACILITIES - TRANSMISSION LINE**

2 The Greenwich Windfarm Transmission Line will connect the Greenwich Windfarm to
3 Hydro One's existing 230kV circuits M23L and M24L and comprise approximately 10.3
4 kilometres of double circuit dedicated 230kV line. The line will connect, at its western
5 terminus, to the Greenwich Windfarm Substation and at its eastern terminus, to the
6 Greenwich Windfarm Switching Station.

7 A single-line diagram of the proposed electrical connection is attached at Exhibit E, Tab
8 2, Schedule 2.

9 The proposed Greenwich Windfarm Transmission Line will proceed in a single pole
10 configuration, with a parallel alignment of wires in order to accommodate both circuits
11 required to connect Greenwich Windfarm to the grid. A pole schematic is included at
12 Exhibit E, Tab 2, Schedule 3. The span length between each pole is expected to be
13 approximately 100 meters although the final design will depend on the outcome of
14 detailed geotechnical analysis, final engineering design as well as clearance
15 considerations along the proposed route of the Greenwich Transmission Line. Further
16 detailed engineering and geotechnical analysis might require the transmission line to be
17 a double poled H-Frame structure but at this stage, it appears that the single pole
18 structure is most likely.

CONFIDENTIAL DOCUMENT
TAB E-2-2



R1	X1	R0	X0	B1	C1	C0
Ω/km	Ω/km	Ω/km	Ω/km	$\mu\text{S}/\text{km}$	$\mu\text{F}/\text{km}$	$\mu\text{F}/\text{km}$
0.0885	0.4862	0.3394	1.1142	3.4610	0.009181	0.006186

FACILITIES - SUBSTATION

The Greenwich Windfarm Substation will comprise two 34.5/ 246 kV transformers, each with a dedicated 230 kV circuit breaker, buswork, switches and line termination equipment, as well as 34.5 kV circuit breakers and associated switchgear, switched capacitor banks for reactive (VAR) support and revenue metering (with transformer loss and 230kV line loss compensation/adjustment). Line protection and monitoring will be provided by multi-function micro-processor based relays and will include primary and back-up systems that incorporate combinations of high-speed differential, impedance (step-distance), overcurrent, and breaker failure functions. The relays will also provide additional other monitoring, control and communications functions as per their technical specifications.

The electrical ratings details of the transformers will be selected to suit the short circuit and voltage regulation requirements of Hydro One's 230kV transmission system, and will be confirmed when the CIA is issued.

An electrical single-line diagram showing the basic design of the proposed Greenwich Windfarm Substation is included in Exhibit E, Tab 3, Schedule 2. The detailed specifications of the transformer are set out in Exhibit E, Tab 3, Schedule 3.

CONFIDENTIAL DOCUMENT
TAB E-3-2

CONFIDENTIAL DOCUMENT
TAB E-3-3

1 **FACILITIES - SWITCHING STATION**

2 The Greenwich Windfarm Switching Station will be located adjacent to Hydro One's 230
3 kV double-circuit transmission line M23L/M24L, at a point that is located approximately
4 183 km from Hydro One's Marathon Transmission Station, and 47 km from Hydro One's
5 Lakehead Transmission Station.

6 The Greenwich Windfarm Switching Station will include two 230 kV breakers and
7 motorized disconnect switches ("MOD"), each tapped to Hydro One's M23L and M24L
8 circuits and two 230kV MOD switches for the two transmission line terminations. Hydro
9 One will install the structures and conductor necessary to tie the Greenwich Windfarm
10 Switching Station to the two existing Hydro One transmission lines. Protection and
11 monitoring will be provided by multi-function micro-processor based relays. Protection
12 includes primary and back-up relay systems, incorporating combinations of high-speed
13 differential, impedance (step-distance), overcurrent, and breaker failure functions in
14 addition to other monitoring, control, and communications functions that are available on
15 these types of relays.

16 A proposed layout of the Greenwich Windfarm Switching Station is attached at Exhibit
17 E, Tab 4, Schedule 2.

GRAVELLED
ACCESS ROAD

BOUNDARY LINE

FENCE

BACKUP ALUX SR. TR

CONTROL
HOUSE

230 KV LINE TO GREENWICH WIND FARM SUBSTATION

TAP TO 230 KV LINE M23L

230 KV LINE TO GREENWICH WIND FARM SUBSTATION

TAP TO 230 KV LINE M24L

S.A.
C.V.T.2)
S.V.T.1)

D.S. & GENTRY

P.I.

C.B.

P.I.

MOTORISED D.S.
AND
GENTRY

S.A.

55m

69m

LEGEND:

- 1. SITE SHALL BE EXTENDED TO 3 METERS BEYOND THE FENCE.

NOTES

1. SITE SHALL BE EXTENDED TO 3 METERS BEYOND THE FENCE.

REFERENCE DRAWINGS:

AG-9011-01 BL GREENWICH WIND FARM SINGLE LINE DIAGRAM SCHEMATIC



PRELIMINARY

No.	Revisions/Remarks	Date

Orientation	Scale



250 Main St. Suite 303
Toronto, Ontario M5S 1B1
Tel: (416) 464-4200 Fax: (416) 464-4200

Project:
RENEWABLE ENERGY SYSTEMS
(RES)
GREENWICH
WIND FARM

Drawing Title:
GREENWICH WIND FARM
230KV JUNCTION STATION
GENERAL ARRANGEMENT

Drawn By:
SY/AB

Date:
JULY 24 2009

Reviewed By:
AB

Proj. No:

Checked By:

Rev. No:

Approved By:

Scale:
1:150

Drawing No:

AG-9011-03

1 **INTERCONNECTION - OVERVIEW**

2 In October 2008, RES Canada and the IESO entered into a System Impact Assessment
3 Agreement ("SIA Agreement"), pursuant to which RES Canada agreed to pay the costs
4 and expenses incurred by the IESO and by any external consultants engaged by the
5 IESO in order to complete a System Impact Assessment ("SIA") in accordance with the
6 Market Rules. A copy of the agreement is included at Exhibit F, Tab 2, Schedule 1.

7 On October 15, 2008, the IESO issued a "System Impact Assessment (Part One)
8 Report" ("Part One SIA") indicating that the proposed connection of the Greenwich
9 Windfarm to the IESO-controlled transmission grid, via the proposed Greenwich
10 Windfarm Transmission Line, was acceptable. The Part One SIA also stated that a 14
11 MVar@34.5 kV capacitor bank would be required to be installed at the 34.5 kV bus in
12 the Greenwich Windfarm Substation and that an Under Load Tap Changer may also be
13 required to be installed, depending on the results of the System Impact Assessment
14 (Part Two) Report ("Part Two SIA"). A copy of the Part One SIA is included at Exhibit F,
15 Tab 2, Schedule 2.

16 As per the IESO's SIA process, and by virtue of the selection of Greenwich Windfarm
17 through the OPA Renewable Energy Supply III ("RES III") process, the Greenwich
18 Windfarm entered the committed generation project queue, meaning that the available
19 transmission capacity of 99 MW has been reserved for this specific project.

20 On October 14, 2008, RES Canada and Hydro One entered into a Greenwich Windfarm
21 Study Proposal ("Study Proposal"), pursuant to which Hydro One agreed to prepare a
22 Customer Impact Assessment ("CIA") to assess the impact of the Greenwich Windfarm
23 on its other transmission customers in the vicinity of the project. A copy of the Study
24 Proposal is included at Exhibit F, Tab 3, Schedule 1.

25 In May 2009, a decision was made to change the model of turbine that would be used in
26 the Greenwich Windfarm. Previously, it was expected that 66 GE xle 1.5MW turbines
27 would be installed. The Applicant now plans to install 43 Siemens 2.3 MW turbines.
28 The total generation capacity or general connection requirements of Greenwich
29 Windfarm have not been materially affected by this design change. However, this
30 change necessitated the submission of an updated joint SIA/CIA application, which was
31 submitted to the IESO and to Hydro One on June 15, 2009. The updated joint SIA/CIA
32 application is currently under review by the IESO and Hydro One and is included at
33 Exhibit F, Tab 3, Schedule 2.



Greenwich Lake Wind Farm
CAA ID 2008-337

System Impact Assessment Agreement

Between

RENEWABLE ENERGY SYSTEMS CANADA INC.

as Applicant

and

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

October 08, 2008

Confidential

AGREEMENT

Table of Changes

Reference (Section and Paragraph)	Description of Change
Entire document	The deposit scheme was modified to reflect decision to assess projects individually rather than as clusters, and as such, the contingency deposit is no longer required.

System Impact Assessment Agreement

THIS AGREEMENT dated 8th, October 2008.

BETWEEN:

Renewable Energy Systems Canada Inc. is a Corporation incorporated under the laws of Quebec, having its registered address and principal place of business at 1124 rue Marie-Anne Est, Suite 23, Montreal, Quebec H2J 2B7 Canada (the "*Connection Applicant*")

- and -

The Independent Electricity System Operator, a corporation incorporated by the *Electricity Act, 1998*, S.O. 1998, c. 15, Sched. A, having its registered address at 655 Bay Street, Suite 410, P.O. Box 1, Toronto, Ontario M5G 2K4 and its principal place of business in Ontario (the "*IESO*")

WHEREAS:

- A. The *Connection Applicant* proposes to establish a new or modify an existing connection to the *IESO*-controlled grid.
- B. The *Connection Applicant* has complied with the requirements set forth in section 6.1.15 of Chapter 4 of the *market rules* and has tendered to the *IESO* the *Deposit*.
- C. Section 6.1.15.3 of Chapter 4 of the *market rules* requires, as a condition of the conduct by the *IESO* of a *system impact assessment*, that the *Connection Applicant* execute this *Agreement* pursuant to which it agrees to pay:
 - (1) all of the costs and expenses incurred by the *IESO*, including the costs and expenses of the *transmitter(s)* to whose transmission *facilities* the proposed new or modified connection relates as invoiced to the *IESO*, in completing such *system impact assessment*, apportioned, where applicable, in accordance with sections 6.1.17 and 6.1.18 of Chapter 4 of the *market rules*, and including costs relating to *Ontario Energy Board* proceedings, and relating to any further studies performed by the *IESO* in accordance with the *Procedures*; and
 - (2) all of the costs and expenses of external consultants engaged by the *IESO* to assist in completing the *system impact assessment*.

NOW therefore, in consideration of the mutual covenants set forth herein and of other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, the *Parties* agree as follows:

ARTICLE 1 INTERPRETATION

1.1 **Incorporation of Market Rules Definitions:** Subject to section 1.2, italicized expressions used in this *Agreement* have the meanings ascribed thereto in Chapter 11 of the *market rules*.

1.2 **Supplementary Definitions:** In this *Agreement*, the following italicized expressions shall have the meanings set out below unless the context otherwise requires:

“*Agreement*” means this *Agreement*, including the Schedules to this *Agreement*, and the expressions “hereof”, “herein”, “hereto”, “hereunder”, “hereby” and similar expressions refer to this *Agreement* and not to any particular section or other portion of this *Agreement*;

“*System Impact Assessment Deposit*” means the deposit referred to in section 6.1.15.2 of Chapter 4 of the *market rules* and as set forth in the *Procedures*;

“*Party*” means a party to this *Agreement* and “*Parties*” means every *Party*; and

“*Procedures*” means the procedures referred to in section 6.1.14 of Chapter 4 of the *market rules*.

1.3 **Interpretation:** In this *Agreement*, unless the context otherwise requires:

1.3.1 words importing the singular include the plural and vice versa;

1.3.2 words importing a gender include any gender;

1.3.3 when italicized, other parts of speech and grammatical forms of a word or phrase defined in this *Agreement* have a corresponding meaning;

1.3.4 the expression “person” includes a natural person, any company, partnership, trust, joint venture, association, corporation or other private or public body corporate, and any government agency or body politic or collegiate;

1.3.5 a reference to a thing includes a part of that thing;

1.3.6 a reference to an article, section, provision or schedule is to an article, section, provision or schedule of this *Agreement*;

1.3.7 a reference to any statute, regulation, proclamation, order in council, ordinance, by-law, resolution, rule, order or directive includes all statutes, regulations, proclamations, orders in council, ordinances, by-laws or resolutions, rules, orders or directives varying, consolidating, re-enacting, extending or replacing it and a reference to a statute includes all regulations, proclamations, orders in council, rules and by-laws of a legislative nature issued under that statute;

1.3.8 a reference to a document or provision of a document, including this *Agreement*, the *market rules* and the *Procedures*, or a provision of this *Agreement*, the *market rules* or the *Procedures*, includes an amendment or supplement to, or replacement or novation of, that document or that provision of that document, as well as any exhibit, schedule, appendix or other annexure thereto;

- 1.3.9 a reference to a person includes that person's heirs, executors, administrators, successors and permitted assigns;
 - 1.3.10 a reference to sections of this *Agreement* or of the *market rules* separated by the word "to" (i.e., "sections 1.1 to 1.4") shall be a reference to the sections inclusively;
 - 1.3.11 the expression "including" means including without limitation, the expression "includes" means includes without limitation and the expression "included" means included without limitation; and
 - 1.3.12 a reference in this *Agreement* to the *market rules* includes a reference to the *Procedures* and to any policies, guidelines or other documents established by the *IESO* and adopted by the *IESO Board* pursuant to section 7.7 of Chapter 1 of the *market rules*.
- 1.4 **Headings:** The division of this *Agreement* into articles and sections and the insertion of headings are for convenience of reference only and shall not affect the interpretation of this *Agreement*, nor shall they be construed as indicating that all of the provisions of this *Agreement* relating to any particular topic are to be found in any particular article, section, subsection, clause, provision, part or schedule.

ARTICLE 2 MARKET RULES

- 2.1 **Market Rules Govern:** In the event of any inconsistency between this *Agreement* and the *market rules*, the *market rules* shall prevail to the extent of the inconsistency.
- 2.2 **Compliance with Market Rules:** The *Connection Applicant* hereby agrees to be bound by and to comply with all of the provisions of the *market rules* so far as they are applicable to *connection applicants*.

ARTICLE 3 COSTS AND SCOPE OF SYSTEM IMPACT ASSESSMENT

- 3.1 **Receipt of System Impact Assessment Deposit:** The *IESO* hereby confirms payment of the *System Impact Assessment Deposit* by the *Connection Applicant*.
- 3.2 **Liability for Costs and Expenses:** The *Connection Applicant* hereby irrevocably and unconditionally agrees that it shall be liable to pay all of the costs and expenses incurred, directly or indirectly, by or on behalf of the *IESO*, including the costs and expenses of the *transmitter(s)* to whose transmission facilities the proposed new or modified facilities relates as invoiced to the *IESO*.
 - 3.2.1 relating to the processing of the *Connection Applicant's request for connection assessment* since the date of the *invoice* issued to the *Connection Applicant* pursuant to section 6.1.20 of Chapter 4 of the *market rules*;
 - 3.2.2 in conducting the *system impact assessment* associated with the *Connection Applicant's request for connection assessment*, apportioned if applicable in accordance with the *Procedures*;

- 3.2.3 relating to any further analysis that may be required in respect of *Ontario Energy Board* proceedings but is outside the current scope of work annexed as Schedule 1 to this *Agreement*, and to regulatory support, including legal fees, associated with the *IESO's* participation in the *Connection Applicant's* leave to construct application(s) before the *Ontario Energy Board*;
- 3.2.4 relating to any further studies, analysis and/or documentation required in respect to:
- a) the preparation of an addendum to the *system impact assessment* in accordance with the *Procedures*; or
 - b) the withdrawal of a request for connection assessment subsequent to the completion of the *system impact assessment*; and
- 3.2.5 relating to the costs and expenses incurred by external consultants engaged by the *IESO* to assist in completing the system impact assessment and any further required analysis, documentation or studies.
- 3.3 **Payment of Invoice:** The *Connection Applicant* hereby agrees that it shall, within the time stated in section 6.1.21 of Chapter 4 of the *market rules*, pay to the *IESO* any amount owing under an *invoice* submitted to it by the *IESO* pursuant to section 6.1.20 of Chapter 4 of the *market rules* and acknowledges and agrees that such amount may, without prejudice to any other manner of recovery available at law, be recovered by the *IESO* in the same manner as an obligation to make payment under the *market rules*.
- 3.4 **Refund of System Impact Assessment Deposit:** Where Article 4 does not apply, and where the aggregate amount of the costs and expenses apportioned to the *Connection Applicant* is less than the amount of the *System Impact Assessment Deposit*, the *IESO* shall refund to the *Connection Applicant* an amount equal to the amount by which the amount of the *System Impact Assessment Deposit* exceeds such aggregate amount.
- 3.5 **No Stay of Payment Obligation:** The *Connection Applicant* hereby agrees that it shall pay to the *IESO* the amount referred to in section 3.3 notwithstanding any dispute resolution process that may be initiated by the *Connection Applicant* in respect of its *request for connection assessment*, the *system impact assessment* associated with its *request for connection assessment* or this *Agreement*.
- 3.6 **Notice of Cost in Excess of Deposit:** The *IESO* shall promptly notify the *Connection Applicant* if the *IESO* expects that the costs and expenses referred to in section 3.2 are likely to exceed the amount of the *System Impact Assessment Deposit*.
- 3.7 **Scope of System Impact Assessment:** Annexed as Schedule 1 to this *Agreement* is a description of the scope of the *system impact assessment* associated with the *Connection Applicant's request for connection assessment*, as agreed to by the *IESO*, the *connection applicant* and the *transmitter(s)* to whose transmission facilities the proposed new or modified *connection* relates.

ARTICLE 4 TERMINATION

- 4.1 **Withdrawal:** The *Connection Applicant* may at any time:

- 4.1.1 withdraw its *request for connection assessment* by the giving of written notice to that effect to the *IESO* in accordance with the *Procedures*; or
- 4.1.2 be deemed to have withdrawn its *request for connection assessment* in accordance with the *Procedures*, with effect from the date of issuance to the *Connection Applicant* of a notice of deemed withdrawal by the *IESO*.
- 4.2 **Costs to Date of Withdrawal:** Upon receipt of the notice referred to in section 4.1.1 or issuance of the notice referred to in section 4.1.2, as the case may be, the *IESO* shall:
- 4.2.1 where the aggregate amount of the costs and expenses:
- (a) referred to in section 3.2.1 incurred with respect to the *Connection Applicant's request for connection assessment* on or before the date of receipt by the *IESO* of the notice referred to in section 4.1.1 or the date of issuance by the *IESO* of the notice referred to in section 4.1.2, as the case may be; and
 - (b) referred to in section 3.2.2 incurred or apportioned with respect to the *system impact assessment* associated with the *Connection Applicant's request for connection assessment* on or before the date of receipt by the *IESO* of the notice referred to in section 4.1.1 or the date of issuance by the *IESO* of the notice referred to in section 4.1.2, as the case may be,
- exceeds the amount of the *System Impact Assessment Deposit*, submit to the *Connection Applicant* an *invoice* for the amount by which the aggregate amount of such costs and expenses exceeds the amount of the *System Impact Assessment Deposit*; or
- 4.2.2 subject to section 4.3, and in accordance with the *Procedures*, where the costs and expenses referred to in section 4.2.1 are less than the amount of the *System Impact Assessment Deposit*, refund to the *Connection Applicant* an amount equal to the amount by which the amount of the *System Impact Assessment Deposit* exceeds such costs and expenses.
- 4.3 **Costs after the Date of Withdrawal:** Where costs and expenses are incurred by the *IESO* or the *transmitter(s)*, to whose transmission *facilities* the proposed new or modified connection relates, to repeat connection assessment studies or to conduct additional studies as a result of the *Connection Applicant* withdrawing its *request for connection assessment*, the *Connection Applicant* agrees to pay the costs and expenses associated with such repeated or additional studies up to a maximum amount of \$15,000.
- 4.4 **Liability for Costs:** The *Connection Applicant* hereby irrevocably and unconditionally agrees that, in the event that it withdraws or is deemed to have withdrawn its *request for connection assessment*, it shall pay to the *IESO* the amount specified in any *invoice* received by it pursuant to section 4.2.1 and, where applicable, section 4.3, within ten *business days* of receipt of such *invoice*. The *Connection Applicant* acknowledges and agrees that such *invoice* shall be considered to create an obligation under the *market rules* to pay the amount specified in such *invoice* and that such amount may, without prejudice to any other manner of recovery available at law, be recovered by the *IESO* accordingly.
- 4.5 **Payment of Invoice:** The *Connection Applicant* hereby agrees that it shall pay to the *IESO* the amount referred to in section 4.4 notwithstanding any dispute resolution process that may be

initiated by the *Connection Applicant* in respect of its *request for connection assessment*, the *system impact assessment* associated with its *request for connection assessment* or this *Agreement*.

- 4.6 **No Obligation to Remit Reports Etc.:** Where the *Connection Applicant's request for connection assessment* has been withdrawn or has been deemed to have been withdrawn, the *IESO* shall have no obligation to provide the *Connection Applicant* with any information or documentation pertaining to or comprising, in whole or in part, the *system impact assessment* associated with its *request for connection assessment*, including any report or study relating thereto.

- 4.7 **Termination and Survival:** This *Agreement* shall terminate on:

- 4.7.1 the date of receipt by the *IESO* of the notice referred to in section 4.1.1 or the date of issuance by the *IESO* of the notice referred to in section 4.1.2, as the case may be; or
- 4.7.2 the date on which the *IESO* tenders to the *Connection Applicant* the report of the results of the completed *system impact assessment* associated with the *Connection Applicant's request for connection assessment*,

whichever is the earlier, provided that sections 3.2, 3.3, 3.4, 4.2, 4.3, 4.4, 4.5 and 4.6, as may be applicable, shall survive the termination of this *Agreement* until such time as payment has been made as required thereby.

ARTICLE 5

FURTHER INFORMATION AND DOCUMENTATION

- 5.1 **Obligation to Provide Information:** The *Connection Applicant* hereby agrees to provide the *IESO* with such information and documentation as the *IESO* may reasonably request for purposes of the completion of the *system impact assessment* associated with the *Connection Applicant's request for connection assessment*. Such information shall be provided within the time noted in the request or within such longer period of time as may be agreed between the *IESO* and the *Connection Applicant*.
- 5.2 **Failure to Provide Information:** The *Connection Applicant* hereby acknowledges and agrees that, in accordance with the *Procedures*, the failure by it to provide the information requested pursuant to section 5.1 within the time noted in the request constitutes a grounds upon which its *request for connection assessment* may be deemed to have been withdrawn.
- 5.3 **Disclosure of Information to Transmitter(s):** The *Connection Applicant* hereby agrees that the *IESO* may disclose such information and documentation as may be reasonably requested by the *transmitter(s)* to whose facilities the proposed new or modified connection relates, in order for the *transmitter(s)* to discharge its responsibilities in respect to the *system impact assessment* of the proposed new or modified connection, as set out in the *Procedures*.
- 5.4 **Disclosure of Information to External Consultants:** The *Connection Applicant* hereby agrees that the *IESO* may disclose relevant information, including without limitation *confidential information*, and documentation to external consultants retained by the *IESO* to assist in completing the *System Impact Assessment*. Such information is information that may be reasonably required by the consultants to perform, or assist in performing the *System Impact Assessment*.

- 5.5 **Publication of System Impact Assessment Report:** The *Connection Applicant* hereby agrees that the *IESO* may publish the *System Impact Assessment Report* pertaining to the proposed new or modified connection, in accordance with the *Procedures*.

ARTICLE 6 REPRESENTATIONS AND WARRANTIES

- 6.1 **Representations and Warranties of the IESO:** The *IESO* hereby represents and warrants as follows to the *Connection Applicant*, and acknowledges and confirms that the *Connection Applicant* is relying on such representations and warranties:
- 6.1.1 that the execution, delivery and performance of this *Agreement* by it has been duly authorized by all necessary corporate and/or governmental action; and
 - 6.1.2 that this *Agreement* constitutes a legal and binding obligation on the *IESO*, enforceable against the *IESO* in accordance with its terms.
- 6.2 **Representations and Warranties of the Connection Applicant:** The *Connection Applicant* hereby represents and warrants as follows to the *IESO*, and acknowledges and confirms that the *IESO* is relying on such representations and warranties:
- 6.2.1 that the execution, delivery and performance of this *Agreement* by it has been duly authorized by all necessary corporate and/or governmental action; and
 - 6.2.2 that this *Agreement* constitutes a legal and binding obligation on the *Connection Applicant*, enforceable against the *Connection Applicant* in accordance with its terms.

ARTICLE 7 MISCELLANEOUS

- 7.1 **Amendment:** No amendment of this *Agreement* shall be effective unless made in writing and signed by the *Parties*.
- 7.2 **Assignment:** The *Connection Applicant* may not assign or transfer, whether absolutely, by way of security or otherwise, all or any part of its rights or obligations under this *Agreement* without the prior written consent of the *IESO*. The *IESO* may not assign or transfer, whether absolutely, by way of security or otherwise, all or any part of its rights or obligations under this *Agreement* without the prior written consent of the *Connection Applicant*.
- 7.3 **Successors and Assigns:** This *Agreement* shall enure to the benefit of, and be binding on, the *Parties* and their respective heirs, administrators, executors, successors and permitted assigns.
- 7.4 **Further Assurances:** Each *Party* shall promptly execute and deliver or cause to be executed and delivered all further documents in connection with this *Agreement* that the other *Party* may reasonably require for the purposes of giving effect to this *Agreement*.
- 7.5 **Waiver:** A waiver of any default, breach or non-compliance under this *Agreement* is not effective unless in writing and signed by the *Party* to be bound by the waiver. No waiver will be inferred or implied by any failure to act or by the delay in acting by a *Party* in respect of any default, breach or non-observance or by anything done or omitted to be done by the other *Party*. The

waiver by a *Party* of any default, breach or non-compliance under this *Agreement* shall not operate as a waiver of that *Party's* rights under this *Agreement* in respect of any continuing or subsequent default, breach or non-observance (whether of the same or any other nature).

7.6 **Severability:** Any provision of this *Agreement* that is invalid or unenforceable in any jurisdiction shall, as to that jurisdiction, be ineffective to the extent of that invalidity or unenforceability and shall be deemed severed from the remainder of this *Agreement*, all without affecting the validity or enforceability of the remaining provisions of this *Agreement* or affecting the validity or enforceability of such provision in any other jurisdiction.

7.7 **Notices:** Any notice, demand, consent, request or other communication required or permitted to be given or made under this *Agreement* shall:

7.7.1 be given or made in the manner set forth in section 8.1 of Chapter 1 of the *market rules*;

7.7.2 be addressed to the other *Party* in accordance with the information set forth in Schedule 2; and

7.7.3 be treated as having been duly given or made in accordance with the provisions of section 8.2 of Chapter 1 of the *market rules*.

Either *Party* may change its address and representative as set forth in Schedule 2 by written notice to the other *Party* given as aforesaid. Such change shall not constitute an amendment to this *Agreement* for the purposes of the application of section 7.1.

7.8 **Governing Law:** This *Agreement* shall be governed by and construed in accordance with the laws of the Province of Ontario and the federal laws of Canada applicable therein.

7.9 **Attornment:** Subject to section 7.10, the *Connection Applicant* hereby irrevocably and unconditionally submits, for itself and its property, to the exclusive jurisdiction of the courts of Ontario in any action or proceeding arising out of or relating to this *Agreement* or for the recognition and enforcement of any judgment. Each of the *Parties* hereby agrees that a final judgment in any such action or proceeding shall be conclusive and may be enforced in other jurisdictions in any manner permitted by law. Nothing in this *Agreement* shall preclude the *IESO* from bringing any action or other proceeding relating to this *Agreement* against the *Connection Applicant* or its properties in any other jurisdiction.

7.10 **Dispute Resolution:** Except as may otherwise be provided in the *market rules*, any disputes arising under this *Agreement* shall be resolved using the dispute resolution process set out in section 2 of Chapter 3 of the *market rules*.

7.11 **Counterparts:** This *Agreement* may be executed in any number of counterparts, each of which shall be deemed to be an original and all of which taken together shall be deemed to constitute one and the same instrument. Counterparts may be executed either in original or faxed form and the *Parties* adopt any signatures received by a receiving facsimile machine as original signatures of the *Parties*; provided, however, that any *Party* providing its signature in such manner shall promptly forward to the other *Party* an original signed copy of this *Agreement* which was so faxed

7.12 **Liability:** The provisions of section 13 of Chapter 1 of the *market rules* apply to this *Agreement* and are hereby incorporated by reference herein, with all references in such section to a *market participant* being deemed to be references to the *Connection Applicant*.

IN WITNESS WHEREOF the *Parties* have, by their duly appointed and authorized representatives, executed this *Agreement*.

Renewable Energy Systems Canada Inc.

By: 

Name: ~~Nicolas Muszynski~~ Peter Clibbon

Title: ~~Development Manager~~ Vice-President

Date: 25 September, 2008

INDEPENDENT ELECTRICITY SYSTEM OPERATOR

By: 

Name: Kim Warren

Title: Director – Planning & Assessments

Date: Oct 08/08

SCHEDULE 1
SCOPE OF WORK
Greenwich Lake Wind Farm: CAA ID 2008-337

1. General

Renewable Energy Systems Canada Inc. is proposing to develop a 99 MW wind farm located about 60 km northeast of Thunder Bay, Ontario. The development will consist of a total of 66 GE 1.5 XLE 1.5 MW 60 Hz wind turbine generators. The power from the wind farm will be injected into Ontario power grid via two three phase 34.5/230 kV transformers plus approximately 11 km 230 kV overhead line, tapped on Hydro One's 230 kV circuit M23L and M24L. The tap point is about 47 km east of Lakehead TS.

The scheduled permanent in-service date is Q3 2010.

2. Assessment Assumptions

- The assessment will be performed based on related procedures and guideline documents that are in force at the time of the assessment.
- The system model will include transmission projects committed and under construction, all existing generators (including upgrading capacity at existing generating facilities), and new generators that were selected in all procurement processes completed to date, have signed a contract with a purchaser, or have signed a connection cost recovery agreement with a transmitter.

3. Assessment Process

The assessment for this Project is to be performed in two discrete stages:

LINE Part 1: Part 1 will primarily look at the feasibility of the proposed connection arrangement of the Project and the impact of the new generating facility on the local transmission facilities. Computer simulations will be strictly limited to a cursory check of acceptability of steady state under normal operating conditions. If the Project has material impact on the local transmission, (i) the connection arrangement should be revised, or (ii) the local transmission should be proposed to be upgraded, or (iii) maximum generating capability for the Project should be determined. Part 1 will also examine data, models and dynamic performance of the new facilities to check the facility's compliance to the Market Rules.

Part 2: Part 2 will perform a thorough investigation on the Project's impact on the IESO-controlled grid. Computation simulations will include power flow, short circuit, transient stability analyses under normal conditions, contingencies, and faults. The impact on the existing interfaces in the IESO-controlled grid will be evaluated. To minimize the adverse impact on the transmission system, some actions will be proposed including installing new transmission facilities, installing static and dynamic reactive power facilities, parameters adjustment/optimization of the control system, upgrading circuit breakers, developing special protection schemes.

Part 1 of the SIA is applicable to those *connection applicants* who are planning to participate in a procurement process, such as a Request For Proposal (RFP) initiated by the OPA, where connection costs must be covered by the offer price. This assessment would provide the *connection applicant* with information regarding connection requirements that are necessary to formulate an offer price.

Part 2 of the SIA will only be completed if the Project is selected and awarded a contract in the procurement process or an RFP, unless the *connection applicant* clearly requests that Part 2 be completed regardless of the results of the procurement process or RFP.

3.1 Part 1 Assessment

The work that is to be performed under Part 1 of the assessment will be as follows:

3.1.1 Connection Arrangement

Review and comment on the proposed connection arrangement for the Project. Check the data and models of the new facilities, the facility's compliance to the Market Rules and Transmission Code by inspection of data, and the intended mode of operation.

3.1.2 Power System Analysis

- Perform a limited number of load flow studies to determine the impact of the Project on the local transmission facilities under steady-state normal operating conditions, if necessary.
- Confirm that the ratings of the local transmission facilities, with consideration to various modes of operation, will be adequate to accommodate the Project.
- If the Project has a material impact on the local transmission system, evaluate the maximum amount of generating capacity that could be incorporated without major transmission reinforcements.
- Identify the local system upgrade that may be required to allow the full output of the Project.
- Identify the need for generation rejection or generation run-back to avoid overloading the remaining transmission facilities following a system contingency.

3.1.3 Data Verification

- Review the data provided for the equipment to be installed. Advise the *connection applicant* of any omissions, errors or data that appears inadequate.
- Evaluate dynamic performance of individual facilities, if applicable.

3.1.4 Report

If required, issue a report summarizing the results of Part 1, together with any specific requirements for the proposed connection to the IESO-controlled grid.

3.2 Part 2 Assessment

The system model to be used in Part 2 assessment will include, in addition to the assumptions listed in Section 2 above, all other generation projects that were selected in the procurement process in which the Project was also successful.

The work that is to be performed under Part 2 of the assessment will be as follows:

3.2.1 Short Circuit Assessment (by Transmitter)

Perform fault level analysis.

- Identify any breakers whose fault interrupting capability would be inadequate for the projected fault levels arising from the incorporation of the Project.
- Examine measures that could be implemented to avoid the need for replacing breakers and confirm that they would be effective (i.e. installing reactors; introducing normally-open points; operating with busbars split; etc.)

3.2.2 Steady State Analysis

Perform other Load Flow Studies that may be required in addition to those performed in Part 1.

- Determine the impact of the Project on the thermal ratings of the existing transmission facilities.

- Identify the system upgrades that may be required to allow the full output of the Project to be accommodated with all existing transmission elements in-service.
- Identify additional requirements for generation rejection or generation run-back (other than those identified in Part 1 of the Assessment), to avoid overloading the remaining transmission facilities following a system contingency. Produce the functional description for a suitable SPS and perform necessary analysis to support determination of NPCC Type status.
- Identify the effect of the Project on the transfer capability of selected transmission interfaces or on existing system operating limits.
- Identify the need for system upgrades that may be required to restore the transfer capabilities of the interfaces or the system operating limits to their former levels.

Perform Voltage Decline Studies.

- Perform load flow voltage analysis to determine the effect of the Project on the existing local transmission system, and affected transmission interfaces.
- Examine the effect of the loss of the Project on local voltages. If the voltage declines are in excess of the voltage change limits specified in the IESO Transmission Assessment Criteria document, the IESO will investigate possible options for limiting them.
- If the Project has a material impact on the transmission system, evaluate the maximum amount of generating capacity that could be incorporated without major transmission reinforcements.
- Determine the effect of transmission contingencies resulting in the loss of the Project on local voltages.

3.2.3 Transient State Analysis

- Examine the dynamic performance of the new generating units under fault conditions. Identify any deficiencies with the facilities.
- Verify the adequacy of low voltage ride through capability for the wind-turbine technology proposed for the Project.
- Determine the reactive power compensation required to be installed at the generating facility to provide adequate dynamic voltage control and compensate for the wind farm collector system excessive reactive losses, if necessary.

3.2.4 Report

Issue a report summarizing the combined results of Parts 1 & 2 of the IESO's Assessment for the Project.

4. Reporting & Schedule

The connection assessment process for the Project will be completed by the IESO on a best effort basis, as determined by number of other connection assessments underway, and as negotiated with the *connection applicant* with due consideration to the project completion schedule.

If this proposal is to be registered in an upcoming capacity or energy procurement process, the IESO will complete Part 1 SIA or the work necessary to meet the mandatory technical requirements expressed in the terms and conditions of the procurement process for which the proposal is to be registered, whichever is less, in advance of the proposal submission deadline.

If a consultant is retained by the connection applicant to perform Part 1 SIA, following execution of SIA and ND agreements, IESO staff is prepared to meet with the consultant to discuss the scope of Part 1 connection assessment, as well as reporting requirements. The *connection applicant* will be charged for IESO time and expenses associated with this meeting. Part 1 assessment must be completed and a report

issued by the consultant to the IESO for review 30 days prior to the proposal submission deadline, where applicable.

Part 2 SIA will be performed by the IESO only after the proposal is selected in a procurement process.

Upon completion of Part 2 study, a preliminary version of the draft SIA report will be circulated to the *connection applicant*, and the Transmitter for comments.

Once agreement has been reached on the contents of the draft version of the SIA Report, a copy will be posted on the IESO web site. This is expected to occur at a date which is mutually acceptable to the IESO and to the *connection applicant*.

Once the draft version of the SIA Report has been posted on the IESO web site, the Transmitter will be in a position to proceed with the Customer Impact Assessment (CIA). The *connection applicants* are required to initiate the CIA process with the Transmitter well in advance of the completion of the. A period of 30 calendar days is required for the receipt of preliminary responses to the CIA from any affected customers in the area. Any additional comments from the *connection applicant* or from the Transmitter on the draft SIA Report are also expected to be received during this period. The SIA Report will be finalized based on these comments.

The Transmitter's Customer Impact Assessment process allows a period of 90 calendar days from the date that the draft SIA Report is posted on the IESO web site for the CIA Report to be issued. This is to permit detailed studies to be performed to quantify the specific impact of the new Project on adjacent customers' facilities. Should the subsequent comments from affected customers merit significant changes to the final version of the SIA Report, then these would be need to be addressed in an Addendum to the SIA Report.

5. Record of Time & Expenses

For the IESO's activities, all time and expenses spent on this assessment are to be recorded, and an invoice issued as soon as possible following the completion of the assessment. If the total costs of the assessment are less than the deposit, the *connection applicant* will receive a refund.

SCHEDULE 2

NOMINATED REPRESENTATIVES FOR OFFICIAL NOTIFICATIONS

[Section 7.7]

IESO

Name of IESO Representative:	MICHAEL FALVO
Title:	MANAGER, TRANSMISSION ASSESSMENTS & PERFORMANCE
Address:	STATION A BOX 4474
City/Province/Postal Code:	TORONTO, ONTARIO M5W 4E5
Email address:	mike.falvo@ieso.ca
Phone:	(905) 855-6209
Fax:	(905) 855-6372

Renewable Energy Systems Canada Inc.

Name of <i>Connection Applicant</i> Representative:	NICOLAS MUSZYNSKI
Title:	Development Manager
Address:	1124 rue Marie-Anne Est, Suite 23
City/Province/Postal Code:	Montreal, Quebec H2J 2B7 Canada
Email address:	nicolas.muszynski@res-americas.com
Phone:	514-525-2113
Fax:	514-525-2113

CONNECTION ASSESSMENT & APPROVAL PROCESS

System Impact Assessment (Part One) Report

Greenwich Lake Wind Farm

Applicant: **Renewable Energy Systems Canada Inc.**

CAA ID 2008-337

Transmission Assessment and Performance Department

Independent Electricity System Operator
Ontario

October 15, 2008

System Impact Assessment (Part One) Report

Greenwich Lake Wind Farm

Disclaimers

IESO

This report has been prepared solely for the purpose of assessing whether the connection applicant's proposed connection with the IESO-controlled grid would have an adverse impact on the reliability of the integrated power system and whether the IESO should issue a notice of approval or disapproval of the proposed connection under Chapter 4, section 6 of the Market Rules.

Approval of the proposed connection is based on information provided to the IESO by the connection applicant and the transmitter(s) at the time the assessment was carried out. The IESO assumes no responsibility for the accuracy or completeness of such information, including the results of studies carried out by the transmitter(s) at the request of the IESO. Furthermore, the connection approval is subject to further consideration due to changes to this information, or to additional information that may become available after the approval has been granted. Approval of the proposed connection means that there are no significant reliability issues or concerns that would prevent connection of the proposed facility to the IESO-controlled grid. However, connection approval does not ensure that a project will meet all connection requirements. In addition, further issues or concerns may be identified by the transmitter(s) during the detailed design phase that may require changes to equipment characteristics and/or configuration to ensure compliance with physical or equipment limitations, or with the Transmission System Code, before connection can be made.

This report has not been prepared for any other purpose and should not be used or relied upon by any person for another purpose. This report has been prepared solely for use by the connection applicant and the IESO in accordance with Chapter 4, section 6 of the Market Rules. The IESO assumes no responsibility to any third party for any use, which it makes of this report. Any liability which the IESO may have to the connection applicant in respect of this report is governed by Chapter 1, section 13 of the Market Rules. In the event that the IESO provides a draft of this report to the connection applicant, you must be aware that the IESO may revise drafts of this report at any time in its sole discretion without notice to you. Although the IESO will use its best efforts to advise you of any such changes, it is the responsibility of the connection applicant to ensure that it is using the most recent version of this report.

This assessment identifies the impact of the new generating proposal on the local transmission facilities surrounding the proposed connection point. This assessment does not look at the impact of the project on the overall system reliability such as impact on system fault levels, transmission interface capability and system operating limits. This assessment does not identify the effect of this project on transmission congestion nor does it take into consideration the capacity limitations of the particular zone, if applicable.

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Greenwich Lake Wind Farm

1. Project Description

The *Renewable Energy Systems Canada Inc.* (RES) has proposed to develop a 99 MW wind farm located in the west of Dorion, Ontario, known as Greenwich Lake Wind Farm. The project will participate in Ontario government's RFP III, and if a contract is awarded it is expected that commercial operation will start at the forth quarter of 2012.

The Greenwich Lake Wind Farm will be connected to Hydro One's 230-kV circuits M23L and M24L via a new 230-kV 2×40/50/60-MVA interconnection substation located about 11 km far from the Hydro One right-of-way. The substation is connected to the 230-kV circuits by means of a selector switching system in which two 230-kV circuits are tapped separately. The new substation will consist of two 34.5/230 kV transformers, two 230-kV circuit breakers and associated switchgears, two 34.5-kV buses, and 4 collector line breakers. Each 34.5-kV bus is connected to the step-up transformer via a disconnect switch.

The wind farm will consist of 66 GE XLE 1.5 MW Wind Turbine Generators (WTGs). The WTG units will be arranged in four groups of 17 or 16 units each. Each group will be collected onto one collector line which will be connected to the 34.5-kV bus at the new substation via a circuit breaker.

Figure 1 shows the single line diagram of the proposed connection of Greenwich Lake Wind Farm.

Circuit ID	C1	C2	C3	C4	Total
Number of generators	17	16	17	16	66
Maximum MW	24	22.5	24	22.5	99

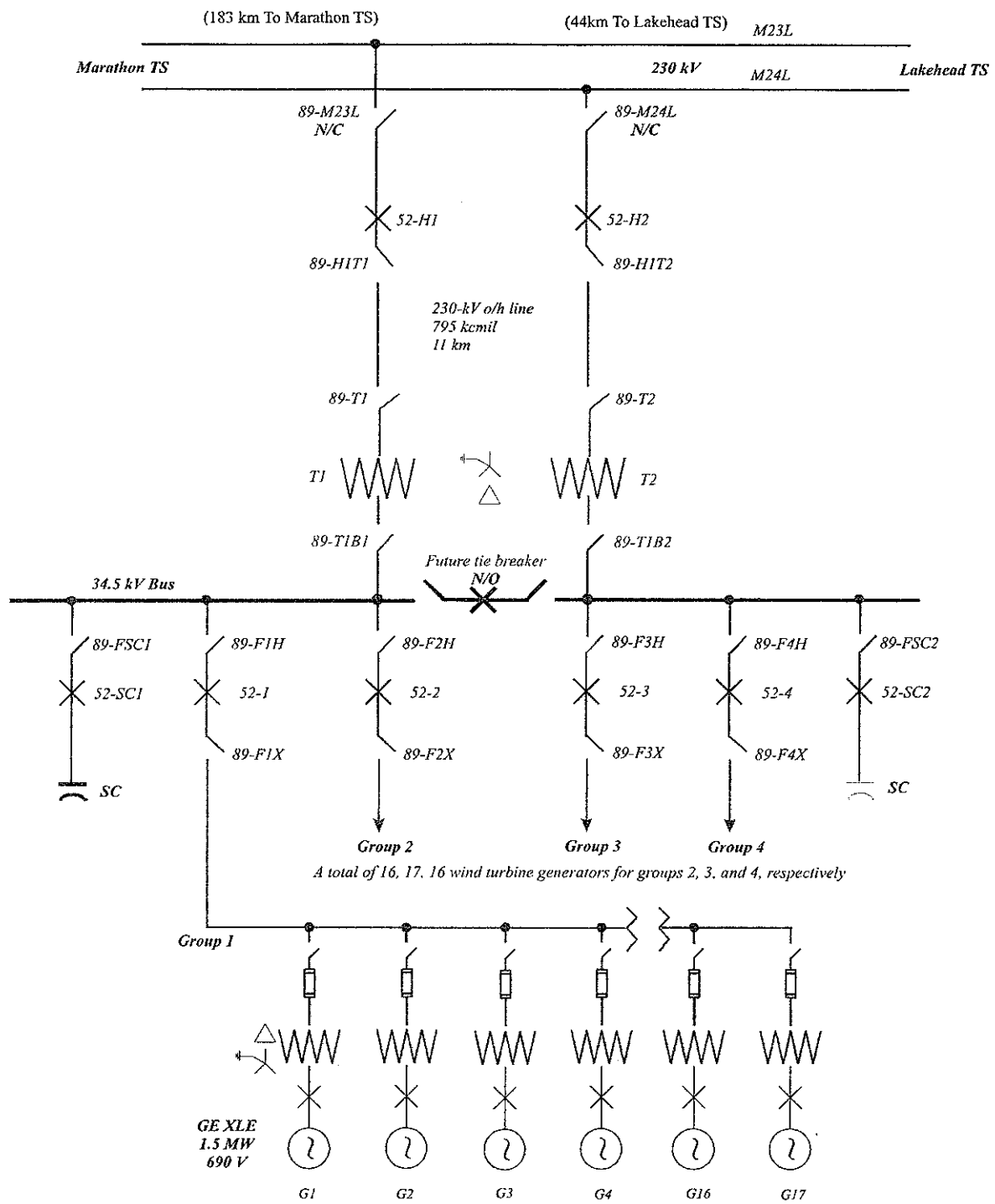


Figure 1: Connection Arrangement

– End of Section –

2. Scope of Part One Assessment

The scope of the Part One System Impact Assessment (SIA) is limited to a review of the project details and an assessment of impact on the local facilities of the IESO-controlled grid surrounding the proposed connection point. This includes:

- Check the completeness of data and models.
- Check the compliance of data and models to IESO Market Rules and the Ontario Transmission System Code.
- Check the suitability of the proposed connection arrangement and mode of operation.
- Check the thermal loading impact of the proposed facility on the local transmission facilities.
- Review the reactive power capability associated with the wind turbine technology.
- Identify the need for any specific equipment requirements and the approximate level of any reactive power compensation required.

The system model includes local transmission projects committed and under construction, existing generators including upgrading capacity at existing facilities, new generators that were selected in all procurement processes completed to date, projects that have signed a contract with a purchaser or have signed a connection cost recovery agreement with a transmitter by the in-service date of the proposed project. The computer simulations performed will strictly be limited to cursory check of acceptability of the steady state under all elements in-service, unstressed and normal operating conditions.

The Part One SIA does NOT cover the following analyses, which belong to the scope of the Part Two SIA:

- Perform fault level analysis to identify any breakers whose fault interrupting capability would be inadequate for the projected fault levels arising from the incorporation of the facility.
- Identify the effect of the facility on the transfer capability of selected transmission interfaces and on existing system operating limits.
- Identify the need for system upgrades that may be required to restore the transfer capabilities of the interfaces or the system operating limits to their former levels.
- Identify additional requirements for generation rejection or generation run-back to avoid overloading the remaining transmission facilities following a system contingency.
- Produce the functional description for a suitable SPS and perform necessary analysis to support determination of NPCC Type status.
- Examine the dynamic performance of the facility under fault conditions.
- Verify the adequacy of voltage ride through capability for the employed wind turbine technology.

The Part Two SIA will ensure that integration of the proposed facility does not compromise the overall reliability of the IESO-controlled grid and that adequate transmission is available. Some of the analyses will be done in conjunction with the transmitter.

This assessment does not identify the effect of this project on transmission congestion nor does it take into consideration the capacity limitations of the particular zone, if applicable.

– End of Section –

3. General Requirements

The general requirements for connection of the new facility include, but not limited to the following items. The complete list of requirements and their specifics will be identified during Part Two SIA.

Generators

The proposed facility must satisfy the generator facility requirements in Appendix 4.2, References 1 to 11, Reference 13 and the voltage response time requirement in Reference 12 of the Market Rules.

In particular, references 1.4 and 2 require that a generating facility connecting to the IESO-controlled grid must have the minimum capability to perform the following:

- Supply reactive power continuously in the range of 0.9 lagging to 0.95 leading power factor based on active power output at its generator terminals for at least one constant 230 kV system voltage, and
- supply full active power continuously while operating at a generator terminal voltage ranging from 0.95 pu to 1.05 pu of the generator's rated terminal voltage.

For a single generator connected to a generator step-up transformer which is in turn connected to the IESO-controlled grid, the above two requirements effectively limit the impedance between the generator terminals and the HV side of the transformer to a maximum of 0.13 pu based on the MVA rating of the generation facility, which is normally based on the maximum continuous active power rating at a 0.9 power factor. However, if a generator is capable of supplying the full reactive power range at its terminals for at least one constant system voltage while operating at a terminal voltage outside the range between 0.95 pu and 1.05 pu, the effective maximum impedance allowed between the generator terminals and the HV side of the generator step-up transformer could be higher than 0.13 pu.

Assuming the facility has a capability to operate from 0.95 pu to 1.05 pu of the generator's rated terminal voltage, the following reactive power requirements, as measured at the connection point, must be supplied:

- The reactive power required to be injected by the facility at the point of connection is +0.35 pu of active power (based on a maximum effective facility impedance of 0.13 pu), and the reactive power required to be absorbed by the facility at the point of connection is -0.33 pu of rated active power.
- A facility deficient in the above reactive power requirements must install additional reactive compensation devices. Specifically, the IESO has identified the following requirements for compensation devices:

For WTGs that have dynamic reactive power capabilities described in Appendix 4.2, Reference 1 of the Market Rules, shunt capacitors may be required to offset the reactive power losses within the facility in excess of the maximum allowable losses.

For WTGs that do not have dynamic reactive power capabilities described in Appendix 4.2, Reference 1 of the Market Rules, dynamic reactive compensation devices must be installed to make up the deficient reactive power capabilities as required in Appendix 4.2, Reference 1. In addition, shunt capacitors may be required to offset the reactive power losses within the facility in excess of the maximum allowable losses.

The WTGs must be able to ride through recognized contingencies in the IESO-controlled grid that do not disconnect the facility by configuration. This will require adequate low and high voltage ride-through capability.

The connection and disconnection of the WTGs must minimize any adverse effects on the IESO-controlled grid.

Connection Equipment (Breakers, Disconnects, Transformers, Buses)

High voltage 230 kV equipment connected to terminal stations must be capable of continuously operating in the range between 220 kV and 250 kV (Appendix 4.1, Reference 2 of the Market Rules).

Some recognized contingencies (e.g. load shedding, open line end) can cause a temporary voltage increase above the maximum continuous limit of 250 kV. For these conditions, connection equipment may be exposed to voltages slightly above its maximum continuous rating for the short period of time that it takes the IESO to direct operations to restore a normal voltage profile, and to prepare for the next contingency. This re-preparation period will be as short as possible, but it will not take longer than 30 minutes.

Therefore, the IESO requires that the 230 kV connection equipment have the following requirements: connection equipment must have a maximum continuous voltage rating of at least 250 kV in southern Ontario, equipment must be able to interrupt rated fault current for voltages up to the maximum continuous rating, and equipment must remain in service, and not automatically trip, for voltages up to 5% above the maximum continuous rating, for up to 30 minutes, to allow the system to be re-dispatched to return voltages within their normal range.

The Transmission System Code (TSC), Appendix 2 states that 230 kV connection equipment should have a rated 3-phase symmetrical short circuit capability of 63 kA and a rated single line to ground (SLG) symmetrical short circuit capability of 80 kA (usually limited to 63 kA). The TSC also requires that 230 kV breakers have a rated interrupting time of three cycles (50 ms) or less.

Connection equipment must be designed so that the adverse effects of failure on the IESO-controlled grid are mitigated. This includes ensuring that all breakers fail in the open position. Connection equipment must be designed so that it will be fully operational in all reasonably foreseeable ambient temperature conditions. This includes ensuring that SF6 breakers are equipped with heaters to prevent freezing.

Protection Systems

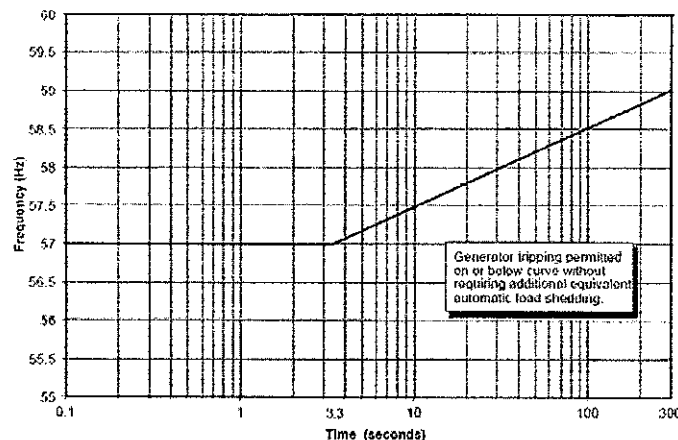
Faults within the facility must not trip the 230 kV circuits M23L and/or M24L except for the failure of the Greenwich Lake 230 kV connection breaker 52-H1 and/or 52-H2. After the facility begins commercial operation, if the tripping of M23L and/or M24L occurs due to events within Greenwich Lake Wind Farm, the facility may be required to be disconnected until the problem is solved.

Protection systems must be designed to meet all the requirements of the Transmission System Code as specified in Schedules E, F and G of Appendix 1 (Version B) and any additional requirements identified by Hydro One. Where required by Hydro One, protection systems at Greenwich Lake

Wind Farm must be coordinated with Hydro One protections systems.

The generators are required to be able to operate continuously at full power for frequencies between 59.4 to 60.6 Hz. The facility must be capable of operating at full active power for a limited period of time for frequencies as low as 58.8 Hz. The wind turbine generators (WTGs) must not trip for under-frequency system conditions that are below 60 Hz but above 57.0 Hz and above the curve shown in Figure 2.

Figure 2: Standards for Setting Under-frequency Trip Protection for Generators



IESO Monitoring and Telemetry Data

The Market Rules (Appendix 4.15 and Appendix 4.19) list the requirements with respect to the telemetry data that must be provided to the IESO and to the performance standards that must be achieved on a continual basis by all generators.

In accordance with the telemetry requirements for a *major generation facility*, equipment must be installed at the proposed facility with specific performance standards that provides telemetry data to the IESO. The data is to consist of certain equipment status and operating quantities which will be identified during the IESO Market Entry Process.

Miscellaneous

The facility must be operated in voltage control mode at the xx.x kV bus by employing a voltage management system that controls the bus voltage to a set point to be determined by the IESO. The voltage management system must provide the coordinated operation of all sources of reactive power to avoid 'hunting' among the various sources. Operation of the facility in power factor control or reactive power control is not acceptable unless required by the IESO.

The station service equipment and plant auxiliaries shall be capable of operating continuously during normal system voltage variations, system disturbances, and system re-preparation periods.

A disturbance recording device must be installed at the proposed facility with satellite clock synchronization that meets the technical specifications provided by Hydro One. The device will be used to monitor and record the response of the facility to disturbances on the 230 kV system in order to verify the dynamic response of WTGs. The quantities to be recorded, the sampling rate and the

trigger settings will be provided by Hydro One.

The connection applicant should have discussions with the transmitter concerning the tap changer duty cycle of the existing transformers connected in the vicinity of the wind farm.

– End of Section –

4. General Assessment

4.1 Connection Arrangement

The proposed Greenwich Lake shown in Figure 1 will not reduce the level of reliability of the integrated power system and is, therefore, acceptable to the IESO.

4.2 Connection Equipment

RES has provided the following 230 kV equipment specifications for Greenwich Lake Wind Farm:

(1) Switches 89-M23L and 89-M24L

Type – Disconnect

Continuous maximum operating voltage – 250 kV

Continuous current rating – 1200 A

For switches 89-M23L and 89-M24L, the Market Rules and Transmission System Code requirements are met.

(2) Breakers 52-H1 and 52-H2

Type – SF6

Continuous maximum operating voltage – 250 kV

Rated interrupting time – 3 cycles (50 ms)

Continuous current rating – 1200 A

Short circuit symmetrical duty – 63 kA

For breakers 52-H1 and 52-H2, the Market Rules and Transmission System Code requirements are met.

– End of Section –

5. Load Flow Assessment

5.1 Models and Data

- Wind generator, generator step-transformer and collector circuits

The data for the GE generator were provided by the manufacturer. The each step-up transformer is 2.3 MVA. The following step-up transformer equivalent impedances and feeder equivalent impedances are based on the number of turbines connected to the feeder. Note that all figures above are based on 100MVA & 34.5 kV.

Feeder	Number of WTG	Equivalent Fx	Equivalent Tx
1	17	0.036 + j 0.146	0.026 + j 0.192
2	16	0.038 + j 0.147	0.027 + j 0.203
3	17	0.013 + j 0.055	0.026 + j 0.192
4	16	0.085 + j 0.327	0.027 + j 0.203

The calculations assume that the WTG step up transformer impedance is 5.75% on 1.75 MVA & X/R ratio of 7.5.

- Collector to HT step-up transformer

Voltage	Maximum Rating	Impedance in pu	Taps
34.5/230 kV	40/50/60 MVA	0.007+0.07j on 40 MVA base	228 – 252 kV

- New 230 kV line (pu values are on 100 MVA base)

R	X	B	Cont. Rating	LTR	Length
0.891 Ω	5.555 Ω	35.97 μ mhos	850 A	950 A	11 km
0.00168 pu	0.0105 pu	0.019 pu			

0.001684 0.010501

- Circuit breakers and switches

<i>Breakers and switches</i>	LV	HV
Rated line-to-line voltage	35 kV	230 kV
Interrupting time	-	50 ms
Rated continuous current	1200 A	1200 A
Rated short circuit breaking current	20 kA	63 kA

- Ratings of existing Hydro One equipment

	Line section name	Continuous	LTR75
L1	M23L (Marathon × Lakehead)	966 A	1124 A
L2	M24L (Marathon × Lakehead)	966 A	1124 A

The ratings are based on 35oC temperature at 15 km/s wind speed. For LTR, pre-flow of 75 % of the continuous rating is assumed. The proponent must verify above ratings with Hydro One.

5.2 Current Conditions

The graphs below display the MW flow out M23L, Lakehead TS and MW flow out M23L at Marathon TS. These are hourly average samples from Jan 1 to Dec 31, 2007 obtained from IESO real-time data.

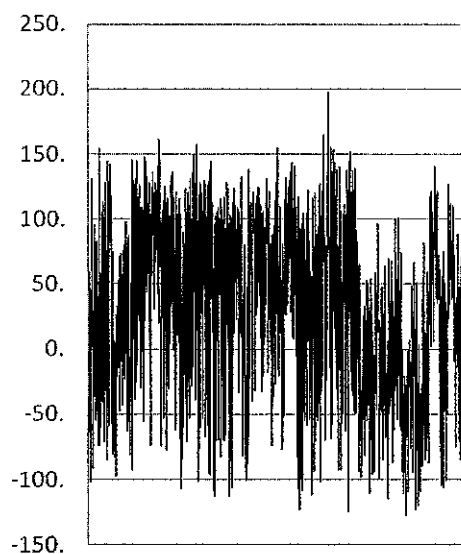


Figure 3: MW flow on M23L at Lakehead TS

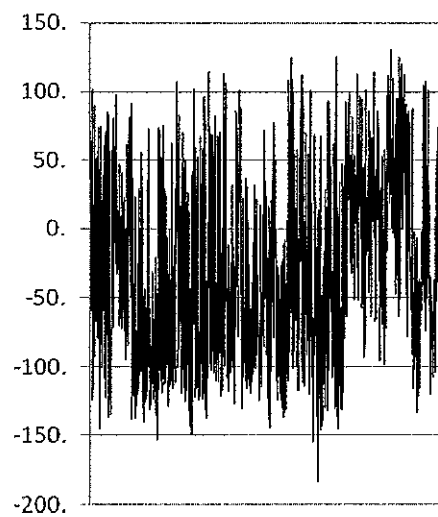


Figure 4: MW flow on M23L at Marathon TS

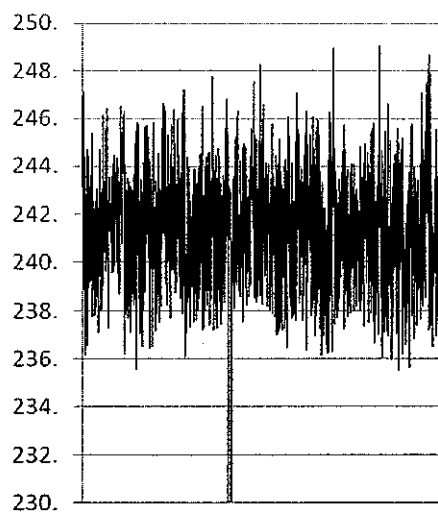


Figure 5: Voltage at Lakehead TS

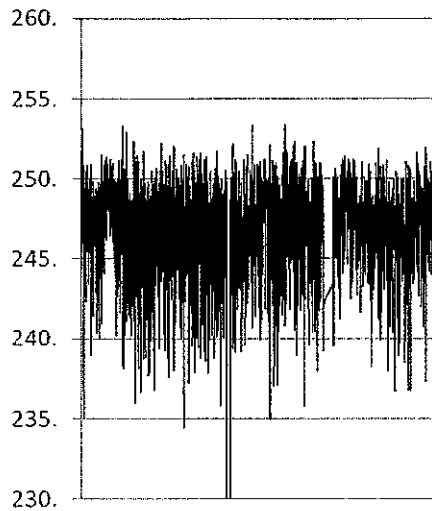


Figure 6: Voltage at Marathon TS

The followings can be observed.

Lakehead TS		Marathon TS	
Average voltage	241.5 kV	Average voltage	245.9 kV
M23L MW load (max)	198.3 MW	M23L MW load (max)	130.5 MW
M23L MW load (min)	-128.1 MW	M23L MW load (min)	-183.1 MW

5.3 Voltage Control

If the generator is connected to the IESO-controlled grid, the IESO requires that the generator assists maintaining voltage in the HT system. It is expected that the wind turbine generators control at minimum, the voltage at the collector bus to a values specified by the IESO. This would need that wind turbines to possess ability to supply sufficient dynamic reactive power to the HT system during voltage declines which in turn may require proponent minimizes the reactive losses occurring in the connection between the generator and the HT system. If these losses are excessive, a supply of additional reactive compensation is required. The following section examined this requirement.

5.3.1 Dynamic Reactive Power Capability

The GE 1.5 MW wind turbine generator is capable of operating continuously at a terminal voltage ranging from 0.9 pu to 1.1 pu of its rated voltage. The generator can operate within a power factor range from 0.9 lagging to 0.9 leading. Thus, the dynamic reactive power capability of the GE 1.5 MW WTG meets the requirements for a similarly rated synchronous generator.

5.3.2 Static Reactive Compensation

Greenwich Lake Wind Farm must have the same capability to supply reactive power continuously as required of a synchronous generator with the same apparent power, as measured at the point of connection to the IESO-controlled grid. With this assumption, Greenwich Lake Wind Farm must have a minimum capability of supplying approximately **+35 MVar** (capacitive) to **-33 MVar** (inductive) at the connection point for at least one constant 230 kV system voltage at all active power outputs.

Load flow studies were performed to justify a need for static reactive compensation. Besides the conditions described in the section '*Model and Data*', additional simulation conditions for these load flow studies include that:

- The 230-kV voltages at Lakehead and Marathon are about 241.1 and 243.8 kV, respectively;
- The terminal voltages of the WTGs vary between 0.9 pu and 1.1 pu;
- The 230 kV tap of the step-up transformer at the interconnection substation is set to the position of 246 kV;

The inductive capability of the generation facility was assessed with the WTGs operating at full active power output. The voltage at the connection point is about 236 kV. The WTG units are operated to control the terminal voltages to their lowest values. The generation facility can absorb a maximum reactive power of **48.2 MVar** at the connection points (23.4 MVar on M22L and 24.8 MVar on M23L), indicating that Greenwich Lake Wind Farm meet the inductive reactive power requirement.

The capacitive capability of the generation facility was assessed with the WTGs operating at full active power output. The voltage at the connection point is about 248 kV. The generation facility can supply a maximum reactive power of **31.6 MVar** at the connection points (17.5 MVar on M23L and 14.1 MVar on M24L) when the WTG units is operated to control the terminal voltages to their highest values. This indicates that static reactive compensation is required to be installed at collector bus #2 to meet the capacitive reactive power requirement.

A capacitor bank, with equipment capacity of **5 MVar@34.5 kV**, is installed at the 34.5 kV bus #2 of the interconnection substation to increase the reactive power injection at the connection point. With this capacitor bank, the wind farm can supply a maximum reactive power of **+35.9 MVar** at the connection point, which meets the capacitive reactive requirement.

5.3.3 Steady State Loading

A limited number of computer simulations were performed to examine the equipment loading in the vicinity of the wind farm at steady-state. Following table summarizes the extent of loading.

Circuit	Before			After			Change (MVA)	Rating ^(*) (MVA)
	P(MW)	Q(MVar)	S(MVA)	P(MW)	Q(MVar)	S(MVA)		
M23L/M24L at Lakehead TS	171	9	171	143	1	143	-28	385
M23L/M24L at Marathon TS	161	35	165	181	31	183	+20	385

(*) The ratings are continuous for 235-kV voltage, based on 35°C ambient temperature at 15 km/hr wind velocity, with 93 °C maximum operating temperature or individual sag temperature if lower.

It can be seen that the impact of the integration of Greenwich Lake Wind Farm on M23L/M24L flow is small and the flow along the M23L/M24L is well below the circuit continuous rating. Thus, there is no overloading foreseen under normal steady-state operating conditions.

It should be noted that the current absolute East West Transfer East (EWTE) limit of 325 MW is set to respect post contingency phenomenon. The Part 2 SIA analysis will need to verify whether:

- (i) An operating point of $EWTE = 325$ MW is still valid and
- (ii) EWTE can be increased with the incorporation of Greenwich Lake Wind Farm

In the event that (i) or (ii) cannot be achieved, mitigating measures such as generation rejection, and wind farm output curtailment may need to be assessed.

6. Conclusions and Requirements

The following conclusions and requirements were made after completion of the Part One SIA for the Greenwich Lake Wind Farm:

- The proposed connection arrangement of the facility is acceptable.
- Under the studied conditions, the connection of the proposed facility does not cause any thermal loading impacts on the local transmission facilities.
- A capacitor bank, with equipment capacity of **5 MVar@34.5 kV**, is installed at the 34.5 kV bus #2 of the interconnection substation to increase the reactive power injection at the connection point.
- The 34.5/230 kV transformers may require be equipped with Under Load Tap Changer (ULTC). SIA Part Two Assessment will confirm the need for an ULTC in this project.
- The proposed facility must meet the general requirements listed in Section 3 of this report.

– End of Document –

Greenwich Lake Wind Farm Study Proposal

Renewable Energy Systems Canada inc. (the "Customer") has requested and Hydro One Networks Inc. ("Hydro One") has agreed to perform the Work (as defined in the Scope of Work attached hereto as Schedule "A"), under the Standard Study Agreement Terms and Conditions v. 2 (February 2008) attached hereto as Schedule "B" and both forming a part hereof (the "Agreement") dated *Tuesday, October 14th 2008*.

Proposed Project

The Customer intends to build a new 99 MW generating facility located in the Municipality of Dorion, Ontario (the "Generation Facility") that would be connected to Hydro One's 230 kV circuits M23L and M24L through the Customer's electrical system (the "Proposed Project").

The Customer intends to submit the Proposed Project under the Request for Proposals issued by the Ontario Power Authority on August 22, 2008, for approximately 500 MW of Renewable Energy Supply in Ontario (the "RES III RFP").

Information Requirements

The Customer shall provide Hydro One with the following:

1. site location map(s) with suitable details of the line routing and the proposed connection arrangement to Hydro One's facilities;
2. four sets (or single electronic copy) of single line diagrams of the Generation Facility and the electrical modeling data for lines, generators and transformers;
3. four sets (or single electronic copy) of technical descriptions of the operating philosophy of the electrical equipment, and the protection and control philosophy of the Customer's Facilities that could affect Hydro One's transmission system; and
4. a completed joint System Impact Assessment Application (IESO)/Customer Impact Assessment Application (Hydro One) for Generation Facilities which is available at www.HydroOneNetworks.com.

Completion Date:

Provided that the Proposed Project is selected by the Ontario Power Authority as a successful proponent for the RES III RFP, Hydro One Networks shall complete the Work, by no later than sixty (60) Business Days after the latter of:

- (a) the Customer executing this Agreement;
- (b) the Customer paying Hydro One the amount specified below in (b) under the heading "Costs";
- (c) the Customer providing the information described above under the heading "Information Requirements"; and
- (d) the Customer providing Hydro One with a copy of the IESO System Impact Assessment for the Proposed Project.

Impact of Subsequent Changes to the Information Provided by Customer or to the IESO System Impact Assessment

Should the Customer make any changes to the information provided by the Customer as described above under the heading "Information Requirements" after Hydro One has commenced the Work or the IESO makes any changes to the IESO System Impact Assessment and those changes:

- (i) result in an increase in the cost of Hydro One performing the Work above the payment contemplated below under the heading "Costs", the Customer shall make such further payment as may be required by Hydro One in the time specified by Hydro One; and
- (ii) otherwise affect any other provision of this Agreement, such as the time required for completion of the Work, the parties shall negotiate and agree upon the required amendments to this Agreement and Hydro One shall be under no obligation to resume performance of the Work until such time as the parties agree on such amendments.

Costs:

- (a) Should the Proposed Project be selected by the Ontario Power Authority as a successful proponent in the RES III RFP, the Customer shall pay Hydro One's Actual Cost of performing the Work which amount is estimated to be \$15,000.00 (plus applicable Taxes).
- (b) The Customer agrees to pay Hydro One \$15,000.00 (plus applicable Taxes) by no later than ten (10) days after the selection of the Proposed Project in the RES III RFP towards the Actual Cost of the Work.
- (c) Within 90 days after the completion of the Work, Hydro One shall provide the Customer with a final invoice or credit memorandum which shall indicate whether the amounts already paid by the Customer exceed or are less than the Actual Cost of the Work. Any difference between the Actual Cost (plus applicable Taxes) and the amount already paid by the Customer shall be paid within 30 days after the rendering of the said final invoice or credit memorandum, by Hydro One to the Customer, if the amount already paid by the Customer exceeds the Actual Cost (plus applicable Taxes), or by the Customer to Hydro One, if the amount already paid by the Customer is less than the Actual Cost (plus applicable Taxes).

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GST Registration Information

The GST registration number for Hydro One is 87086-5821 RT0001, and the GST registration number for the Customer is 85946 2475 RT0001.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by the signatures of their proper officers, as of the day and year first written above.

HYDRO ONE NETWORKS INC.



Name:

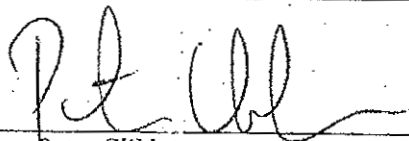
ADAM GARG

Title:

Manager, Policy & Approvals

I have the authority to bind the corporation

Renewable Energy Systems Canada Inc.



Name: Peter Clibborn

Title: Director

I have the authority to bind the corporation

SCHEDULE "A": Scope of Work - Customer Impact Assessment

General Description:

Hydro One will prepare a Customer Impact Assessment for the connection of the Proposed Project based on the information provided by the Customer in accordance with the terms of this Agreement.

Customer Impact Assessment Study

The purpose of the study is to assess the impact of the incorporation of the Proposed Project on the transmission customers connected to Hydro One's transmission system in the vicinity of the Proposed Project. The study is intended to supplement the IESO's System Impact Assessment. The study focuses on customer issues and impacts which are outside the scope of the IESO's System Impact Assessment.

The Work will include the following studies to be performed by Hydro One:

- Fault level study analysis
- Voltage performance analysis, and
- Reliability study

Hydro One will provide copies of the Customer Impact Assessment report to the Customer, the Electrical Safety Authority, the affected transmission customers and the IESO.

The affected transmission customers will have thirty (30) Business Days to provide their comments on the Customer Impact Assessment report. Hydro One will issue the Customer Impact Assessment report in its final form fifteen (15) Business Days after receiving comments from the affected transmission customers and the IESO, and after receiving the IESO's final System Impact Assessment for the Proposed Project.

SCHEDULE B – Standard Study Agreement Terms and Conditions

1. Definitions

In the Agreement, unless there is something in the subject matter or context inconsistent therewith, the following words shall have the following meanings:

“Actual Cost” means Hydro One’s charge for equipment, labour and materials at Hydro One’s standard rates plus Hydro One’s standard overheads and interest thereon.

“Applicable Laws” means any and all applicable laws, including environmental laws, statutes, codes, licensing requirements, treaties, directives, rules, regulations, protocols, policies, by-laws, orders, injunctions, rulings, awards, judgments or decrees or any requirement or decision or agreement with or by any government or government department, commission, board, court or agency.

“Business Day” means a day that is not a Saturday, Sunday, statutory holiday in Ontario or any other day on which the principal chartered banks located in the City of Toronto are not open for business during normal banking hours.

“Code” means the *Transmission System Code*, the code of standards and requirements issued by the OEB on July 25, 2005 that came into force on August 20, 2005 as published in the Ontario Gazette, as it may be amended, revised or replaced in whole or in part from time to time.

“Confidential Information” means:

- (i) the terms of the Agreement and the operations and dealings under the Agreement;
- (ii) all information disclosed by a party to the other party under the Agreement or in negotiating the Agreement which by its nature is confidential to the party disclosing the information, including, but not limited to, Hydro One’s transmission system design and system specifications; and
- (iii) all interpretative reports or other data generated by a party that are based in whole or in part on information that is made Confidential Information by clauses (i) and (ii).

“Connection Agreement” means the form of connection agreement appended to the *Code* as Appendix 1, Version A or B, as appropriate to the Customer.

“Customer’s Facilities” has the meaning set forth in the *Code*, and includes, but is not limited to any new, modified or replaced Customer’s Facilities.

“IESO” means the Independent Electricity System Operator.

“Good Utility Practice” has the meaning set forth in the *Code*.

“OEB” means the Ontario Energy Board.

“OEB-Approved Connection Procedures” means Hydro One’s connection procedures as approved by the OEB from time to time.

“Person” shall include individuals, trusts, partnerships, firms and corporation or any other legal entity.

“Representative” means (i) a person controlling or controlled by or under common control of a party and each of the respective directors, officers, employees and independent contractors of a party and such party’s Representative, (ii) any consultants, agents or legal, financial or professional advisors of a party or such party’s Representative and (iii) in the case of Customer, any institution providing or considering providing financing for the Proposed Project, including such institution’s directors, officers, employees and independent contractors or its consultants, agents or legal, financial or professional advisors.

“Taxes” means all property, municipal, sales, use, value added, goods and services, harmonized and any other non-recoverable taxes and other similar charges (other than Taxes imposed upon income, payroll or capital).

“Work” means the work to be conducted in accordance with the Scope of Work attached to the Agreement as Schedule “A”.

2. Representations and Warranties

Each party represents and warrants to the other that:

- (a) it is duly incorporated, formed or registered (as applicable) under the laws of its jurisdiction of incorporation, formation or registration (as applicable);
- (b) it has all the necessary corporate power, authority and capacity to enter into the Agreement and to perform its obligations hereunder;
- (c) the execution, delivery and performance of the Agreement by it has been duly authorized by all necessary corporate and/or governmental and/or other organizational action and does not (or would not with the giving of notice, the lapse of time or the happening of any other event or condition) result in a violation, a breach or a default under or give rise to termination, greater rights or increased costs, amendment or cancellation or the acceleration of any obligation under (i) its charter or by-law instruments; (ii) any material contracts or instruments to which it is bound; or any laws applicable to it;

SCHEDULE B – Standard Study Agreement Terms and Conditions

- (d) any individual executing the Agreement, and any document in connection herewith, on its' behalf has been duly authorized by it to execute The Agreement and has the full power and authority to bind it;
- (e) the Agreement constitutes a legal and binding obligation on it, enforceable against it in accordance with its terms;
- (f) it is registered for purposes of Part IX of the *Excise Tax Act* (Canada); and
- (g) no proceedings have been instituted by or against it with respect to bankruptcy, insolvency, liquidation or dissolution.

3. The Customer and Hydro One shall perform their respective obligations outlined in the Agreement in a manner consistent with Good Utility Practice and in compliance with all Applicable Laws.

4. Except as provided herein, Hydro One makes no representation or warranty, express, implied, statutory or otherwise, including, but not limited to, any representation or warranty as to the merchantability or fitness of the Work or any part thereof for a particular purpose.

5. Customer Covenants

The Customer acknowledges and agrees that:

- (a) Hydro One has informed the Customer that the OEB-Approved Connection Procedures apply to the Proposed Project;
- (b) should the Proposed Project proceed, an agreement must be executed by the Customer and Hydro One to address the terms and conditions (which may include terms with respect to capital contributions required to be made) of Hydro One performing the work required in order to provide for the connection of the Customer's Facilities prior to Hydro One initiating any modifications to Hydro One's facilities or purchasing any equipment;
- (c) the Customer will be responsible for ensuring that the Proposed Project complies with all Applicable Laws;
- (d) if the Proposed Project involves the connection of a Generation Facility (as that term is defined in the *Code*), the Customer shall rectify at its expense, any negative impacts that the connection of the Generation Facility and operation of the Generation Facility following connection may have on Hydro One's transmission system to the satisfaction of Hydro One, acting reasonably;

- (e) if the Proposed Project involves the connection of a Generation Facility (as that term is defined in the *Code*), the Customer is responsible for:

- i. providing the IESO with the modeling and studies to show the acceptable dynamic behavior of the generators as specified in the IESO Assessment; and
- ii. any resulting requirements that come from the IESO's review of dynamic studies that were or are not part of the IESO's System Impact Assessment including, but not limited to changes required to be made to the Work as a consequence of such review;

- (f) the Customer shall obtain all applicable approvals required by the IESO for the connection of the Proposed Project;

- (g) all right, title and interest, including copyright ownership, to all information and material of any kind whatsoever (including, but not limited to the work product developed as part of the Work) that may be developed, conceived and/or produced by Hydro One during the performance of the Agreement is the property of Hydro One, and the Customer shall not do any act that may compromise or diminish Hydro One's interest as aforesaid;

- (h) if the Work involves Hydro One preparing a Customer Impact Assessment, the Customer consents, notwithstanding any term to the contrary in the Agreement, to Hydro One releasing the completed Customer Impact Assessment Report to be prepared by Hydro One to the IESO, the Ontario Electrical Safety Authority and customers connected to Hydro One's transmission system in the vicinity of the Proposed Project that may be affected by the Proposed Project;

- (i) if the Work involves Hydro One preparing a Customer Impact Assessment, it may provide a deposit to the IESO for the IESO studies in relation to the Proposed Project. In the event that the IESO refunds part of the deposit to Hydro One, Hydro One will refund such funds to the Customer within 30 days of receipt by Hydro One. In the event that the IESO studies cost more than the deposit, the Customer agrees that it will pay the additional costs of such studies as invoiced to Hydro One by the IESO; and

- (j) Hydro One performs the Work based on the system conditions at the time the Work is performed, should there be any changes to system conditions between the time that Hydro One completes the Work and when the Customer proposes to connect the

SCHEDULE B – Standard Study Agreement Terms and Conditions

Proposed Project, the Work may have to be revised at the Customer's expense at that time.

6. Code Revisions and Amendments

This Agreement is subject to the *Transmission System Code* and the OEB-Approved Connection Procedures. If any provision of this Agreement is inconsistent with the:

- (a) *Transmission System Code*, the said provision shall be deemed to be amended so as to comply with the *Transmission System Code*; or
- (b) OEB-Approved Connection Procedures the said provision shall be deemed to be amended so as to comply with the OEB-Approved Connection Procedures.

7. Liability and Force Majeure

PART III: LIABILITY AND FORCE MAJEURE and Sections 1.1.12 and 1.1.17 of the Connection Agreement are hereby incorporated in their entirety by reference into, and form an integral part of the Agreement. Unless the context otherwise requires, all references in PART III: LIABILITY AND FORCE MAJEURE TO "the Agreement" shall be deemed to be a reference to the Agreement and all references to the "the Transmitter" shall be deemed to be a reference to Hydro One.

For the purposes of this Section 8, the Parties agree that the reference to:

- (i) the Transmitter in lines 3 and 4 of Section 15.1 of the Connection Agreement means the Transmitter or any party acting on behalf of the Transmitter such as contractors, subcontractors, suppliers, employees and agents; and
- (ii) the Customer in lines 3 and 4 of Section 15.2 of the Connection Agreement means the Customer or any party acting on behalf of the Customer such as contractors, subcontractors, suppliers, employees and agents.

This Section 7 shall survive the termination of the Agreement.

8. Confidential Information

8.1 Disclosures of Confidential Information

Pursuant to the terms and conditions contained herein, a party may disclose Confidential Information to the other party solely for the purpose of the Proposed Project or the Work. Notwithstanding such disclosure the Confidential Information shall remain the sole and exclusive property of the disclosing party and as such shall be maintained in confidence by the receiving party

using the same care and discretion to avoid disclosure as the receiving party uses with its own similar information that it does not wish to disclose. The receiving party may disclose Confidential Information to its Representatives pursuant to Section 4 below but may not use or disclose it to others without the disclosing party's prior written consent. Notwithstanding the generality of the foregoing, all intellectual property rights which may subsist in the Confidential Information shall remain with the disclosing party. The receiving party shall not use the confidential information for any purposes other than the Proposed Project or the Work without the disclosing party's prior written consent.

8.2. Information that is not Confidential

Confidential Information shall not include information which:

- (a) is previously known to or lawfully in the possession of the receiving party prior to the date of disclosure as evidenced by the receiving party's written record;
- (b) is independently known to or discovered by the receiving party, without any reference to the Confidential Information;
- (c) is obtained by the receiving party from an arm's length third party having a bona fide right to disclose same and who was not otherwise under an obligation of confidence or fiduciary duty to the disclosing party or its Representatives;
- (d) is or becomes publicly available through no fault or omission of, or breach of this Schedule "B" by, the receiving party or its Representatives;
- (e) is disclosed by the disclosing party to another entity without obligation of confidentiality;
- (f) is required to be disclosed on a non-confidential basis by operation of law or pursuant to a final judicial or governmental order;
- (g) is disclosed in the circumstances described in Section 4.7.2 of the Code; or
- (h) is contained in the Customer Impact Assessment report prepared by Hydro One and released by Hydro One to customers connected to Hydro One's transmission system in the vicinity of the Proposed Project that may be affected by the Proposed Project, the Ontario Electrical Safety Authority and the IESO.

8.3. Disclosure to Representatives

Confidential Information shall only be disclosed to Representatives who need to know the Confidential Information for the purposes of the Proposed Project or the Work. Except in the case of officers, directors or employees, Confidential Information may only be disclosed to Representatives where the receiving party has an agreement in place with those Representatives sufficient to obligate them to treat the Confidential

SCHEDULE B - Standard Study Agreement Terms and Conditions

Information in accordance with the terms hereof. The receiving party hereby specifically acknowledges that it shall be solely responsible to ensure that its representatives comply with the terms of this Section 8 and that the receiving party shall defend, indemnify and hold harmless the disclosing party from and against all suits, actions, damages, claims and costs arising out of any breach of this Section 8 by the receiving party or any of its Representatives.

8.4 Compelled Disclosure

In the event that a receiving party, or anyone to whom a receiving party transmits Confidential Information pursuant to this Section 8 or otherwise, becomes legally compelled to disclose any Confidential Information, the receiving party will provide the disclosing party with prompt notice so that the disclosing party may seek injunctive relief or other appropriate remedies. In the event that both parties are unable to prevent the further transmission of the Confidential Information, the receiving party will, or will use reasonable efforts to cause such person to whom the receiving party transmitted the Confidential Information to furnish only that portion of the Confidential Information, which the receiving party is advised by written opinion of counsel is legally required to be furnished by the receiving party, to such person and exercise reasonable efforts to obtain assurances that confidential treatment will be afforded to that portion of the Confidential Information so furnished.

8.5 Records with respect to Confidential Information

The receiving party shall keep all written or electronic confidential information furnished to or created by it. All such Confidential Information, including that portion of the Confidential Information which consists of analyses, compilations, studies or other documents prepared by the receiving party or by its Representatives, is the disclosing party's property and will be returned immediately to the disclosing party or destroyed upon its request and the receiving party agrees not to retain any copies, extracts or other reproductions in whole or in part. If a receiving party does not receive a request to return Confidential Information to the disclosing party within six months of the last communication between the parties concerning the Proposed Project or the Work then the receiving party shall destroy any Confidential Information it holds.

Notwithstanding the foregoing and provided that the Proposed Project is connected to Hydro One's transmission system, Hydro One shall have the right to retain such electrical information concerning the Proposed Project that it has received from the Customer or its Representatives for the purpose of Hydro One

making the required calculations and decisions related to the design, operation, and maintenance of Hydro One's facilities and those for any other person that may connect or is considering connecting to Hydro One's transmission system that could be impacted by or could impact the Proposed Project.

8.6 Remedies

The receiving party agrees that the disclosing party would be irreparably injured by a breach of this Section 8 and that the disclosing party shall be entitled to equitable relief, including a restraining order, injunctive relief, specific performance and/or other relief as may be granted by a court to prevent breaches of this Section 8 and to enforce specifically the terms and provision hereof in any action instituted in any court having subject matter jurisdiction, in addition to any other remedy to which the disclosing party may be entitled at law or in equity in the event of any breach of the provisions hereof. Such remedies shall not be deemed to be the exclusive remedies for a breach of this Section 8 but shall be in addition to all other remedies available at law or equity.

8.7 Term

The obligations in this Section 8 shall be effective as of the date of this Agreement and shall remain in force and effect in perpetuity unless modified by further written agreement of the parties.

9. General

(a) Subject to Section 6, no amendment, modification or supplement to the Agreement or any waiver shall be valid or binding unless set out in writing and executed by the parties with the same degree of formality as the execution of the Agreement.

(b) The failure of either party hereto to enforce at any time any of the provisions of the Agreement or to exercise any right or option which is herein provided shall in no way be construed to be a waiver of such provision or any other provision nor in any way affect the validity of the Agreement or any part hereof or the right of either party to enforce thereafter each and every provision and to exercise any right or option. The waiver of any breach of the Agreement shall not be held to be a waiver of any other or subsequent breach. Nothing shall be construed or have the effect of a waiver except an instrument in writing signed by a duly authorized officer of the party against whom such waiver is sought to be enforced which expressly waives a right or rights or an option or options under the Agreement.

(c) The Agreement may not be assigned without the written consent of the other party, which consent will not be unreasonably withheld.

SCHEDULE B – Standard Study Agreement Terms and Conditions

(d) The Agreement may be executed in counterparts, including facsimile counterparts, each of which shall be deemed an original, but all of which shall together constitute one and the same agreement.

(e) The Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of the Province of Ontario and the laws of Canada applicable therein.

(f) Invoiced amounts are due 30 days after invoice issuance. All overdue amounts including, but not limited to amounts that are not invoiced but required under the terms of this Agreement to be paid in a specified time period, shall bear interest at 1.5% per month compounded monthly (19.56 percent per year) for the time they remain unpaid.

(g) The obligation to pay any amount due and payable hereunder shall survive the termination of the Agreement.

(h) The Agreement will supersede the terms of any purchase orders issued by the Customer to Hydro One in respect of the Proposed Project irrespective of whether same have been issued by Customer and/or accepted by Hydro One on or after the execution of this Agreement by the Customer.

1 **LAND MATTERS - CROWN LAND**

2 RES Canada has obtained Applicant of Record ("AOR") status for 88 Ministry of Natural
3 Resources ("MNR") grid cells within the project boundary in respect of the Greenwich
4 Windfarm. The grid cells are divided into two separate sections.

5 For each of the two sections, RES Canada has received confirmation of AOR status
6 from the MNR, identified as WP-2006-01 and WP-2006-28. The two letters confirming
7 RES Canada's AOR status are attached as Exhibit G, Tab 2, Schedules 1 and 2.

8 Pursuant to MNR Procedure PL 4.10.04 – Windpower Site Release and Development
9 Review – Crown Land (the "Procedure"), land tenure can only be applied for once the
10 environmental assessment process has been completed, and will generally take the
11 form of a 25-year Crown Lease. Greenwich Windfarm, LP, as the owner and operator of
12 Greenwich Windfarm, will comply with the Procedure and follow the steps set out
13 therein to obtain Crown Leases once an environmental Statement of Completion has
14 been issued for Greenwich Windfarm (see Exhibit H, Tab 1, Schedule 1 for a
15 description of that process).

16 For lands required for the Greenwich Windfarm Transmission Line that are not located
17 within the grid cells described above and thus not subject to a Crown Lease, Greenwich
18 Windfarm, LP relies on section 6.2 of the Procedure, which states that separate tenure
19 documents in the form of land use permits or easements will be issued for any
20 infrastructure that falls outside the leased area.



August 23, 2006

Peter Clibbon
Renewable Energy Systems Can. LTD
4443 rue do Mentana
Montreal, QC H2J 3B4

Dear Mr. Clibbon;

Subject: Wind Power Application #WP-2006-01
~~Applicant of Record Status Phase One~~
Greenwich Lake Area, Thunder Bay District

Please be advised that you have been selected as the Applicant of Record for the above noted site. Your Applicant of Record status will become official seven (7) days from the date of this letter.

This Applicant of Record status follows two phases, phase one provides the opportunity for you to test for wind power to determine the viability of developing a wind farm on the lands (as shown on the attached sketch and list of wind power grid cells). Phase two provides you with the opportunity to apply for the necessary approvals and proceed through the environmental assessment requirements to construct and operate a wind farm on the lands (as shown on the attached sketch and list of wind power grid cells). The opportunity under phase two is contingent upon you meeting the necessary requirements and timelines outlined in phase one.

There are no rights or tenure associated with this Applicant of Record status. In addition, this Applicant of Record status does not provide the right to make any alterations or improvements on the lands. Your Applicant of Record status is not transferable and applies only to you as the successful applicant. You will be considered the Applicant of Record from the date your Applicant of Record status becomes official until a Crown Lease is issued or your Applicant of Record status is surrendered or revoked due to failure to meet prescribed timelines or other requirements as outlined below.

As the Applicant of Record you are required to complete all federal, provincial, municipal and environmental assessment requirements prior to any authorizations or approvals being issued.

The following is an outline of the timelines, requirements and conditions of this Applicant of Record status. Failure to meet any of these timelines, requirements or conditions may result in your Applicant of Record status being reviewed by the MNR's Thunder Bay district office and this opportunity being revoked, if deemed appropriate.

Phase One - Wind Power Testing

As the Applicant of Record for this site you must submit an annual report showing that you are proceeding as per the schedule outlined in your testing proposal which was submitted to the District Manager on **August 4, 2006**, or any subsequent amendments thereto.

In order to proceed to Applicant of Record status for phase 2 you must provide the District Manager with your decision to proceed or not with development of a wind farm. This decision must be received within three (3) months of completion of wind power testing as set out in the testing proposal and within three years of the date your Applicant of Record status for phase 1 became official.

Phase Two - Development of a Wind Farm

As the Applicant of Record, you must, within sixty (60) days of providing your decision to proceed with development of a wind farm, set up a meeting with staff at the Thunder Bay MNR District Office. The purpose of the meeting will be to discuss the project and to design a coordinated approach to meet all federal, provincial, municipal and environmental assessment requirements. You are required to submit an initial plan of development to me ten (10) days prior to the scheduled date of this meeting.

The initial plan of development (POD) must at a minimum contain the information set out in Appendix A to this letter.

In order to keep your Applicant of Record, in good standing you must:

1. Publish a Notice of Commencement under the *Ontario Environmental Assessment Act* within nine (9) months of the date of your decision to develop a wind farm.
2. Provide a draft of the Environmental Review Report and the current draft of the POD to the District Manager sixty (60) days before the Notice of Completion of Environmental Review Report is published
3. Within twenty-four (24) months from the date you issue your Notice of Commencement:
 - complete your environmental assessment requirements;
 - submit your final plan of development to the District Manager; and
 - apply for a Crown Lease.

Your contact at the local MNR District Office is **Colin Hovi**, who can be reached at: **(807) 475-1175**.

Yours sincerely,



W.D. Baker
District Manager
Thunder Bay District
Ontario Ministry of Natural Resources

cc. Colin Hovi, OMNR

Attachments

APPENDIX A

1. Project Summary including details of project size, location, expected output, type of equipment, wind data, transmission connection plan, environmental issues, permit status, financing, construction schedule and current status.
2. Confirmation of financial viability of the company, usually in the form of a letter from the lender or financial backer.
3. Overview of wind resource (testing) program and power and energy summary;
4. Required Permits and Approvals must be identified along with a schedule for procurement;
5. If Available - Site Access Agreements: including wind rights (wind easements on adjacent private lands), road access rights, transmission corridor access rights, surface mining rights, and resource harvesting rights (timber, trapping and commercial fishing).



Ministry of
Natural Resources

Ministère des
Richesses naturelles

Thunder Bay District Office
435 South James St.
Thunder Bay, ON P7E 6S8

April 11th, 2007

Peter Clibbon
Renewable Energy Systems Canada Inc
1124 rue Marie-Anne Est, Suite 23
Montréal, QC H2J 2B7

Dear Mr. Clibbon;

Subject: Wind Power Application #WP-2006-28
~~Applicant of Record Status Phase One~~
Greenwich Lake Area, Thunder Bay District

Please be advised that you have been selected as the Applicant of Record for the above noted site. Your Applicant of Record status will become official seven (7) days from the date of this letter.

This Applicant of Record status follows two phases, phase one provides the opportunity for you to test for wind power to determine the viability of developing a wind farm on the lands (as shown on the attached sketch and list of wind power grid cells). Phase two provides you with the opportunity to apply for the necessary approvals and proceed through the environmental assessment requirements to construct and operate a wind farm on the lands (as shown on the attached sketch and list of wind power grid cells). The opportunity under phase two is contingent upon you meeting the necessary requirements and timelines outlined in phase one.

There are no rights or tenure associated with this Applicant of Record status. In addition, this Applicant of Record status does not provide the right to make any alterations or improvements on the lands. Your Applicant of Record status is not transferable and applies only to you as the successful applicant. You will be considered the Applicant of Record from the date your Applicant of Record status becomes official until a Crown Lease is issued or your Applicant of Record status is surrendered or revoked due to failure to meet prescribed timelines or other requirements as outlined below.

As the Applicant of Record you are required to complete all federal, provincial, municipal and environmental assessment requirements prior to any authorizations or approvals being issued.

The following is an outline of the timelines, requirements and conditions of this Applicant of Record status. Failure to meet any of these timelines, requirements or conditions may result in your Applicant of Record status being reviewed by the MNR's Thunder Bay district office and this opportunity being revoked, if deemed appropriate.

Phase One - Wind Power Testing

As the Applicant of Record for this site you must submit an annual report showing that you are proceeding as per the schedule outlined in your testing proposal which was submitted to the District Manager on **August 4, 2006** for application WP-2006-01, or any subsequent amendments thereto.

In order to proceed to Applicant of Record status for phase 2 you must provide the District Manager with your decision to proceed or not with development of a wind farm. This decision must be received within three (3) months of completion of wind power testing as set out in the testing proposal and within three years of the date your Applicant of Record status for phase 1 became official.

Phase Two - Development of a Wind Farm

As the Applicant of Record, you must, within sixty (60) days of providing your decision to proceed with development of a wind farm, set up a meeting with staff at the Thunder Bay MNR District Office. The purpose of the meeting will be to discuss the project and to design a coordinated approach to meet all federal, provincial, municipal and environmental assessment requirements. You are required to submit an initial plan of development to me ten (10) days prior to the scheduled date of this meeting.

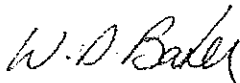
The initial plan of development (POD) must at a minimum contain the information set out in Appendix A to this letter.

In order to keep your Applicant of Record, in good standing you must:

1. Publish a Notice of Commencement under the *Ontario Environmental Assessment Act* within nine (9) months of the date of your decision to develop a wind farm.
2. Provide a draft of the Environmental Review Report and the current draft of the POD to the District Manager sixty (60) days before the Notice of Completion of Environmental Review Report is published
3. Within twenty-four (24) months from the date you issue your Notice of Commencement:
 - complete your environmental assessment requirements;
 - submit your final plan of development to the District Manager; and
 - apply for a Crown Lease.

Your contact at the local MNR District Office is **Colin Hovi**, who can be reached at: **(807) 475-1175**.

Yours sincerely,



W.D. Baker
District Manager
Thunder Bay District
Ontario Ministry of Natural Resources

cc. Colin Hovi, OMNR

Attachments

APPENDIX A

1. Project Summary including details of project size, location, expected output, type of equipment, wind data, transmission connection plan, environmental issues, permit status, financing, construction schedule and current status.
2. Confirmation of financial viability of the company, usually in the form of a letter from the lender or financial backer.
3. Overview of wind resource (testing) program and power and energy summary;
4. Required Permits and Approvals must be identified along with a schedule for procurement;
5. If Available - Site Access Agreements: including wind rights (wind easements on adjacent private lands), road access rights, transmission corridor access rights, surface mining rights, and resource harvesting rights (timber, trapping and commercial fishing).



Thunder Bay District
Ontario Government Building
Suite B001, 435 James Street South
Thunder Bay, Ontario P7E 6S8

Ministry of
Natural Resources

Ministère des
Richesses naturelles

Tel: (807)475-1471
Fax: (807)475-1527

Nicolas Muszynski
Development Manager - Directeur du développement
Renewable Energy Systems - Systèmes d'énergies renouvelables
1124 rue Marie-Anne Est,
Suite 23
Montreal, Quebec H2J 2B7

October 16, 2008

Dear Sirs;

This will acknowledge that Renewable Energy Systems is the current Applicant of Record for applications WP 2006 01 and 2006 28. This will also confirm that commercial power generation is a permitted use on crown lands within the areas of Spruce Current G2622 and Rural G2625 which are within the area under application.

The file remains under active consideration and pending completion of Environmental Assessment requirements the applicant will be eligible to apply for various permits and land use authorizations to proceed with the project.

Yours truly,

Jim Cameron
District Planner
Thunder Bay District
435 James Street South
P7E 6S7
Tel: 807 475 1457
Fax 807 575 1527

Cc Renewable Energy Section - Peterborough

1 **LAND MATTERS - PRIVATE LAND**

2 The proposed route of the Greenwich Windfarm Transmission Line will cross two
3 properties that are privately owned (i.e., not Crown land) as follows:

- 4 • West Part of Lot 3 in Concession 7 in the Municipality of Dorion; and
5 • East Part of Lot 3 in Concession 7 in the Municipality of Dorion.

6 Options to Acquire Transmission Facilities Easement ("Options") have been executed
7 with both private landowners; these options give RES Canada the right to exercise the
8 easement anytime within a seven year period. The terms of the easement have been
9 agreed upon and RES Canada holds the executed easements in escrow until such time
10 as the transmission line is ready to be built. RES Canada is in the process of
11 transferring the Options to Greenwich Windfarm, LP in accordance with section 8.1 of
12 the Options.

13 A copy of the form of Option is included at Exhibit G, Tab 3, Schedule 2. A copy of the
14 form of Transmission Facilities Easement that RES Canada holds in escrow is included
15 at Exhibit G, Tab 3, Schedule 3.

THIS AGREEMENT made as of the day of , 2008.

(hereinafter referred to as the "**Owner**")

TO AND IN FAVOUR OF:

OF THE SECOND PART.

WHEREAS those portions of the Owner's Lands shown cross-hatched in the drawing attached hereto as Schedule "C" are hereinafter referred to as the "**Transmission Corridor**"; and the Transmission Facilities (or parts thereof) may be situate: (i) anywhere on, in, or pass through, under, over, across, along and upon the Transmission Corridor; or (ii) where the explanatory notes in Schedule "C" expressly limiting the location of the Transmission Facilities, then only in those portions of the Transmission Corridor as more particularly described in any such explanatory notes;

WHEREAS attached hereto as Schedule "D" is an easement, signed by the Owner, setting forth the rights and privileges necessary or desirable to permit the existence and convenient operation of the Transmission Facilities in the Transmission Corridor (the "**Transmission Facilities Easement**"), with capitalized but undefined terms used in this Agreement having the meanings herein as are ascribed to them in the Transmission Facilities Easement;

WHEREAS the Owner wishes to grant to the Company an exclusive option to release and deliver the Transmission Facilities Easement on the terms and conditions set forth in this Option;

NOW THEREFORE, for good and valuable consideration, the receipt and adequacy of which is hereby irrevocably and unconditionally acknowledged by the Owner, the Owner covenants with and in favour of the Company:

ARTICLE 1

OPTION

1.1 Grant of Option to Lease

The Owner hereby grants the Company the exclusive option to acquire the Rights pursuant to the Transmission Facilities Easement, which may be exercised as hereinafter provided at any time during the term of this Agreement (the "**Option**").

ARTICLE 2

TERM AND TERMINATION

2.1 Term

This Agreement shall have a term of seven (7) years commencing on the date hereof (the "**Term**").

2.2 Termination

This Agreement shall terminate automatically upon the release of the Transmission Facilities Easement pursuant to the exercise of the Option.

ARTICLE 3

COMPENSATION

3.1 Signing Fee

The Owner acknowledges that, as consideration for the Option and other rights granted to the Company in this Agreement, the Company is paying to the Owner, upon the execution and delivery of this Agreement by the Owner to the Company, the sum of **FIVE HUNDRED DOLLARS (\$500)**.

ARTICLE 4

COMPETITIVE ACTIVITIES

4.1 Restrictions During the Term of this Agreement

During the term of this Agreement, the Owner shall: (i) not encumber, permit to be encumbered, or otherwise deal with the Owner's Lands in any manner that would prevent or hinder the Transmission Facilities Easement from becoming effective upon the exercise of this Option or that would render the Transmission Facilities Easement subordinate to any encumbrance other than a Permitted Encumbrance; (ii) comply with and observe all of the applicable obligations set forth on the part of the Owner under the Transmission Facilities Easement, in each case as if the Option has already been exercised and the Transmission Facilities Easement was already binding on the Owner; and (iii) not grant any other easements or similar rights within the Transmission Corridor, it being the intent that this Agreement and the Transmission Facilities Easement shall, unless this Agreement expires without the Option being exercised, together constitute the sole and exclusive rights for the transmission of electric power within the Transmission Corridor.

4.2 Injunction and Specific Performance

The Owner acknowledges that the Company will suffer irreparable harm in the event of a breach of any of the obligations owed to the Company hereunder after the installation of the Transmission Facilities in the Transmission Corridor. Notwithstanding the provisions of Section 10.2 of this Agreement, the Company shall, accordingly, but without limiting its rights hereunder or at law, be entitled to mandatory injunctive relief and/or a decree of specific performance in respect of any breach by the Owner of its obligations hereunder.

ARTICLE 5

EXERCISE OF THE OPTION

5.1 Transmission Facilities Easement Pre-Signed

The Owner acknowledges having fully executed and delivered to the Company copies of the Transmission Facilities Easement, to be held by the Company in escrow pending the exercise of the Option by the Company. For greater certainty, the Owner acknowledges that, by entering into this Agreement and by having delivered a signed Transmission Facilities Easement to the Owner, the Owner is satisfied with the terms of the Transmission Facilities Easement and that there will be no further negotiation of the terms of the Transmission Facilities Easement, whether in the nature of business terms or strictly legal terms (or any combination thereof).

5.2 Exercise of the Option

The Company may exercise the Option at any time during the term of this Agreement by giving a written notice to the Owner of such exercise. Forthwith upon the delivery of such written notice by the Company, the signed Transmission Facilities Easement already in

the Company's possession shall be deemed automatically released from escrow without any further formality on the part of the Company or the Owner.

5.3 Formalization of the Option

The Company may, at any time after having exercised the Option as aforesaid: (i) effect, as attorney for the Owner, such clerical particularisation (including, without limitation, the preparation of reference plans and the compilation of legal descriptions) that may be necessary or desirable to ensure that the Transmission Facilities Easement correctly identifies the details of the Owner, the Owner's Lands, and the compensation called for under the Transmission Facilities Easement; and (ii) effect any notarization, commissioning, registration or like processes as may be necessary or desirable to perfect its interest in the Rights.

ARTICLE 6 SALE OF THE PROPERTY

6.1 Registration

This Agreement or a notice thereof may, at the option of the Company only, be registered by the Company on title to the Owner's Land in any manner that the Company deems appropriate in order to best secure the Rights. In order to effect the foregoing, but without limiting the generality of the foregoing, the Owner hereby: (i) covenants to execute, at the Company's expense, any and all documentation prepared by the Company in order to effect and maintain such registrations and filings; (ii) grants to the Company a power of attorney (which power is coupled with an interest and expressly intended to survive the death, dissolution or bankruptcy of the Owner) to execute and deliver all such documentation for and on behalf of the Owner; and (iii) irrevocably authorizes and directs any solicitors acting for the Company to electronically register on title to the Owner's Land, for and on behalf of the Owner, all such registrations and filings, with the execution of this Agreement by the Owner being such solicitors' good and sufficient authority for so doing.

6.2 Assumption by New Owners

In the event of a sale or other disposition of all or part of the Owner's Lands, and whether or not the Company shall have registered this Agreement or a notice thereof against title to the Owner's Lands, the Owner shall advise each acquirer any part of the Owner's Lands of the existence and terms of this Agreement. The Owner further undertakes to cause each acquirer of all or part of the Property to enter into an agreement, directly with the Company, to respect each and every obligation of the Owner set forth herein.

ARTICLE 7 NOTICE

7.1 Addresses for Notice

All notices pursuant to this Agreement shall be in writing and shall be sent only by the following methods: personal delivery; certified mail (return-receipt requested, postage

prepaid) or delivery by a national, overnight courier service which keeps records of deliveries. For purposes of giving notice hereunder, the respective addresses of the parties are, until changed as hereinafter provided, the following:

Owner

Company

300 Léo-Pariseau, Suite 2516. Montreal,
Quebec, Canada, H2X 4B3

Any party may change its address at any time by giving written notice of such change to the other party in the manner provided herein. All notices shall be deemed given on the date of personal delivery or, if mailed by certified mail, on the delivery date or attempted delivery date shown on the return-receipt.

ARTICLE 8

SUCCESSORS AND ASSIGNS

8.1 Assignment

The Company shall have the right to freely assign this Agreement, in whole or in part, and all of the rights and benefits to be derived hereunder, without the consent of the Owner.

8.2 Enurement

This Agreement shall enure to the benefit of the Company and its successors and assigns, and be binding upon the Owner, and his or her heirs, successors and assigns.

ARTICLE 9

CONFIDENTIALITY

9.1 Confidential Information

The Owner shall use its best efforts to keep the terms of this Agreement and of the Transmission Facilities Easement (the "**Information**") confidential. The Owner shall not directly or indirectly disclose, allow access to, transmit or transfer the Information to a third party without Company's prior written consent except to its employees and professional advisors or unless required to do so by law. Prior to disclosing the Information to any of its employees or professional advisors, the Owner shall issue appropriate instructions to them to satisfy its obligations herein and obtain their agreement to receive and use the Information on a confidential basis on the same conditions as contained in this Agreement. The Owner shall be liable for any loss or damage caused to the Company resulting from unauthorized disclosure of the Information. The foregoing confidentiality covenants shall survive for a period of five (5) years following the expiry or sooner termination of this Agreement.

ARTICLE 10
MISCELLANEOUS

10.1 Further Assurances

The parties shall execute such other documents and shall take such acts as are reasonably necessary or required to give effect to this Agreement. Without limiting the generality of the foregoing, the Owner agrees to cooperate with the Company and to sign any documents or instruments which may be necessary to obtain any necessary land use, subdivision and *Planning Act* approvals in connection with the Transmission Facilities Easement and this Agreement, provided that the Company shall bear all costs and expenses actually incurred in connection with any such approvals.

10.2 Arbitration

Any and all controversies, questions, claims, issues or other disputes arising out of or relating in any way whatsoever to this Agreement including, without limitation, issues concerning the validity, application or interpretation of this Agreement and the parties' rights and obligations hereunder, shall be referred to the final and binding arbitration of a single arbitrator, if the parties agree upon one; otherwise to three arbitrators, one appointed by each party and a third to be chosen by the first two. For greater certainty, no recourse may be made by either party to any court or tribunal, whether federal or provincial, in respect of any matter whatsoever relating to this Agreement including, without limitation, any dispute, any arbitration initiated to resolve a dispute, and any arbitration award made in relation to a dispute. To the extent possible, the arbitrator or arbitrators shall conduct an oral hearing within fifty (50) kilometres of the Windfarm Zone and the oral hearing shall be completed within one (1) day. To the extent not inconsistent herewith, all arbitrations under this Agreement shall be governed by the *Arbitration Act*, 1991, S.O. 1991, c. 17, as amended.

10.3 Governing Law

This Agreement shall be construed and enforced in accordance with the laws of the Province of Ontario, and the laws of Canada applicable therein and references herein to "Dollars" shall mean the lawful currency of Canada.

IN WITNESS WHEREOF, the Owner has executed this Agreement in favour of the Company as of the first date written above.

OWNER: _____

By: _____

Name: _____

Title: _____

(if co-owned by Spouse)

OWNER: _____

By: _____

Name: _____

Title: _____

**SCHEDULE A
OWNER'S LANDS
(SERVIENT TENEMENT)**

Greenwich Lake Project Study Area

Legend

- Roads
- River/Streams
- Project Boundary
- Under Application
- Provincial Park
- Woodlots
- Waterbody

Map Labels: Carleton Place, Jonas Lake, Carleton Place Provincial Nature Reserve, Outlet Canyon Provincial Nature Reserve, Furbush Lake, White Granite Lake, Hades Lake, Makenzie Lake, Moose Lake, MacKenzie Creek, Valley Rd, Outlet Canyon Rd, Greenwich Lake, Mollan Lake, MacKintosh Lake.

Scale: 1" = 62,000'

North Arrow: N, S, E, W

Scale Bar: 0, 1,250, 2,500, 3,750'

Source: Created by: SPG
Data Created: February 23, 2007
Data Modified: November 10, 2007
File Path: I:\GIS\Greenwich\Map\Map\Greenwich\Greenwich.mxd

Crown Land under Applicant of Record Status with the OMNR

[illegible]

SCHEDULE C
DRAWING SHOWING LOCATION AND AREA OF TRANSMISSION FACILITIES
WITHIN THE OWNER'S LANDS
(TRANSMISSION CORRIDOR)

SCHEDULE D

TRANSMISSION FACILITIES EASEMENT

THIS EASEMENT made as of the day of , 2008.

BY:

(hereinafter referred to as the "**Owner**")

OF THE FIRST PART,

TO AND IN FAVOUR OF:

RENEWABLE ENERGY SYSTEMS CANADA INC.,
(hereinafter referred to as the "**Company**")

OF THE SECOND PART.

WHEREAS the Owner is the owner in fee simple of the lands and premises in the Municipality of Dorion more particularly described in Schedule "A" attached hereto (the "**Owner's Lands**"); and

WHEREAS the Company, as tenant, has leased certain real Crown Land property located in the Municipality of Dorion and in Unorganised Territory, all as more particularly described in the box in red in Schedule "B" hereto annexed (collectively, the "**Wind Farm Lands**") for purposes including, without limitation, developing, operating and maintaining a wind farm (the "**Wind Farm**"); and

WHEREAS the Company has erected, or is about to erect: (a) a line or lines of towers, with such wires and cables as from time to time are suspended therefrom, and/or underground wires and cables, for the transmission of electrical energy (including, without limitation, high-voltage electrical energy) and/or for communications purposes, and all foundations, footings, crossarms, other appliances, equipment and fixtures for use in connection with such towers, wires and cables; and (b) one or more interconnection stations and/or switching facilities from which the Company and/or others that generate energy (whether on the Wind Farm Lands or elsewhere) may interconnect to a utility transmission system or the transmission system of a purchaser of electrical energy (the works described in (a), and (b) above are hereinafter collectively referred to as the "**Transmission Facilities**"), together with any access roads required to reach such interconnection/switching facilities from a public highway; and

WHEREAS the Transmission Facilities (or parts thereof) may be situate on, in, or pass through, under, over, across, along and upon those portions of the Owner's Lands shown cross-hatched in the drawing attached hereto as Schedule "C" (the "**Transmission Corridor**");

WHEREAS the Owner and the Company are entering into this Easement to procure for the Company the rights and privileges necessary or desirable to permit the existence and convenient operation of the Transmission Facilities in the Transmission Corridor, all on the terms and conditions set forth herein;

NOW THEREFORE, in consideration of the mutual covenants and agreements set forth in this Easement and the amount paid by the Company to the Owner hereunder, and for good and other valuable consideration (the receipt and sufficiency of which is hereby acknowledged), the parties hereto covenant and agree as follows:

1. **Grant:**

The Owner hereby grants and conveys to the Company and its successors and assigns, free from all encumbrances other than Permitted Encumbrances (as hereinafter defined), the unobstructed and exclusive permanent rights, easements, rights-of-way, covenants, agreements and privileges in, through, under, over, across, along and upon the Owner's Lands, all as more particularly described herein (collectively, the "**Rights**").

2. **Representations and Warranties:**

The Owner represents and warrants to the Company that the Owner is the legal and beneficial owner in fee simple of the Owner's Lands, and has the absolute and unfettered right at any time from time to time to grant the Rights to the Company (subject only to the Permitted Encumbrances) in the manner and for the purposes set forth in this Easement.

3. **Transmission Facilities:**

The Company shall be entitled, as part of the Rights, to enter and lay down, install, construct, erect, maintain, open, inspect, add to, enlarge, alter, repair and keep in good condition, move, remove, replace, reinstall, reconstruct, relocate, supplement and operate and maintain the Transmission Facilities at all times in, through, under, over, across, along and upon the Transmission Corridor, as in the opinion of the Company may be necessary, desirable or convenient from time to time, solely in connection with the Wind Farm and subject to a maximum capacity of 250 megawatts.

4. **Payment for the Rights:**

The Company shall pay to the Owner a single, one-time, lump-sum payment equal to FIVE THOUSAND DOLLARS (\$5,000.00) per acre of the area of the Transmission Corridor, payable on the entering into of this Easement. If the acreage of the Transmission Corridor is other than a whole number, the Company shall pay for such part acre area at an accordingly pro-rated annual rate.

5. **The Scope of the Rights:**

For greater certainty but without in any way limiting the generality of the Rights, the Company shall be entitled from time to time and at all times:

- (a) to enter on and selectively cut or prune, and to clear and keep clear, and remove all trees (subject to compensation to Owners for merchantable wood values),

branches, bush and shrubs and other obstructions and materials in, over or upon the Transmission Corridor, and without limitation, to cut and remove all leaning or decayed trees located on the Owner's Lands whose proximity to the Transmission Facilities renders them liable to fall and come in contact with the Transmission Facilities or which may in any way interfere with the safe, efficient or serviceable operation of the Transmission Facilities;

- (b) to conduct all engineering, legal surveys, and make soil tests, soil compaction and environmental studies and audits in, under, on and over the Transmission Corridor as the Company in its sole discretion considers necessary or desirable;
- (c) to erect, install, construct, maintain, repair and keep in good condition, move, remove, replace and use bridges and such gates in all fences which are now or may hereafter be on the Transmission Corridor as the Company may from time to time consider necessary or desirable;
- (d) to clear the Transmission Facilities and keep it clear of all buildings, structures, erections, installations, or other obstructions of any nature whether above or below ground, including removal of any materials and equipment or plants and natural growth, which in the opinion of the Company, endanger the Transmission Facilities or any person or property or which may be likely to become a hazard to any Transmission Facilities or to any persons or property or which do or may in any way interfere with the safe, efficient or serviceable operation of the Transmission Facilities;
- (e) to enter on and exit the Transmission Corridor through the Owner's Lands by the Owner's access routes and to pass and repass at all times in, over, along, upon and across so much of the Owner's Lands as is reasonably required for the Company, its respective officers, employees, agents, servants, contractors, subcontractors, workmen and guests, with or without any machinery, plant, material, supplies, vehicles and equipment of any nature for all purposes necessary or convenient to the exercise and enjoyment of the Rights in the Transmission Corridor; and
- (f) to remove, relocate and reconstruct all or any part of the Transmission Facilities.

6. **The Owner's Obligations:**

The Owner agrees to do all things necessary to co-operate with, permit and facilitate the Company's exercise of the Rights. For greater certainty but without in any way limiting the generality of the foregoing, the Owner agrees that the Owner will not:

- (a) interfere with any Transmission Facilities and shall not erect or cause to be erected or permit in, under or upon the Transmission Corridor any obstruction or plant or permit any trees, bush, shrubs, plants or natural growth which does or may interfere with the Rights granted herein;
- (b) change or permit the existing configuration, grade or elevation of the Transmission Corridor to be changed and the Owner further agrees that no

excavation or opening or work which may disturb or interfere with the existing surface of the Transmission Corridor shall be done or made;

- (c) construct or maintain any roads, lanes, walks, drains, sewers, water pipes, oil and gas pipelines, fences, service cables on or under the Transmission Corridor or any portion thereof without the prior written approval from the Company; and that, in the event of any unauthorised installations as aforesaid the Company may, all at the Owner's expense, forthwith remove, relocate, clear or correct the offending interference, obstruction, installation from the Transmission Corridor, all without being liable for any damages caused thereby (and with the cost and expenses thereof permitted to be set-off by the Company against any amounts owing or coming due by the Company to the Owner); or
- (d) permit or grant any other encumbrances to be created over or in respect to the Transmission Corridor or the Transmission Facilities other than Permitted Encumbrances.

7. **The Owner's Rights:**

Notwithstanding anything to the contrary set forth in this Agreement, the Owner (and its successors and assigns) shall have the right to:

- (a) conduct farming, livestock, hunting, oil and gas activities in the Transmission Corridor, but only to the extent that: (i) such activities are not carried out anywhere within five (5) metres of any of the Transmission Facilities (other than overhead lines, it being the intent that such activities may be conducted underneath such overhead lines so long as they are not carried out within five (5) metres of any of the tower pads or other fixed parts of the Transmission Facilities); and (ii) such activities do not otherwise interfere with the Company's rights hereunder;
- (b) construct or maintain any roads, lanes, walks, drains, sewers, water pipes, oil and gas pipelines, fences, service cables on or under the Transmission Corridor or any portion thereof but only to the extent that such works have the prior written approval from the Company; and
- (c) to the extent that the Company's construction and installation activities in the Transmission Corridor result in damage to the Owner's crops or to drainage networks in the Transmission Corridor, the Owner may require that the Company repair any damaged drainage tiles and drains, re-compact and restore the top soil, and compensate the Owner for any substantiated losses; and
- (d) require, within twelve (12) months following the expiration or earlier termination of the last of the leases in the Windfarm Lands, that the Company, at the Company's sole cost and expense: (i) remove any of the above-grade Transmission Facilities to not less than three (3) feet below grade or as otherwise required by the applicable law; (ii) remove all buried tower foundations; and (iii) reseed those areas where tower pads were located with grasses and/or natural

vegetation (for greater certainty, the Company shall not be required to remove any roads constructed by the Company on the Owner's Lands).

8. **Title to the Transmission Facilities:**

Notwithstanding any rule of law or equity, the Transmission Facilities installed by or for the Company shall at all times remain the property of the Company and shall at anytime and from time to time be removable in whole or in part by Company, notwithstanding that such Transmission Facilities are or may become annexed or affixed to the Transmission Corridor.

9. **Permitted Encumbrances:**

The Company recognizes that the Owner's Lands may be subject to: (a) an easement for high voltage electrical energy transmission lines in favour of Hydro One Networks Inc. or successor corporations (collectively, "**HONI Easements**"); and/or (ii) one or more charge/mortgages of land charging the Owner's Land (the "**Existing Mortgages**"). The Existing Mortgages and the HONI Easement shall, notwithstanding anything to the contrary set forth herein, be permitted encumbrances under this Easement so long as: (i) the mortgagees under the Existing Mortgages shall have executed this Easement below; or (ii) the Owner has obtained, at its sole cost and expense, another form of postponement and subordination (in registrable form) from the mortgagee(s) under all of the Existing Mortgages, postponing their respective rights, title and interests in the Owner's Land to the Company's interests herein so as to place the Rights in first priority on title to the Owner's Lands.

10. **No Waiver and Further Assurances:**

No provision of this Easement shall be deemed to have been waived by the Company unless such waiver is in writing by the Owner and expressly identifies the relevant Rights being waived. No waiver of a breach of or non-compliance with any provision of this Easement shall be construed to be a waiver of any succeeding breach of or non-compliance the same or any other provision of this Easement. The Owner will, from time to time and at any time at the request of the Company, promptly execute, at the Owner's own cost and expense, such further documents and do such other things as may be requested by the Company by way of further assurances of the Rights.

11. **Enurement and Assignment:**

The Rights shall be binding upon the Owner and its heirs, representatives, administrators, successors and assigns and shall enure to the benefit of the Company and its successors and assigns. In addition to and not in substitution of the foregoing, the Rights are intended to constitute, for all intents and purposes:

- (a) restrictions and restrictive covenants running with and burdening, all and singular, the Owner's Lands, as servient tenement, appurtenant to and for the express benefit of, all and singular, the Wind Farm Lands, as dominant tenement; and
- (b) easements and related incorporeal hereditments burdening, all and singular, the Owner's Lands, as servient tenement, appurtenant to and for the benefit of, all and singular, the Wind Farm Lands, as dominant tenement;

and the Rights may, without need for the Owner's consent, be assigned or conveyed, in whole or in part, on an exclusive or nonexclusive basis, by the Company and its successors and assigns.

12. **Registration:**

This Easement or a notice thereof may, at the option of the Company only, be registered by the Company on title to the Owner's Land in any manner that the Company deems appropriate in order to best secure the Rights. In order to effect the foregoing, but without limiting the generality of the foregoing, the Owner hereby: (i) covenants to execute, at its own expense, any and all documentation prepared by the Company in order to effect and maintain such registrations and filings; (ii) grants to the Company a power of attorney (which power is coupled with an interest and expressly intended to survive the death, dissolution or bankruptcy of the Owner) to execute and deliver all such documentation for and on behalf of the Owner; and (iii) irrevocably authorizes and directs any solicitors acting for the Company to electronically register on title to the Owner's Land, for and on behalf of the Owner, all such registrations and filings, with the execution of this Easement by the Owner being such solicitors' good and sufficient authority for so doing.

13. **Confidentiality:**

The Owner shall use its best efforts to keep the terms of this Easement (the "**Information**") confidential. The Owner shall not directly or indirectly disclose, allow access to, transmit or transfer the Information to a third party without Company's prior written consent except to its employees and professional advisors or unless required to do so by law. Prior to disclosing the Information to any of its employees or professional advisors, the Owner shall issue appropriate instructions to them to satisfy its obligations herein and obtain their agreement to receive and use the Information on a confidential basis on the same conditions as contained in this Agreement. The Owner shall be liable for any loss or damage caused to the Company resulting from unauthorized disclosure of the Information.

IN WITNESS WHEREOF the Owner has executed and delivered this Easement to the Company as of the day and year first above written.

SIGNED, SEALED & DELIVERED
in the presence of:

Witness

Name of Owner:

(seal)

EXISTING MORTGAGES

The undersigned, being the chargee under the charge/mortgage of land registered as Instrument Number _____ does hereby: (i) consent to this Easement and hereby postpones and subordinates said charge/mortgage of land to the Rights and this Easement; (ii) irrevocably authorizes and directs any solicitors acting for the Company to register on title to the

Owner's Land, for and on behalf of the undersigned, notice or other evidence of such consent, postponement and subordination, with the signature of the undersigned on this Easement being such solicitors' good and sufficient authority for so doing.

Per

Name:

Title:

I have the authority to bind the Corporation/Bank

**SCHEDULE A
OWNER'S LANDS
(SERVIENT TENEMENT)**

Greenwich Lake Project Study Area

Legend

- Roads
- River/Streams
- Project Boundary
- Under Application
- Provincial Park
- Woodlots
- Waterbody

Map Labels: Craven Lake Provincial Nature Reserve, Jones Lake, Quiet Canyon Provincial Nature Reserve, Greenwich Lake, Furcata Lake, Waterfowl Lake, Hades Lake, Mactenish Lake, Moose Lake, Mactenish Creek, Waken Lake, Muchnash Lake, QUIMET CANYON RD, WALLE RD.

Scale: 1:83,000
0 1,250 2,500 3,750

North Arrow: N, E, S, W

Source: Created by SFC Date Created February 22, 2001 Data Modified November 13, 2001 File Path: G:\SFC\Greenwich\Maping\Greenwich\Gd\Greenwich.mxd

Crown Land under Applicant of Record Status with the OMNR

[illegible]

SCHEDULE C
DRAWING SHOWING LOCATION AND AREA OF TRANSMISSION FACILITIES
WITHIN THE OWNER'S LANDS

1 **ENVIRONMENT - ENVIRONMENTAL ASSESSMENT**

2 Greenwich Windfarm is considered a Category B project under the "Guide to
3 Environmental Assessment Requirements for Electricity Projects" under the *Ontario*
4 *Environmental Assessment Act* (the "Guide"). All Category B projects are subject to the
5 Environmental Screening Process ("ESP"). All projects subject to the ESP are required
6 to go through the screening stage to identify the potential environmental effects of
7 project activities as required by the Ministry of the Environment ("MOE") to determine
8 the impacts on a variety of local and regional conditions. A Notice of Commencement
9 for the environmental screening study was issued on October 17, 2007.

10 An Environmental Screening Report/Environmental Impact Statement ("ESR") was
11 completed by Dillon Consulting Limited ("Dillon") in order to fulfill provincial and federal
12 environmental regulatory requirements. An interdisciplinary team of professionals
13 prepared this report based on extensive field work and data collection activities. These
14 included a one-year, four-season bird survey program, survey of potential peregrine
15 falcon habitat areas, extensive summer and fall migration bat surveys and natural
16 feature studies. Field visits were conducted to examine water crossing locations and to
17 confirm the presence of natural vegetation/wildlife/aquatic habitat. Maps, air photos,
18 natural heritage data and studies, and land-use planning documents and policies were
19 reviewed. Natural heritage survey programs were guided by the input of provincial and
20 federal government agencies.

21 On June 9 2009, a draft of the ESR (the "Draft ESR") was voluntarily released by RES
22 Canada, in advance of the filing of the Notice of Completion and the formal 30-day
23 review period for discussion with government agencies and other stakeholders. The
24 Draft ESR presented the preliminary design of Greenwich Windfarm and identified a
25 preliminary route for the Greenwich Windfarm Transmission Line. The availability of the
26 report was advertised through letters and in the Nipigon-Red Rock Gazette and the
27 Thunder Bay Chronicle Journal. The Draft ESR was made available for public review at
28 the Township of Dorion Municipal Office and on the Greenwich Windfarm website. The
29 Draft ESR was also made available to the Ministry of Natural Resources ("MNR") and
30 the MOE. In addition, Environment Canada was informed by way of letter that the Draft
31 ESR had been posted on the Greenwich Windfarm website identified below. Both the
32 MNR and MOE provided comments to RES Canada on the Draft ESR.

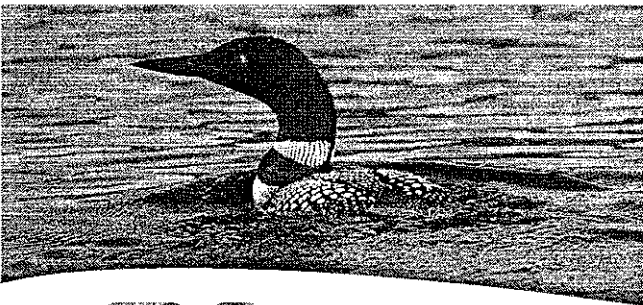
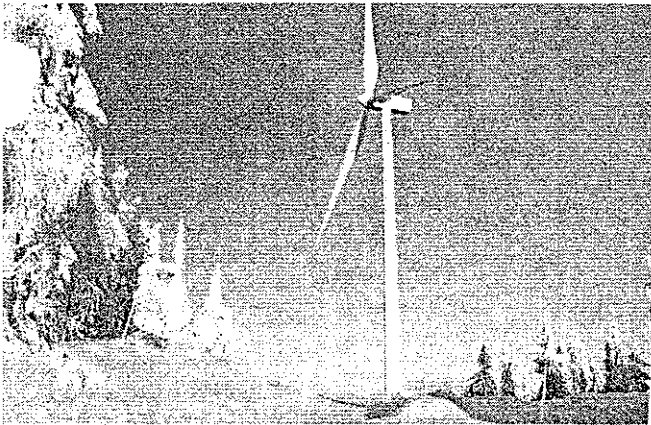
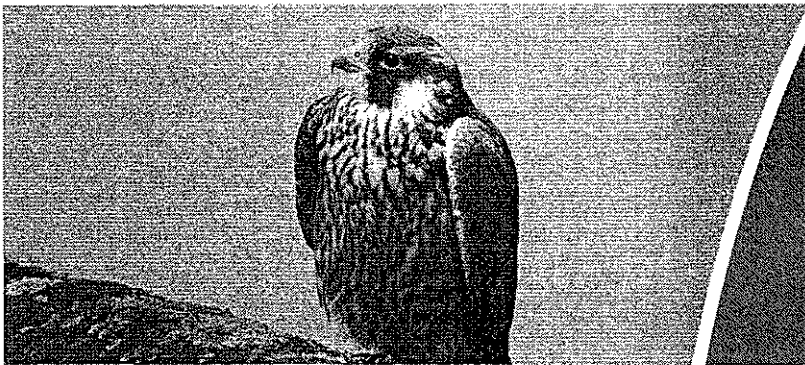
33 The ESR was finalized in July 2009 ("Final ESR"). This document presented the
34 updated project design including the proposed routing of the Greenwich Windfarm
35 Transmission Line. The proposed design, layout and routing reflected comments
36 received from the MOE and MNR as well as constructions constraints identified during
37 the site investigations by RES Canada. A copy of the Final ESR is included in Exhibit
38 H, Tab 1, Schedule 2.

1 A "Notice of Completion" ("NOC") of the ESR was released on July 13, 2009. The NOC
2 advised the public and key stakeholders that RES Canada had completed the
3 environmental screening of the Greenwich Windfarm project and had determined that
4 there were no significant environmental impacts (including the natural and social
5 environment) associated with the project. The NOC triggered the beginning of a 30-day
6 review period during which time any interested party who has significant outstanding
7 environmental concerns about the project may raise these with RES Canada. RES
8 Canada and the concerned party will then attempt to resolve the matter.

9 If the parties are unable to resolve the concern, the concerned party may then proceed
10 to make a written request, to the Director of the Environmental Assessment and
11 Approvals Branch of the MOE, to elevate the project to an individual Environmental
12 Assessment under the *Environmental Assessment Act* ("Elevation Requests"). The
13 MOE has 45 days to respond to such requests.

14 The 30-day review period will expire on August 11, 2009. At the time of filing, no
15 comments or Elevation Requests have been received.

16 A copy of the ESR, without the appendices, is attached at Tab H, Tab 1, Schedule 2. A
17 copy of the complete ESR with all appendices can be accessed at
18 <http://greenwichwindfarm.com/environment-and-economic-studies.php>



Renewable Energy Systems Canada Inc.

Greenwich Wind Farm

Environmental Screening Report /
Environmental Impact Statement

July 13, 2009



**Renewable Energy Systems
Canada Inc.
Greenwich Wind Farm
Environmental Screening
Report/Environmental Impact
Statement**

*Report
July 2009*

07-7384

Submitted by

**Dillon Consulting
Limited**

Executive Summary

Renewable Energy Systems Canada Inc. (RES) proposes to develop the Greenwich Wind Farm, located near the community of Dorion, north-east of Thunder Bay, Ontario. This wind farm is expected to ultimately consist of up to 72 wind turbines that will generate 165.6 MW of electricity. RES has been awarded a contract by the Ontario Power Authority (OPA) to provide an initial 98.9 MW of electricity from the Greenwich Wind Farm from 43 wind turbines. RES has completed this Environmental Screening Report/Environmental Impact Statement (ESR/EIS) for the larger 165.6 MW project which would be developed in two phases – an initial 98.9 MW project and a future 66.7 MW project (subject to the award of a future contract).

This ESR/EIS is consistent with the Environmental Screening provisions of Ontario Regulation 116/01 for a Category B project and with the requirements of the *Canadian Environmental Assessment Act*. A team of interdisciplinary professionals completed the screening and this report using best practices. Field work and data collection, based on agency-approved protocols and methodology, was undertaken to assist in the determination of potential environmental effects, including both the social and natural environment, which could result from this project. Key data collection activities included one full year of bird survey work under a work program approved by Environment Canada and the Ontario Ministry of Natural Resources (MNR), extensive bat surveys and initial aquatic habitat surveys. A mitigation strategy has been developed to manage the potential effects. RES is committed to implementing the mitigation strategy outlined in this ESR/EIS.

Significant effects to the natural and social environment have been avoided through careful site selection, good planning, implementation of mitigation measures, and adherence to regulatory requirements. The project is located in a remote rural area and, while this ESR outlines the various impacts that the project will have during the construction and operation phases, no significant environmental effects are anticipated.

The overall conclusion of this ESR/EIS is that this project can be constructed, operated and decommissioned without any significant impacts to the environment, including the natural and social environment.

Public, government agency and Aboriginal consultation activities have been undertaken and will continue. Both the Municipality of Dorion, where a portion of the project is located, and the Red Rock Indian Band, the closest identified First Nation community, have indicated their support for the project.

There are significant net benefits of this project including the generation of clean renewable energy for Ontario, increased economic activity for the region, and employment opportunities for the local communities, particularly during the construction phase of the project. During the operational phase, the project, it will also provide annual economic benefits through municipal taxes paid to the Township of Dorion, lease payments to the province, and a continuing need for services from the local northern economy.

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Appendix I	Aboriginal Consultation Summary
Appendix J	Guidelines for Consultant Archaeologists
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1. Project Summary

In response to the Province of Ontario's policy commitments to support opportunities for the generation and use of renewable energy, Renewable Energy Systems Canada, Inc. (RES) is proposing to construct and develop the Greenwich Wind Farm (GWF or "the project") to generate electricity in Northern Ontario. The project is located approximately 75 kilometers northeast of Thunder Bay and lies partially within the Township of Dorion and partially on MNR-administered unorganized territory, in the district of Thunder Bay, Ontario (see **Figure 1.1**). The wind farm is expected to consist of up to 72 wind turbines that will generate 165.6 megawatt (MW) of electricity. In addition to the turbines, the project will require a 10.7 km 230 kV power transmission line (double circuit) be constructed to the east of the study area in order to connect the Greenwich Wind Farm to the provincial grid system, approximately 10 km away. This Environmental Screening Report/ Environmental Impacts Statement (ESR/EIS) assesses the effects of both the wind farm and the transmission line.

RES has been awarded a contract by the Ontario Power Authority (OPA) to provide 98.9 MW of electricity from the Greenwich Wind Farm. As such, the current Project is not subject to the Feed-in-Tariff Program of the *Green Energy Act*. RES is completing this environmental screening for the larger 165.6 MW project which would be developed in two phases – an initial 98.9 MW project and a future 66.7 MW project (subject to the award of a future contract).

1.1 Project Proponent

RES is a global leader in creating and building renewable energy projects and has been at the forefront of the wind industry since its creation in 1981. Since then RES has built wind projects across four continents at over 60 locations totaling over 4000MW of capacity. RES has been operating in Canada out of its Montreal office for the last five (5) years.

RES is part of the UK-based Sir Robert McAlpine Group, a 137-year old privately held global construction, design, and engineering company. The McAlpine Group has been active in Canada since 1953, operating mainly in Toronto, but also active in Quebec and the Maritimes. Through its subsidiary, R.B. Somerville, a large pipeline and utilities contractor headquartered in King City, Ontario, the McAlpine Group has been awarded major contracts by Toronto Hydro, TransCanada and Enbridge among others.

RES's key competencies include a unique, in-house development cycle that utilizes proprietary software to identify sites, evaluate wind capacity and climate predictions. RES is also an accomplished wind farm engineering and construction company, having built almost 14% of all the installed wind capacity in the United States. RES' 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.

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<http://www.res-americas.com>

1.2 Title of Project

The project name is the Greenwich Wind Farm (GWF). Throughout this ESR/EIS the terms “project” and “Greenwich Wind Farm” as well as “GWF” are used interchangeably and include the transmission line component of the study.

1.3 Project Location

The project is located in the District of Thunder Bay near the Townships of Dorion and Shuniah in northwestern Ontario. The study area is located east of Dorion and is comprised of approximately 17,047 ha of land. **Figure 1.1** illustrates the location of the project.

1.4 Estimated Capacity of Wind Farm

The project is designed with a total of seventy-two (72) 2.3MW Siemens turbines, the wind farm, once fully built, will have an installed capacity of over one hundred and sixty-five (165.6) MW. Should another turbine model be used, the Wind Farm’s same general dimensions shall be observed.

The initial capacity of the wind farm will have an installed capacity of approximately 98.9 MW.

1.5 This Report

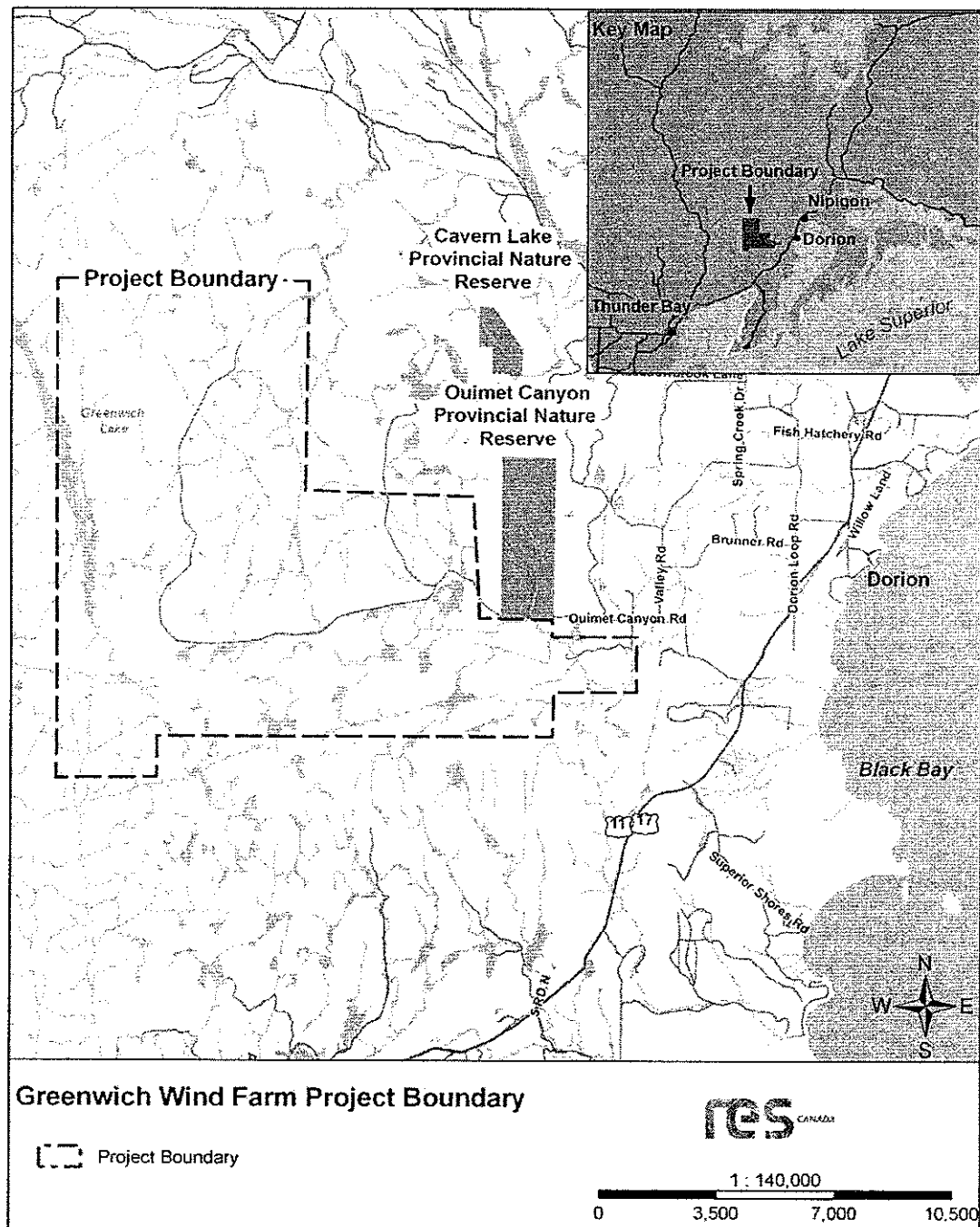
This Environmental Screening Report (ESR) and Environmental Impact Statement (EIS) provides a description of the proposed Greenwich Wind Farm, the existing environmental conditions, the effects that may result from the undertaking, proposed mitigation and monitoring measures, and the net effects of the project. Consultation with a wide range of Aboriginal communities and organizations, community stakeholders, and agencies was an integral part of the environmental screening (ES) process; the activities and result of the stakeholder consultation program are summarized in this ESR.

The project is subject to the Environmental Screening Process (ESP) outlined in the Ontario Ministry of the Environment’s (MOE) *“Guide to Environmental Assessment Requirements for Energy Projects”* (MOE, 2001a) (the Guide). Potential issues that fall under federal jurisdiction have also been anticipated and addressed.

1.6 ESR/EIS Study Team

Dillon Consulting Limited (Dillon), in consultation with RES, undertook the screening level assessment and prepared this ESR. Dillon was supported by several sub-consultants including: Ross Archaeological Research Associates, Northern Bioscience (bird studies), EchoTracks (bat studies), and Ortech Power (visual simulations).

Figure 1-1: Project Location



1.7 Environmental Assessment (EA) Requirements

1.7.1 Provincial EA Requirements

The Greenwich Wind Farm is considered to be a Category B project under the “Guide to Environmental Assessment Requirements for Electricity Projects” under the *Ontario Environmental Assessment Act* (the “Guide”). All Category B projects are subject to the Environmental Screening Process (ESP). All projects subject to the ESP are required to go through the screening stage to identify the potential environmental effects of project activities as required by the MOE to determine the impacts on a variety of local and regional conditions. During this stage, significance of net effects are also examined as detailed in Section 6. The proponent is required to consider as part of its assessment, the potential for effects to:

- Air Quality and Noise;
- Surface and Groundwater (Water Resources);
- Land Uses,
- Human and Ecological Health;
- Vegetation;
- Wildlife and Birds;
- Soils;
- Social and Economic Conditions;
- Natural and Cultural Heritage; and
- Visual.

Once the environmental screening process has been completed and the ESR is prepared, the proponent can then release a Notice of Completion of ESR and post it for a 30 day comment period. If no significant environmental or public issues are raised, and no 'elevation requests' are received during the 30 day review period, the proponent submits a Statement of Completion to the Director of Environmental Assessment and Approvals Branch (EAAB) of the MOE, and may proceed with construction, pending any other required approvals.

Through the Environmental Screening Process, a project may be elevated to the Environmental Review if:

- There are potentially significant negative environmental effects or public issues raised;
- Substantive public or agency concerns are received during the 30-day review of the Screening Report; or
- The Director of the EAAB receives substantive elevation requests from the public or government agencies during the 30-day period.

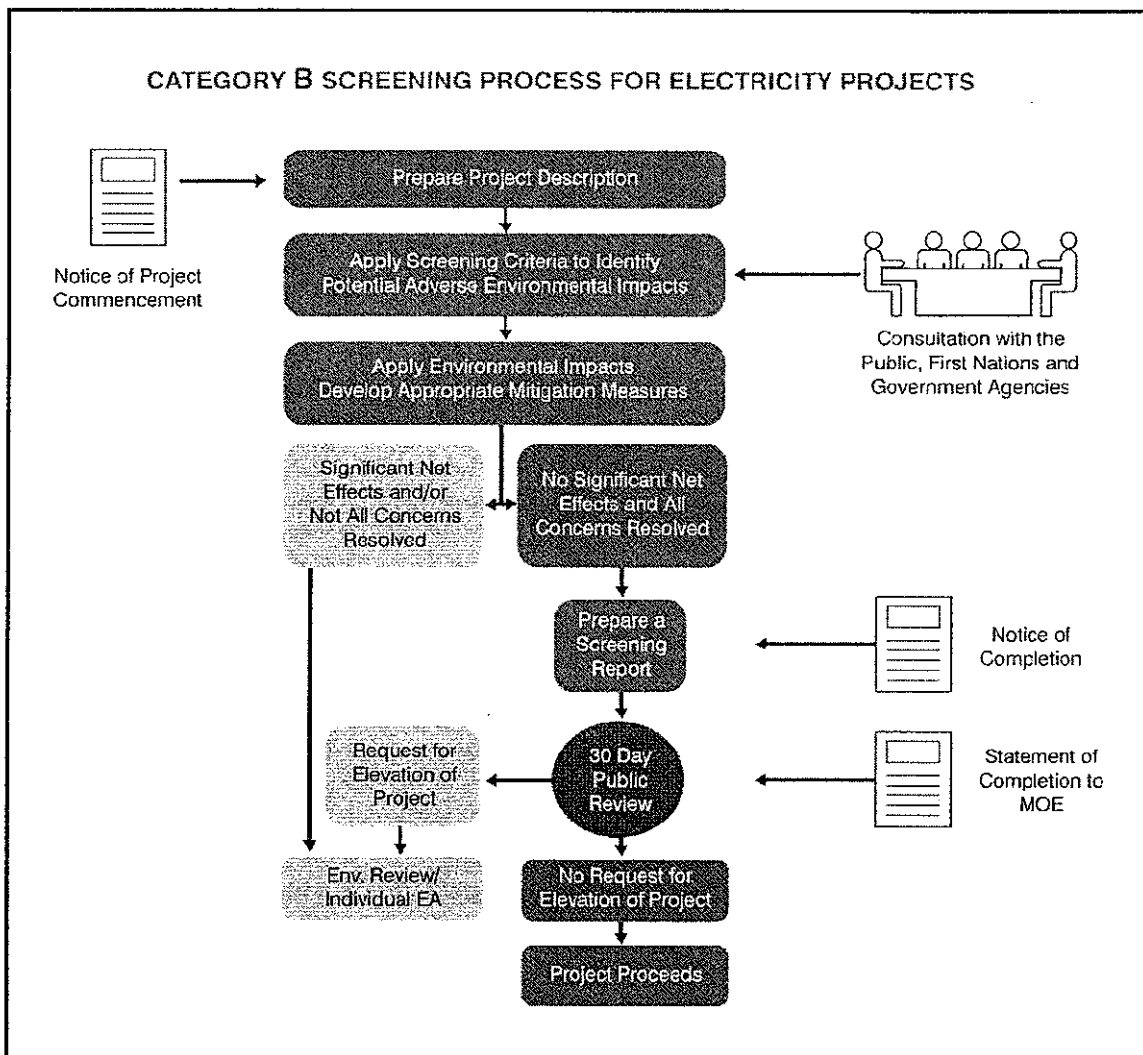
If additional studies are required these are determined in consultation with the public and agencies. To respond to outstanding issues and concerns, the environmental screening can be elevated to an environmental review.

The level of environmental investigation that has been undertaken to support this screening is consistent

with the level of work undertaken for an environmental review. A significant amount of field work and detailed assessment of effects has been undertaken that goes well beyond the expectations of an environmental screening as outlined in the “Guide”.

As part of the EA requirements, a consultation process has been undertaken to provide an 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. The environmental screening and review process, as outlined in the Guide, is summarized in **Figure 1-2**. Please note that the Statement of Completion is provided to MOE when no requests for elevation of the project have been received (not during the 30-day review period).

Figure 1-2: Environmental Screening Process



1.7.2 Federal EA Requirements

Wind farm developments can trigger an EA under the *Canadian Environmental Assessment Act* (CEAA). CEAA can be triggered through the need for federal funding, federal permits and/or federal lands. As RES does not intend, at this time, to apply for funding under the federal ecoEnergy for Renewable Power Program (ecoEnergy), the requirements of the CEAA do not need to be met in the form of a CEAA Screening. However, there is the potential that federal permits could be required, including, for example, approval under the *Fisheries Act* (due to the access road crossings of water courses), which could trigger CEAA. Federal comments and concerns received to date have been addressed and incorporated into this ESR.

1.7.3 Coordinated Approach to Federal and Provincial Approvals

This Environmental Screening (ES) has been undertaken recognizing the various federal and provincial environmental approval processes that apply to this project. The ESR has been prepared to be consistent with the MOE's Environmental Assessment process (i.e. environmental screening) and federal CEAA requirements (including Natural Resources Canada's requirements).

1.8 Agencies Involved in the Environmental Screening

The project is subject to both provincial and federal EA requirements. As a result the following agencies were contacted.

Federal Agencies

- Natural Resources Canada (NRCan)
- Indian and Northern Affairs Canada (INAC)
- Canadian Environmental Assessment Agency (CEAA)
- Environment Canada (EC) / Canadian Wildlife Service (CWS)
- Department of Fisheries and Oceans (DFO)
- Transport Canada (TC)
- NAV Canada

Provincial Agencies

- Ministry of the Environment (MOE) – Thunder Bay Regional Office
- Ministry of Natural Resources (MNR) – Thunder Bay Regional Office
- Ministry of Northern Development and Mines (MNDM) – Thunder Bay Office
- Ontario Ministry of Aboriginal Affairs (OMAA)
- Ministry of Transportation Ontario (MTO) – Northwestern Region

- Ministry of Culture
- Ministry of Municipal Affairs (MMA) – Northwestern Municipal Services Office
- Government of Ontario Public Safety Network (Communication Towers)

Conservation Authorities

- Lakehead Conservation Authority – Thunder Bay Office

1.9 Required Permits and Approvals

In addition to the environmental screening requirements, other provincial environmental related permits that may be required for this project include:

- Crown Lease from MNR or other relevant Land Use Permit or Tenure as defined in the MNR Policy - Application Review & Land Disposition Process (4.02.01);
- Permits under the regulation “Development, Interference with Wetlands and Alterations to Shorelines and Watercourses” (“Generic Regulation”) through the Conservation Authority (which replaces Ontario Regulation 158 “Fill Construction and Alteration to Waterways” as of May 1, 2006);
- 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 or for other purposes from a surface and or groundwater source in excess of 50,000 liters per day. The generating capacity of the nominal capacity of the generator for the batch plant will be under 1MW and the plant, will therefore, not require a separate screening;
- Certificate of Approval (sewage) with respect to settling ponds as per Section 53 of the *Ontario Water Resources Act* (if required);
- Generator Registration under Ontario Regulation 347 for generation of subject waste;
- Ontario Ministry of Culture “clearance” under the *Heritage Act* regarding effects on cultural resources;
- Several permits from the MNR that could include:
 - Road and trails work permit under Regulation 453-96 of the *Public Lands Act* (MNR);
 - Water Crossing Work Permit under Regulation 453-96 of the *Lake and Rivers Improvement Act*;
 - Work Permit for Watercourse Crossing under the *Public Lands Act* (MNR);
 - Burning Permit under Section 5 of Regulation 207/96 of the *Forest Fire Prevention Act*;
 - Aggregate Permit under section 34(1) of the *Aggregate Resources Act* (MNR);
 - Permit under *Fish and Wildlife Conservation Act* (MNR);
 - Forest Resource License under Section 27 of the *Crown Forest Sustainability Act* (MNR);
 - Approval to commence cutting operation under Section 44 of the *Crown Forest Sustainability Act* (MNR);
 - Authorization for temporary holding yard for harvested wood (MNR);

- Authorization to haul Unscaled Crown Forest Resources (MNR);
- Removal of Mine Surface Rights (MNR); and
- Authority for hunting closure on Crown Lands (MNR).

This project will also require a number of other provincial level permits, which are not directly related to the environment such as: Ontario Energy Board – Leave to Construct for the Transmission Line; a generator's license from the Ontario Energy Board and agreements and/or approvals with the Independent Electricity System Operator (IESO) and Hydro One.

RES Canada has also consulted with the Government of Ontario Public Safety Network under the Ministry of Government Services and the owners of specific communication towers in the area, regarding the potential for effects on communication tower signals.

Portions of the project are located within the Township of Dorion. Wind turbines are considered to be permitted uses in the Official Plan/Zoning By-law for these lands. No approvals under the Planning Act are required.

Federal permits and approvals that may be required include:

- Approvals under the *Fisheries Act*;
- Aeronautical Obstruction Clearance Permit from Transport Canada in response to potential turbine height hazards and navigation lighting; and
- Air Safety and Land Use Clearance from NAV Canada for navigational mapping requirements.

1.10 Project Schedule

The proposed Greenwich Wind Farm was announced through a formal Notice of Study Commencement in October 2007. The acquisition of permits is anticipated in September 2009. Project construction is expected to commence in late 2009 or early 2010.

1.11 Report Organization

This ESR is organized into the following sections:

Section 2.0	Project Description
Section 3.0	Scope of Assessment
Section 4.0	Stakeholder Consultation
Section 5.0	Environmental Features Screening
Section 6.0	Effects Assessment and Mitigation
Section 7.0	Project Follow-up Measures and Monitoring
Section 8.0	Conclusions
Section 9.0	References

Several Technical Support Reports are attached which contain further details regarding the studies that were conducted:

Appendix A	Turbine Coordinates and Specifications
Appendix B	Stakeholder Consultation Report
Appendix C	Natural Environment Report
Appendix D	Bird Study Report
Appendix E	Bat Study Report
Appendix F	Archaeology Report
Appendix G	Noise Analysis Report
Appendix H	Visual Assessment Report
Appendix I	Aboriginal Consultation Summary
Appendix J	Guidelines for Consultant Archaeologists
Appendix K	Avian Monitoring Program
Appendix L	Environmental Management Plan

2. Project Description

RES is proposing to develop the Greenwich Wind Farm in northern Ontario. The project contributes to the Province's target of procuring 10% of all electrical generating capacity to come from renewable sources by 2010 (2700 MW). This project will help Ontario meet its electricity needs while reducing emissions of smog and greenhouse gases. The location of this project is based on the following factors:

- **Strong Wind Resource** - The shores of Lake Superior have a very good to excellent wind resource, averaging from 7.5 m/s to 9 m/s, (OMNR, 2005).
- **Access to Electrical Grid** - Transmission connection points, with available capacity, are in close proximity to the study area.
- **Aboriginal Community Support** – RES has undertaken extensive communications with Aboriginal communities in the area which it initiated at an early stage in the project and which it intends to continue through the project's permitting and construction phase. In particular, ongoing communication, meetings, and information sharing sessions has led to a good working relationship and a letter of support from the Red Rock Indian Band, the closest identified First Nation community to the study area.
- **Municipality Support** - There is general public support for the project in the vicinity of the study. The local Township of Dorion will receive tax revenues each year as well as land fees for the leasing of public land. In addition, economic benefits including labour and service contracts will be dispersed throughout the region. The Township of Dorion has also provided a letter of support which can be found in **Appendix B**.

2.1 Description of Project Components

The major components of the Project are as follows:

- Wind turbines;
- Pad mount 600 V / 34.5 kV step up transformers (located at or near the base of each turbine);
- 34.5 kV collection system to link the wind turbines to the substation (approximately 70 km of MV cable). While these lines are expected to be primarily above ground, there may be sections of the line where buried cables will be used.
- Substation (to step up the electric output from 34.5 kV to 230 kV);
- A 10.7 km, 230 kV double-circuit transmission line;
- A switching station at the point of connection with the provincial grid;
- Turbine access roads (approximately 40 km of new and existing access roads);
- Two meteorological towers;
- Staging areas for assembly of wind turbines, only during construction; and
- Batch plant for the manufacture of concrete (only during construction and only if concrete cannot be sourced from a local supplier). If a batch plant is required, it is expected that it will be operated by a contractor and that the nominal capacity of the generator required to run the plant will be under 1 MW.

2.1.1 Wind Turbines

The project has been designed with up to 72 wind turbines that will generate 165.6 MW of electrical power. The manufacturer's specifications for the Siemens SWT-2.3-101 wind turbines are presented in Table 2.1

It is expected that the foundations for the wind turbines shall be constructed with poured concrete into a pre-fabricated steel structure. Detailed foundation design will be finalized after full site geotechnical data is obtained.

Table 2-1: Wind Turbine Description – Siemens 2.3-101

Operating Data	Specification
General	
Rated Capacity	2300 kW
Cut-in wind speed (m/s)	4
Cut-out wind speed (m/s)	25
Rated wind speed (m/s)	12-13
Rotor	
Number of rotor blades	3
Rotor diameter (m)	101
Swept area (m ²)	8000
Rotor speed (rpm)	6-16 rpm
Tower	
Hub height (m)	80
Power Control	Pitch regulation with variable speed

The selection of the project area was based primarily on the wind resource assessment results, access to the local electrical distribution system, Hydro One Transmission grid and local support.

The turbine layout took into consideration the following factors:

- Results from wind profile studies and anemometer data;
- Site access;
- Environmental constraints information (i.e. wildlife habitat, vegetation, wetlands);
- Public and agency input; and
- Interconnection considerations.

There are no homes or private dwellings located in the study area. The nearest potential resident (a campground) to a proposed turbine position is approximately 2.2 km away. Therefore, sound levels from the turbines were not a major determinate in turbine siting.

The turbine setback distance requirements as specified in the Township of Dorion zoning by-law are observed or even surpassed in siting the turbines. These setbacks are:

- Minimum Setback from Property Lines – One (1) times the total length of the rotor blade, plus 10.0 metres, from the base of the tower to the lot line and any public road right-of-way limit, but not less than 30 metres; provided however that, the minimum setback shall be 0 metres for a lot line that abuts a lot under lease with the wind energy system developer.*

- b) *Minimum Setback from Dwellings – 200 metres or the requirement established in the Ministry of Environment Certificate of Approval for noise, whichever is greater.*
- c) *Wind turbine setbacks from natural heritage features to be identified through any applicable provincially or federally legislated environmental assessment.*

It is noted that as there are no buildings within the study area, the second set back does not apply to the project.

A key aspect of all project phases is to minimize environmental effects. The 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 setback requirements. Turbine siting also respects the setback requirements of the proposed Green Energy Act regulations. Access roads and electrical connection lines have been routed to minimize their length, avoid sensitive natural features, and minimize tree cutting.

The construction phase of any major project such as this has the potential for adverse but temporary effects on the environment. Key activities during the construction phase include: clearing, grading, access road development, trenching of underground distribution lines (if required for select line sections), water course crossing construction, foundation excavation, blasting (if required), transportation, assembling and erecting of the turbines and distribution poles. To minimize the potential for environmental effects during the construction phase, the contractors will be made well aware of the environmental management commitments that have been made. An Environmental Management Plan (EMP) has been developed (Appendix L) and will be adhered to during the construction stage. A RES compliance inspector will monitor the project contractor's compliance with the EMP throughout the construction phase.

Table A-1 in Appendix A contains the coordinates of the wind turbines (UTM NAD 83, Zone 17N coordinate system). The wind farm has been designed to meet the required environmental setbacks. The final turbine locations may be refined as a result of geotechnical consideration and environmental considerations. **Figure 2.1** presents the wind farm layout.

Greenwich Wind Farm **Figure 2.1 Wind Farm Layout, and Infrastructure**

Legend

- Target Turbines
- Expansion Turbines
- ⊠ Substation
- ⊠ Switchyard
- ⊠ Site Compound
- ⊠ O&M Building
- ⊠ Batch Plant
- ⊠ Watercourse Crossing
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV Transmission Line
- Existing HONI 115KV Transmission Line
- Proposed Transmission Line
- MV CIRCUIT Phase I
- MV CIRCUIT Phase II
- Phase I Access Road
- Phase II Access Road
- Contours (5m)
- River/Streams
- ⊠ Project Boundary
- ⊠ Grid Cells Under AOR Status
- Forested Areas
- Waterbody



1 : 71,000
0 1,500 3,000 4,500



Created By: SFG
Checked By: DM
Date Created: February 22, 2007
Date Modified: July 8, 2009
File Path: I:\GIS\077384_Greenwich
2008 Greenwich Mapping\ESR July 2009
Figure 2.1 Wind Farm Layout.mxd

Cavern Lake
Provincial Nature
Reserve

Oulmet Canyon
Provincial Nature
Reserve

VALLEY RD

117

2.1.2 Access Roads

Access roads are required in order to erect the turbines and for operations maintenance. The access roads to be constructed will, in most sections, be approximately 10 m wide with no ditches and be composed of a gravel base. In sections with steeper terrain, ditches and culverts will be incorporated to avoid washout of the road. Where turning is required the width of the road may be wider.

Local interest groups have indicated concern with any new direct access into the site from the south of the study area due to conservation efforts in this area. These groups currently use the area for fishing and hunting and are concerned that additional direct access roads from the highway would open up access to this area. These concerns are addressed in various sections of the ESR including Sections 4.0 – Consultation and 6.13 – Rural Resources. RES is committed to working with all local stakeholders and the local MNR to develop appropriate mitigation measures to ensure that remote areas are left as undisturbed as possible. To these ends, access to the site is planned via Quimet Canyon Road as well as Armstrong Road to Escape Lake Road. **Figure 2.1** illustrates the locations of the proposed access roads. Several watercourses will need to be crossed by the turbine access roads as shown in **Figure 6.1** (Section 6).

Any soils encountered along the proposed roads Right-of-Way (ROW) will be excavated and used as fill material to bring low areas to desired grade. The foundation of the road (roadbed) will be at the depth required to support the anticipated traffic loads associated with the construction and operations of the wind farm.

During construction, concrete trucks, pick-up trucks, cranes on tracks and transport trucks bringing turbine components to the site will use these access roads.

2.1.3 Electrical Connections/Substation

A combination of an aboveground and underground 34.5 kV electrical power collection lines will be installed between the turbines and then connected to the Transformer Station. Generally, each row of turbines will be interconnected at a local connection point, with each row then connected to the substation with either a buried or aboveground line, depending on site and soil conditions, which shall generally follow the access roads. **Figure 2.1** shows the electrical connection lines as proposed, no distinction is made between aboveground and underground lines as this will be confirmed further to geotechnical investigations.

The substation (which serves to convert the generated electricity to 230 kV so that the wind farm can be tied into the provincial grid) will be located within the study area, as shown in **Figure 2.1**. A switching station would be required next to the point of connection with the Hydro One transmission line. About 0.4 ha of land would be required for this.

The substation has been included in the noise analysis of the wind farm. As specific substation specifications are not known at this time, maximum noise emission specifications were used, corresponding to the worst case scenario.

A typical layout for the substation is provided in **Figure 2.2**.

Transmission Line

A 230 kV double-circuit transmission line will connect the wind farm to the provincial grid system,

approximately 10 km away. The right-of-way (ROW) width will depend on the final structure type and whether one or two structures are used. It is anticipated that the maximum width of the (ROW) would be 40m in either case. A 35m wide clearing is anticipated. Wherever possible the collector system will be strung to the transmission line poles to reduce the amount of land use and required right of way.

Ontario Energy Board (OEB) approvals will be required for the proposed 230 kV transmission line. These approvals are: Leave to Construct the line (Section 92), Right of Entry (Section 98) for gathering survey and engineering data) and Authority to Expropriate (Section 99). If the expropriate option is required, this process would be governed by the *Expropriations Act*. Expropriation will however be unnecessary as the current line routing uses only two privately owned lots for which easements are already in place.

The proposed route of for the transmission line is presented in **Figure 2.1**. The route was selected giving consideration to the wind farm layout, environmental constraints and topographical considerations. Some adjustments to the rating may be made subject to detailed engineering and detailed vegetation work.

Effects associated with the transmission line have been assessed as part of the larger project as documented in **Section 6**.

Cement Batch Plant

If the required amount of concrete cannot be sourced from an existing licensed local facility in the area, a project specific batch plant will be required during the construction period. If a new batch plant is needed, it would be operated by a contractor and would require approximately 2 hectares of land. Water requirements for the plant would exceed 50,000 litres/day, and as such, a MOE Permit to Take Water would be required.

Electrical power for the batch plant would be supplied through a diesel generator that will require a MOE Certificate of Approval to address noise and air concerns. However, the nominal capacity of the generator for the batch plant will be under 1MW and will, therefore, not require a separate screening. The batch plant will be operated by a subcontractor.

The wash water from the cement drums will be dealt with in one of the following ways, and approval for disposal of the wash water will be sought from the appropriate agency:

- Build a containment system which separates the sediment/aggregate from the water.
- Dry wash using stone in the drums to clean them.
- Use a retarder on the inside of the drum, which prevents the concrete from adhering to the drum.

The land will be restored to its original state after the construction period.

Aggregate Source

During the construction phase, on-site produced spoils will be used when the material and size is appropriate. In addition, aggregate from pits in the area may be required. It is anticipated that existing pits will be used in this case. As required, detailed plans for aggregate sourcing will be provided to the agencies and will be subject to MOE approval and MNR aggregate permit authorizations. In all cases, aggregate supply and handling will be executed by a subcontractor.

Please refer to the EMP appended to this report for further information on the handling, use, and storage of aggregate materials.

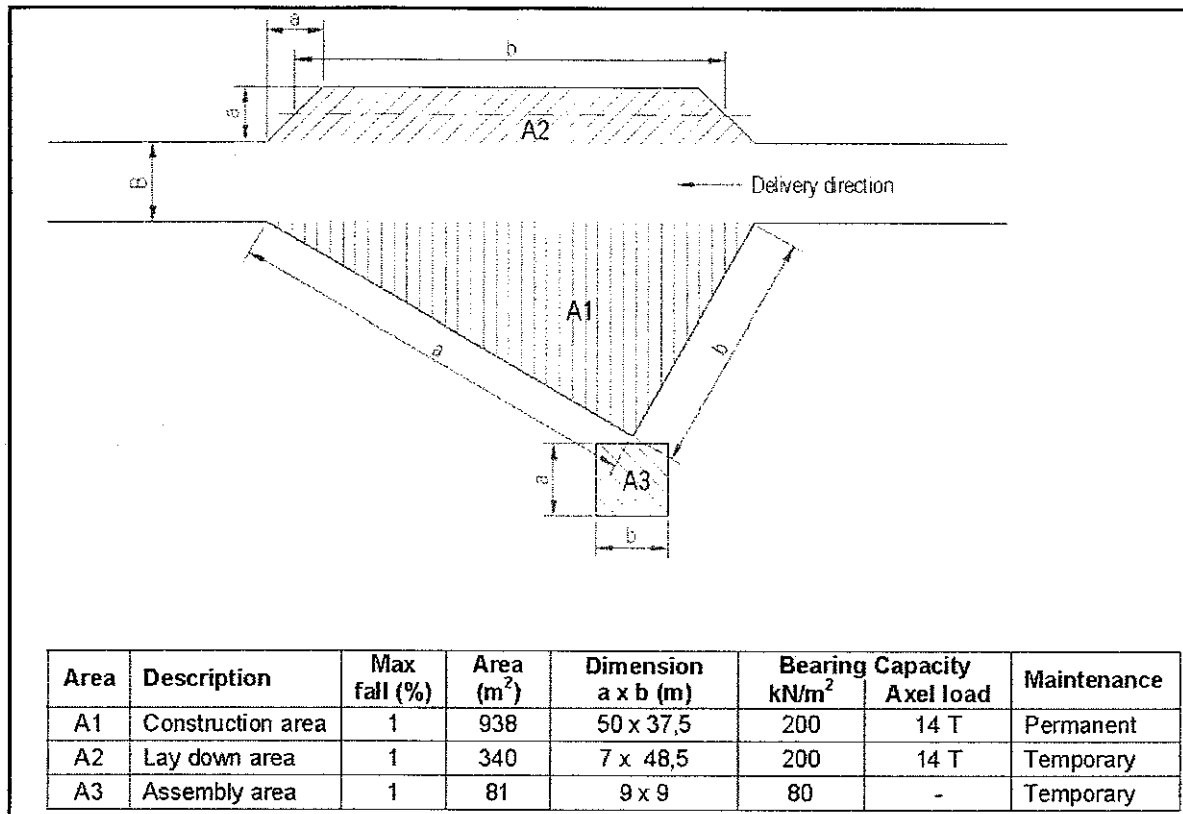
2.1.4 Staging/Laydown Areas

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 long 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 at a 5% grade is needed for the assembly and erection of the turbines. **Figure 2.3** shows an example of the staging area for a turbine. Note these dimensions are indicative and may be modified once detailed engineering design is performed.

The land for the staging area will be restored to as close of an original state as possible after the construction period.



Figure 2-3: Typical Turbine Laydown Area



2.2 Description of Project Activities

The key project activity phases include: construction, operations and decommissioning of the wind farm and transmission line. **Table 2.2** provides a description of the key activities that will occur under each project phase. A key aspect of all project phases will be on the minimization of environmental and social effects. The turbines have been sited to maximize distances from sensitive natural features. Access roads and electrical connection lines have been routed to minimize their length, avoid sensitive natural features, and minimize tree removal. Project components not specifically listed in the ESR may be subject to MNR Class EA requirements.

2.2.1 Construction Phase

The construction phase of any major project such as this has the potential for adverse effects on the environment. Key activities during the construction phase include: clearing, topsoil stripping, grading, access road development, trenching of underground distribution lines, watercourse crossing construction, foundation excavation, blasting, transportation, assembling and erecting of the turbines and distribution poles. Key activities during the construction of the transmission line include: surveying, clearing, and installation of the poles and stringing of the conductors.

An Environmental Management Plan has been developed (please refer to Appendix L) and its implementation will be monitored by an RES environmental inspector.

2.2.2 Operation and Maintenance Phase

Once the project is operational, the wind turbines and transmission line will operate automatically. There is little maintenance required for the turbines and transmission line, aside from periodic routine servicing. Any wastes generated, including fluids and oils, will be recycled where possible and if not possible, will be disposed of at an approved facility. Waste disposal is discussed in subsequent sections of the ESR. The turbines will be accessed primarily by all-terrain vehicles or light trucks. Larger trucks or cranes may be required for repairs from time to time. Winter access vehicles may be used to expand accessibility of the site after periods of heavy snowfalls. All access to the turbines and transmission line will be confined to access routes and wind turbine sites.

2.2.3 Decommissioning Phase

The project is designed to have a life of at least 20 years. 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 according to covenants in Crown Land lease, currently under development with the Thunder Bay district MNR.

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 the 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 (MOE guidelines on blasting activities will be consulted). It will be necessary to cross several watercourses (about 11) with the turbine access roads. Further, improvements to 10 existing road crossings may be required. 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.
Clearing	Bush, trees, and other vegetation will be cleared from the construction areas as required. An area of approximately 1ha (100m by 100m) will be required for each turbine location for assembly of the turbine rotor before being erected onto the turbine tower. The clearing of a right-of-way will be required for the 230 kV transmission line (details below).
Soil stripping and Grading	Graders, bulldozers, and backhoes will be used to strip any soil that could 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	The 34.5 kV collector lines will run from each turbine to the transformer station. The line will run along the access roads as much as possible and will be underground for the individual turbine access roads. Along the main access road, either underground or above ground lines supported by single poles will be utilized, depending on soil conditions. A corridor (Right of Way) will need to be cleared for the line. The width of this corridor will be a maximum of 20m and narrower when along roads.
Transmission Line Installation	The 230 kV transmission line will require the clearing of a right-of-way of approximately 30m in width. It is expected that the tower structures would be composed of two single poles each supporting one circuit (3 wires per pole) and be spaced approximately 100m apart. The line has been routed to minimize its distance and avoid sensitive environmental features. Some minor variations to the alignment are possible dependant on engineering considerations. In response to stakeholder concerns, efforts will be made to limit the use of chemical sprays to limit vegetation along this corridor.
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 maximum of 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 3 meters. If depth is appropriate, gravity caisson foundations will be used. If bedrock is exposed and solid, rock anchors or a P&H socketed foundation will be used. Depending on rock strength, blasting may be required for excavation in the bedrock (MOE guidelines on blasting activities will be consulted). Blasting would be undertaken as per MNR and local municipal requirements.

Project Activities	
Physical Works/Activities	Description of Activity
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 is 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 may 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, an area of 100 m in diameter from each turbine location 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 are assembled on the ground and lifted as one piece and attached to the nacelle.
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 RES' Waste Management Plan.
Waste Management, clean-up and reclamation	<p>Garbage and debris will be removed and disposed of at an approved location. Slash trees will be left to decompose among the remaining trees. 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. High voltage signage will be installed at the substation and elsewhere, as necessary.</p> <p>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. RES will contract licensed commercial waste collection and disposal companies and develop a disposal plan that includes the use of a landfill that has a Certificate of Authorization that covers the project area. The requirements of the licensed operator and the associated operational regulations will determine how they will handle disposal. All waste fluids and oils will be removed from the site and recycled, where possible, or disposed of according to provincial guidelines.</p>
Drainage System	Drainage patterns will be maintained as much as possible in the construction of the access roads and turbine basis. As noted previously, 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.

Project Activities	
Physical Works/Activities	Description of Activity
Operations and Maintenance	
Wind Turbine Operation	Operation activities will largely involve the remote monitoring of the facility. 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 will not happen frequently. Scheduled maintenance on turbines will occur every quarter for the first year and will 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 using a crane and removed from the site for re-use, reconditioning or disposal using a flatbed truck.
Removal of access roads	All permanent access roads would be deep-ploughed, as appropriate and graded to restore terrain profiles, and vegetated.
Removal of concrete foundation	Within 12 months of termination of lease, all above grade facilities will be removed to not less than 3 feet below grade [but not below 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	<p>All waste material would be removed from the site and disposed at an appropriate facility (e.g. licensed landfill).</p> <p>RES will contract licensed commercial waste collection and disposal companies and develop a disposal plan that includes the use of a landfill that has a Certificate of Authorization that covers the project area. The requirements of the licensed operator and the associated operational regulations will determine how they will handle disposal.</p> <p>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.</p>

2.3 Economic Benefits of the Project

In Canada, the impact of the wind energy related expenditures is estimated at \$1.49 billion (Insightrix, 2007). Of those expenditures almost 33% are from project developers, 27% are involved in consulting and 30% buy and sell wind energy (Insightrix, 2007). Project specific economic benefits are all positive as described below.

Construction Spending

The construction of the first phase (98.9MW) of the 165.6 MW wind farm will require a capital spend of approximately \$300 million on turbine components, civil construction, electrical, crane and many additional specialist contractors. Approximately 20% of the overall capital spend is on “balance of plant” (i.e. everything except the turbine) which are generally not specialist contractors and would include, for example local road, concrete, aggregate, and electrical contractors/suppliers. Opportunities to provide these services and supplies would likely be through regional contractors. RES will preferentially hire local contractors, depending on capabilities and experience and cost competitiveness of proposals. In total, up to \$60 million in contracting services would be available to companies in northwestern Ontario. The expansion phase of the project (66.7) would require a proportionate further investment to the region.

A portion of the direct local capital spend will be duplicated by support and contracting services to the wind farm project. Typically this could represent orders to fabrication shops, catering, hoteliers, electrical sub-suppliers, etc.

The construction of the wind farm would generate about 250 jobs at the peak of the construction period. The income generated through these jobs is expected to be about \$6 to 7 million.

Operation Spending

The overall annual spending on wind farm operations and maintenance activities is estimated at \$6 million. The wind farm will be operated and maintained from an operations and maintenance facility to be located in the vicinity of the wind farm. The facility will have stores for spare parts, and scheduled and unscheduled maintenance will be dispatched from this facility. 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 \$400,000.

Further sub-contracts will be awarded to contractors for road maintenance, snow clearance, electrical maintenance, etc. The annual value of these sub-contracts is estimated at \$150,000.

A percentage of direct local operations spending will be duplicated by support and contracting services to the wind farm project. As with construction, this could represent orders to fabrication shops, catering, hoteliers, and electrical sub-suppliers.

Municipal Tax Payments

Within the Greenwich Wind Farm’s layout of 72 turbines, 19 turbines in the initial development phase (98.9 MW) and an additional 5 turbines in the fully developed project are in the Municipality of Dorion. This will represent an annual tax payment to the Municipality of approximately \$35,000 per year for the initial phase of the project and a total of \$43,000 per year if the project is fully developed. Another \$37,000 in tax revenue is expected to go to the provincial treasury for turbines on unorganized MNR-administered land for the initial project and \$73,000 per year for the fully developed project.

Further payments to MNR for Crown land leases will be approximately \$500,000 annually for the initial phase of the project and 825,000 for the fully developed project.

Aboriginal Communities and Organizations

Local Aboriginal communities and organizations are expected to benefit economically from this project through capacity funding during the environmental screening process and direct employment opportunities during the construction and operational phases of the project. During the construction and decommissioning phases, opportunities for contracting, as well as supply of machinery and labour will be made available to local Aboriginal communities.

Economic Summary

In addition to the estimated \$300 million to be spent to construct the initial phase of the project, over an assumed 20 year life span of the facility, the initial phase of the project is expected to result in approximately \$11.4 million being generated in taxes and land payments and land payments to the MNR (all 2008 dollars not including inflation). The expansion phase of the project is expected to result in \$500 million of capital spend and approximately 18.8 million, over a 20 year period, generated in taxes and land payments.

3. Scope of the Assessment

The following describes the environmental components that were considered to meet both Ontario and federal EA requirements. This ESR/EIS has been structured according to the provincial process but all key components required to fulfill federal EA requirements have also been addressed. Sections pertinent to provincial authorities or federal authorities only have been labeled accordingly.

3.1 Scope of Assessment

The Ontario's Environmental Assessment Act and MOE's March 2001 *Guide to Environmental Assessment Requirements for Electricity Projects* (the "Guide"), defines "environment" as:

air, land or water; plant and animal life, including man; the social, economic and cultural conditions that influence the life of man or a community; any building, structure, machine or other device or thing made by man; any solid, liquid, gas, odour, heat, vibration or radiation resulting directly or indirectly from the activities of man; or any part or combination of the foregoing and the interrelationships between any two or more of them.

Further, the Guide states that:

Negative environmental effects include the negative effects that a project has, or could potentially have, directly or indirectly on the environment at any stage in the project life cycle. Negative environmental effects may include, but are not limited to, the harmful alteration, disruption, destruction, or loss of natural features, flora or fauna and their habitat, ecological functions, natural resources, air or water quality, and cultural or heritage resources. Negative environmental effects may also include the displacement, impairment, conflict or interference with existing land uses, approved land use plans, businesses or economic enterprises, recreational uses or activities, cultural pursuits, social conditions or economic structure.

The Guide also states that "net effects" are "negative environmental effects of a project and related activities that will remain after mitigation and impact management measures have been applied".

Section 16 of *CEAA* identifies the factors that need to be considered in the environmental assessment screening:

16(1) *Every screening...shall include a consideration of the following factors:*

- a) the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project and any cumulative environmental effects that are likely to result from the project in combination with other projects or activities that have been or will be carried out;*
- b) the significance of the effects referred to in paragraph (a);*
- c) comments from the public that are received in accordance with this Act and the regulations;*

- d) *measures that are technically and economically feasible and that would mitigate any significant adverse environmental effects of the project; and*
- e) *any other matter relevant to the screening... such as the need for the project and alternatives to the project, that the responsible authority... may require to be considered.*

CEAA defines "environmental effect" as any change that the project may cause in the environment including any change to a listed wildlife species, its critical habitat or the residences of individuals in that species [per the Species at Risk Act]; the effect of any such change on health and socio-economic conditions, on physical and cultural heritage, on the current use of lands and resources for traditional purposes by aboriginal persons, or on any structure, site or thing that is of historical, archaeological, paleontological or architectural significance; or any change to the project that may be caused by the environment, whether any such change occurs within or outside Canada.

CEAA includes the following definition of "environment":

- a) *land, water and air, including all layers of the atmosphere;*
- b) *all organic and inorganic matter and living organisms; and*
- c) *the interacting natural systems that include components referred to in paragraphs (a) and (b).*

The scope of the assessment for the Greenwich Wind Farm project includes the environmental effects of the project, including the environmental effects of malfunctions or accidents that may occur in connection with the project, cumulative environmental effects that are likely to result from the project in combination with other approved projects or activities that have been or will be carried out and the effect of the environment on the project.

3.2 Scope of Factors

The screening has considered the potential changes to both the biophysical and the socio-economic environment caused by the project as described in the scope of the project. The environmental factors considered in the assessment were:

Biophysical Environment

- Physiography/Topography
- Surface Water Quality and Soil Erosion
- Geotechnical
- Fish and Fish Habitat
- Groundwater Quality
- Air Quality
- Birds
- Bats
- Wildlife and Wildlife Habitat

- Vulnerable, Threatened or Endangered Species

Related Effects on Socio-Economic Conditions

(Under CEAA, these effects should be directly linked to the project's environmental effects)

- Population and Existing Land Use
- Disposal of Waste Materials
- Environmental Noise
- Agricultural and Rural Resources
- Neighbourhood and Community Characteristics
- Traditional Land Use by Aboriginal Peoples
- Recreation and Tourism Areas
- Construction Related Traffic
- Public Health and Safety
- Effects on Communications
- Historical and Archaeological Resources
- Viewscape
- Accidents and Malfunctions

Effects of the Environment on the Project

- Climate Change
- Extreme weather events
- Earthquakes

In assessing the potential for cumulative effects, the assessment has considered other projects or activities that could combine with the potential effects of the project regardless of where these other projects/activities are located.

To determine the potential for environmental effects that could occur and the significance of those effects, the following questions were examined:

- What are the possible environmental effects of the project?
- Are the identified effects positive or negative?
- Can the predicted adverse effects be avoided or mitigated?
- After mitigation of adverse effects, are there residual effects?
- Taking into consideration any cumulative effects, what are the magnitude, geographic extent, duration and frequency of adverse residual effects or positive effects?

- Are the residual adverse effects reversible?
- Is the ecological setting of the undertaking sensitive?

The environmental screening has considered both the potential direct net effects of the proposed project and the potential for combined effects from other existing and future activities and projects. Existing activities and projects have been addressed through the consideration of the existing environment. Cumulative effects with other future project/activities have been considered where there is some reasonable expectation for development (such as some commitment to develop) and there is some potential for effect overlap with the project in terms of time and space.

3.3 Study Objectives

The following outlines the study objectives:

- To ensure environmental considerations are addressed and incorporated into the planning, design, and decision-making processes;
- To identify, define and assess the potential effects of the project on the environment, including the natural and social environment. The environmental and social features identified in this document represent features that were known to occur or had a reasonable probability of occurrence within the study area (See Section 1.2) and which could be affected by the project. These environmental and social features that were selected for assessment are listed above in Section 3.2 and are further discussed in Section 6 and the technical appendices; and
- Considering the above, to design a project follow-up and monitoring program that contains plans to prevent, mitigate, and compensate for the potentially adverse environmental effects of the project.

3.4 Methodology of Environmental Screening/Environmental Impact Assessment

In conducting the environmental screening, the following primary and secondary data collection activities were undertaken to determine key baseline conditions in and around the study area:

- Review of maps and air photos;
- Review of natural heritage data and studies for the area;
- Review of land use planning related documents and policies;
- 1 year, 4-season bird survey program;
- Survey of potential peregrine falcon habitat areas;
- Bat summer and fall migration surveys;
- Field visits to examine water crossing locations/fish habitat;
- Archaeological investigations;
- Consultation with district MNR office; and
- Discussions with local stakeholders regarding the project.

3.5 Study Area

The study area for data collection (spatial boundary) considered in the assessment of the project largely included the project area boundary as shown previously in **Figure 1.2**. The study area was expanded to include the transmission line which extends outside of the project area boundary. Further some bird survey work was conducted outside of the project area boundary (closer to Black Bay) as recommended by Environment Canada.

3.6 Uncertainty and Data Gaps

Identifying uncertainty and data gaps is important when evaluating the occurrence and significance of potentially adverse environmental effects and their probabilities. Having regard for potentially incomplete data sets the following supporting field studies were undertaken to complete the required datasets listed below:

- Natural Heritage Studies (Appendix C)
- Bird Surveys (winter, breeding bird, fall and spring migration) (Appendix D)
- Bat Surveys (Appendix E)
- Archaeological Resources (Appendix F)
- Sound Modeling (Appendix G)
- Visual Assessment (Appendix H)

4. Stakeholder Consultation

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. The consultation program was initiated in July 2007 with the Notice of Study Commencement and continues throughout 2009 with the release of this draft ESR. The following sections describe the key consultation activities that were undertaken. Comments received at these consultation events were considered in the completion of this environmental screening. **Appendix B** provides the supporting documentation from the project consultation activities.

It is expected by regulatory agencies that proponents of a project undertake public and agency consultation early in the planning process and continue to consult throughout the duration of the project. This assists in the success and acceptance of a project by involving the community, keeping them informed of the project, and working with them to address concerns.

4.1 Consultation Methodology

This project has been in the formal planning stages since the fall of 2007. Since that time, various forms of consultation have taken place. A detailed account of these activities is outlined in the following sections, and includes: public notifications, meetings with various government agencies, discussions with key interest groups, meetings with the local municipal council, meetings with Aboriginal communities and organizations, and the holding one Public Information Centre (PIC).

The objectives of the Greenwich Wind Farm stakeholder consultation process were to:

- Identify potentially interested stakeholders and the nature of their interests;
- Inform stakeholders of preliminary plans for the wind farm and how the project might affect the physical, natural, social and economic environment in the community; and
- Incorporate stakeholder interests into the planning, design, construction, and operation of the wind farm, where possible.

A number of methods have been undertaken to achieve these objectives including:

- Identification of key community members and interest groups in and around the study area;
- Meetings with local government, provincial agencies and Aboriginal communities and organizations to obtain data and to identify issues associated with the project;
- Advertising in the local newspapers (Nipigon Red Rock Gazette and the Thunder Bay Chronicle Journal) to introduce the project, to provide notice of the PIC, and the release of this draft ESR);
- Receipt of public and agency verbal and written comments through meetings, letters, email and telephone calls;
- Production and analysis of questionnaires distributed during the PIC;
- Circulation of information to government agencies and local/regional government stakeholders;
- The release of this ESR to the public and agencies for review and comment; and
- A project website with all project news and key documents: www.greenwichwindfarm.com.

Potential stakeholders were identified and contacted early in project planning to identify areas of concern. Stakeholders were defined as:

- Parties with a potential interest in the wind farm including neighbouring residents and landowners, environmental organizations, community organizations, and other interested groups or individuals;
- Federal, provincial, regional or municipal government representatives and agencies with a legislative mandate for any aspect of the project's planning, construction or operations; and,
- Aboriginal communities and organizations.

A copy of consultation letters and notices are provided in **Appendix B and I**.

4.2 Project Public Notices

The Notice of Study Commencement was published in the *Thunder Bay Chronicle Journal* for the week of October 17, 2007. The Notice provided a summary of the project, a description of the Environmental Assessment (EA) process for electricity projects, and contact information for those individuals who wanted more information. A letter and the Notice were also mailed out to federal, provincial, municipal, communication tower agencies and Aboriginal communities/organizations. Notice of Study Commencement documentation can be found in **Appendix B1 Notice of Study Commencement**.

The Notice of the first Public Information Center (PIC) for the project was published in the *Nipigon Red Rock Gazette* and the *Thunder Bay Chronicle Journal* for the weeks of September 8 and Sept 15, 2008. The Notice contained a description of the project, the location/time of the event, a description of the EA process for electricity projects, and contact information for those individuals who wanted more information. Public Information Centre documentation is provided in **Appendix B2 Public Information Centre # 1**.

On September 8, 2008, a Notice for the PIC was also mailed out to federal, provincial, and municipal agencies, as well as residents, stakeholders, and Aboriginal communities. A pamphlet containing company contact information and further information on the PIC was also mailed out as part of the notice. Follow-up phone calls were made to local stakeholders and the Notice was posted at local municipal offices and supermarkets around the communities of Dorion and Shuniah by the staff members of the local town offices.

The Notice of the second PIC for the project was published in the *Thunder Bay Chronicle Journal* on June 6 and 13, 2009 and in the *Nipigon Red Rock Gazette* on June 9 and 16, 2009. The Notice provided a summary of the project, the location/time of the event, a description of the EA process for electricity projects and contact information for those individuals who wanted more information. The notice also contained information relating to the 30-day volunteer draft release of the ESR for public review and comment which began June 9, 2009 as well as the project website that contained the link to the electronic version of the report. **Appendix B3 Public Information Centre # 2 and Draft ESR Availability** contains documentation relating to the public information center and draft ESR release.

On June 5, 2009, letters, as well as a copy of the notice, were mailed out to federal, provincial, and municipal agencies, as well as residents, stakeholders, and Aboriginal communities. A pamphlet containing company contact information and further information on the PIC was also mailed as part of the

notice. A copy of the letter and notice is provided in **Appendix B3 Public Information Centre # 2 and Draft ESR Availability**.

Additionally, individuals from the first PIC who expressed an interest in receiving notices via email were sent an electronic copy of the notice on June 8, 2009. Some individuals who did not provide contact information at the first PIC were not sent a notice. Individuals who were present at the first PIC were also added to the distribution list if they provided consent to do so in the sign-in sheets or questionnaires.

On July 13, 2009, the Greenwich Wind Farm filed its Notice of Completion informing the public and the MOE that the EA conducted for the project was complete. A copy of the Notice is provided in **Appendix B9 Notice of Completion**. The Notice was published in the *Thunder Bay Chronicle Journal* and the *Nipigon Red Rock Gazette* on Saturday, July 11 and 18, 2009 and Tuesday, July 14 and 21, 2009, respectively. The Notice provided a map showing the location of the Greenwich Wind Farm, a summary of background project information and contact information for both the MOE and project proponents. Additionally, the notice explained the process for submitting elevation requests and contained the link to the website that could be used to access the electronic version of the ESR.

4.3 Aboriginal Consultation

Since the inception of the development of the Greenwich Wind Farm, RES has recognized that Aboriginal consultation is an integral part of the environmental assessment process.

In February 2007, as part of its screening guidance to RES, the Thunder Bay office of the Ministry of Natural Resource (MNR) indicated the Aboriginal communities which it considered should be included in RES' consultation process. As a further step in determining which Aboriginal communities and organizations to consult, RES contacted the Chiefs of Ontario in September of 2007. For this same purpose, in October 2007 RES contacted various departments of Indian and Northern Affairs Canada (INAC) as well as Ontario Ministry of Aboriginal Affairs (MAA). These letters are included in **Appendix B**.

In October 2007, RES sent Notice of Study Commencement and an introductory letter to identified Aboriginal communities and representative organizations. In November and December of 2007, INAC and MAA responded to RES' correspondence with a list Aboriginal communities that they considered should be included in the consultation process.

In early 2009, as required by the OPA's RES-III RFP process, RES submitted to the Ontario Ministry of Energy and Infrastructure (MEI) an "Aboriginal Consultation Information Request" letter. MEI responded in a letter dated February 12, 2009, identifying the Aboriginal communities that it considers should be consulted.

Beyond the standard Ontario EA and MEI requirements, RES also conducted its own research to identify potentially affected Aboriginal communities and has made efforts to communicate with each of them.

Based on information and guidance from INAC, MAA, MNR, MEI, Chiefs of Ontario, Union of Ontario Indians and the Métis Nation of Ontario (MNO) and through RES' own research, the following Aboriginal communities and representative organizations have been included in the consultation process:

- Red Rock Indian Band Lake Helen Reserve;
- Fort William First Nation;
- Pays Plat First Nation;

- Bingwi Neyaashi Anishinaabek (Sand Point) First Nation;
- Biinjitiwabik Zaaging Anishnabek (Rocky Bay) First Nation;
- Animbiigo Zaagiigan Anishinaabek (Lake Nipigon) First Nation;
- Union of Allied Indians;
- Grand Council Treaty #3;
- Whitewater Lake First nation;
- Lac Des Milles First Nation;
- Flying Post First Nation;
- Nishnawbe Aski First Nation;
- Kiashke Zaaging Anishinaabek First Nation (Gull Bay);
- Pic Mobert First Nation;
- Ojibways of Pic River (Heron Bay);
- Red Sky Métis Independent Nation;
- Métis Nation of Ontario;
 - Thunder Bay Métis Council;
 - Geraldton Area Métis Council; and,
- Ontario Native Women's Association.

The following were used in developing and implementing RES' Aboriginal consultation process:

- Correspondence received from government agencies, including INAC (Specific Claims, Comprehensive Claims, Litigation), MAA, MEI, MNR;
- Correspondence received from Aboriginal communities and organizations;
- Identified Aboriginal community and Aboriginal organization websites (where available);
- INAC Specific Claims Public Information Summary Reports (to March 2009);
- INAC Comprehensive Claims Information per INAC website (to Sept. 2007);
- Ontario Power Authority "Best Practices, Good Business: Consulting with First Nation and Métis Communities"; MAA "Draft Guidelines for Ministries on Consultation with Aboriginal Peoples Related to Aboriginal Rights and Treaty Rights"; Government of Canada "Aboriginal Consultation and Accommodation: Interim Guidelines for Federal Officials to Fulfill the Legal Duty to Consult";
- Available litigation proceedings for litigation identified by INAC; and,
- Other selected publicly available information (media reports, court records, government agency websites, internet searches, etc.).

4.3.1 Consultation to Date

Please refer to the Consultation Summary (Summary) found in **Appendix I** for a summary of the consultation activities undertaken by RES to date.

Communication with the identified Aboriginal communities was on-going throughout the environmental screening process. To promote a successful consultation process, RES undertook the following activities:

- Keeping up-to-date on community contact or governance changes within the Aboriginal communities. As the study progressed over an extended period of time, it was important to ensure that communication was occurring with the relevant community authorities;
- Providing information to the above Aboriginal communities on the regulatory and approvals process. This was achieved by presenting panels on the environmental screening process at the Public Information Centre (PIC) meetings. A Project area map and pertinent information,

covering, among other things, the environmental screening process, and contact names and phone numbers were also provided in letters and incorporated into presentation materials.

- Making itself available to any Aboriginal community that responded to information requests or accepted the invitation to hold an in-person meeting. RES met with representatives from Red Rock Indian Band First Nation (RRIB), Fort William First Nation (FWFN), Red Sky Métis Independent Nation (RSMIN), and the Métis Nation of Ontario (Thunder Bay and Geraldton and Area Councils) (MNO). Such meetings provided opportunities to RES and these Aboriginal communities to engage in a meaningful way and to discuss the Project in general and specific terms. These meetings also provided additional mechanisms for these communities to express their respective concerns and interests with regard to the Project and the Project area, the consultation process, applicable regulatory processes, and other related matters.
- Continuing to follow-up with identified Aboriginal communities through telephone calls, emails, faxes, and letters.
- Gathering and taking into account information provided by Aboriginal communities regarding their potential interests in the Project area, as well as information relating to concerns of potential impacts on such interests in the formulation of mitigation, approval and operations plans.

Since the fall of 2007, RES has undertaken a sustained program of consultation activities with the Aboriginal communities listed above. Although these activities are summarized in **Appendix I**, selected major milestones are mentioned below. These are not exhaustive of consultation activities to date. As shown in **Appendix I**, considerable other communications and certain meetings have also taken place with Aboriginal communities.

On October 17th, 2007, RES sent an introductory letter with the Notice of Study Commencement (NOC) to the above identified Aboriginal communities and organizations, notifying of its intent to develop the Project, with a Project study area map and general information on Project and relevant contact information. RES indicated its willingness to meet with representatives of Aboriginal communities to discuss the Project and to receive any comments or questions.

RES subsequently sent Aboriginal communities a follow-up letter to the NOC. In the context of the environmental screening process, RES offered to meet individually with each Aboriginal community, in order to better understand the community's interest, if any, in the Project area and to discuss the environmental screening process in greater detail. Such a meeting would also solicit information from the Aboriginal community regarding its interest, or other information, relating to the Project area, provide such community with information on RES' study and findings to date, develop a good working relationship with Aboriginal communities and provide them with more information on wind energy and the environmental screening process.

In June 2009, RES sent the above-mentioned Aboriginal communities and organizations a letter inviting them to PIC #2 and notifying them of its voluntary release of the draft ESR (Draft ESR). In addition, RES offered to provide a hard copy of the Draft ESR to any Aboriginal community or organization, upon request.

Summary of Input Received from Aboriginal Communities

The following section provides a synopsis of topics and themes that have emerged from those Aboriginal communities who have responded to RES' request for information. Please refer to the appended Summary in **Appendix I** for additional details and information.

Red Rock First Nation

Since September 2007, RES and RRIB have been involved in on-going consultation efforts.

- In an October 2007 introductory meeting at the RRIB band office, RRIB identified its primary concerns with the Project as environmental, community employment opportunities, and impact on traditional activities, although no specific activities were discussed. RRIB indicated that no Project infrastructure falls on its reserve lands or in areas within existing RRIB land claims.
- In July 2008, RES and RRIB held a Project update meeting at the RRIB band office. RRIB reported positive community response to Project to date, and agreed to include a description of the Project area in its community bulletin and request community comments regarding traditional use activities in the Project area. RRIB also inquired about potential economic benefits from Project.
- In September 2008, RES and RRIB held a Project update meeting at the RRIB band office. RRIB expressed its continued support for Project. RRIB indicated that traditional values mapping had not been completed in the Project area, and expressed its interest in potential employment opportunities relating to the Project.
- In October 2008, RRIB provided RES with a letter of support in principle for the Project.
- In March 2009, RES and RRIB held a Project update meeting at the RRIB band office, subsequent to OPA tender award to RES. RES provided details about the baseline environmental studies, with a focus on potential avian wildlife impacts, and RRIB did not indicate concern this regard. Discussion of installation of two additional meteorological towers in the Project area, and RRIB did not indicate concern in this regard. Discussion of involvement of Fort William and other Lake Nipigon First Nations in the environmental screening process and related issues.
- In April 2009, RES and RRIB held a project update meeting in Thunder Bay. Discussion of the installation of two new meteorological towers in the Project area, and RRIB expressed its continued support in this regard. RES offered potential capacity funding to RRIB for ESR review, and participation in related meetings and processes, including vegetation field survey, if necessary. Discussion of involvement of other Lake Nipigon First Nations and FWFN.
- In late May 2009, RES, RRIB, and FWFN held a project update meeting in Thunder Bay. FWFN and RRIB indicated interest in developing other future renewable energy projects in their traditional territories, and RES indicated willingness to consider possibilities of future collaboration with FWFN and RRIB, including possible development funding. RES reiterated its offer of capacity funding to RRIB and FWFN for their review of ESR, and participation in related meetings and processes, including up-coming vegetation field survey. RRIB indicated that a 10 MW expansion to the current Project site is a priority, and RES noted that it would be open to explore potential collaboration on such a 10 MW expansion for a future phase of the Project. FWFN, RRIB and RES discussed possible means of formalizing understanding regarding the above.
- In June 2009, RES provided RRIB an invitation to the up-coming PIC and notice of the release of the Draft ESR, for inclusion in the community newsletter. RES later couriered a hard copy of the Draft ESR to RRIB, for its review and comment.
- In June 2009, RES and RRIB also held a project update meeting in Thunder Bay. RES and RRIB discussed various matters including possible capacity funding for environmental screening participation and development funding for potential future collaboration on new developments, potential employment and contracting opportunities relating to Project construction and decommissioning activities, wind technician bursary proposal, in context of discussing possible

understanding regarding these points. RRIB requested a letter of support in principle from RES in relation to RRIB's request to regulatory authorities for a 10 MW transmission capacity expansion for a potential future phase of the Project, and RES agreed to provide such a letter.

- In late June 2009, RES emails RRIB regarding possible understanding relating to the Project.

Fort William First Nation

- In October 2007, RES and FWFN held an introductory meeting at the FWFN band office. RES provided a presentation on the project, EA process, and the company. FWFN Chief posed several questions on general environmental impacts, location of infrastructure, and potential benefits to the community.
- From July 2008 to February 2009, RES attempted to contact FWFN to schedule a follow-up meeting. RES was unable to connect in order to schedule such a meeting.
- In April 2009, having been made aware of the election of a new Chief and council at FWFN, RES re-sent copies of previously exchanged letters and correspondence between RES and FWFN, to the new FWFN Chief and project coordinator.
- In May 2009 RES and FWFN representatives held a project update meeting in Thunder Bay. FWFN asserted that the Project area overlaps with its traditional lands. RES offered capacity funding for FWFN review of ESR, and participation in related meetings and processes, including vegetation field survey, and requested that FWFN provide a budget for such work. FWFN to consider. RES requested future joint meeting with FWFN and RRIB to discuss their support of current Project, potential capacity funding measures, and potential collaboration of FWFN, RRIB and RES on future wind energy projects. FWFN to discuss in Council and respond.
- In May 2009, RES, FWFN, and RRIB held a project update meeting in Thunder Bay. Please refer to the narrative regarding this meeting in the RRIB section, above, for details.
- In June 2009, RES provided FWFN an invitation to the up-coming PIC and notice of the release of the Draft ESR, for inclusion in the community newsletter. RES later couriered a hard copy of the Draft ESR to FWFN, for its review and comment.
- In late June 2009, RES emails RRIB regarding possible understanding relating to the Project.

Red Sky Métis Independent Nation

- In October 2008, RES sent Project information to the Red Sky Métis Independent Nation (RSMIN).
- In November 2008, RSMIN requested copy of the draft ESR, once available, and stated need for members' support as condition of endorsement.
- In April 2009, RES and RSMIN held an introductory Project meeting in Thunder Bay. RSMIN informed RES of its land claim regarding Robinson-Superior Treaty, submitted to the federal Department of Justice. Concerns expressed by RSMIN: continued hunting, fishing, trapping and vegetation harvesting; potential impacts on archaeological and historic resources; greater access into area could impact hunting and fishing; noise; chemical application. RSMIN requested revenue sharing. RES to provide Draft ESR to RSMIN for review and comment, and opportunity

for RSMIN representative to travel to Project area for additional field studies, if required, along with offer of potential capacity funding for such activities.

- In June 2009, RES provided RSMIN an invitation to the up-coming PIC and notice of the release of the Draft ESR. RES later couriered a hard copy of the Draft ESR to RSMIN, for its review and comment. RES and RSMIN agreed that a RSMIN representative will accompany RES consultants on the vegetation surveys in the Project area.
- In late June 2009, RSMIN and RES agreed on capacity funding budget for review of ESR and participation in related meetings and processes, including vegetation field survey.

Métis Nation of Ontario (Thunder Bay Métis Council and Geraldton and Area Métis Council)

- In October 2008, RES sent project information to the Métis Nation of Ontario (MNO). MNO later indicated it had forwarded this information to the appropriate local councils, the Thunder Bay and Geraldton and Area Métis councils.
- In March 2009, MNO provided RES with a document entitled “Métis Consultation and Accommodation: A Guide for Government and Industry on Engaging Métis in Ontario”. Discussion of potential employment opportunities relating to Project, potential capacity funding for ESR review and possible general impacts on current land use, although MNO did not provide specific information regarding such land use.
- In April 2009, RES and MNO had an introductory project meeting in Thunder Bay. Representatives from the MNO, Thunder Bay Council and the Geraldton and Area Council were present. RES provided a presentation on the Project, environmental screening process, the company, and details on the baseline studies. MNO stated that consultation with Métis would be different than with other Aboriginal communities. The parties discussed a process for collecting “Traditional Knowledge”, and discussed potential areas of environmental interest including species, habitat, aquatics and vegetation control measures, information for trap-line holders, and possible health impacts of turbines. RES undertook to provide Draft ESR, when available, and offered capacity funding to MNO for its review. MNO advised that its elected leadership would review and discuss material presented.
- In June 2009, RES provided MNO an invitation to the up-coming PIC and notice of the release of the Draft ESR. RES later couriered a hard copy of the Draft ESR to MNO, for its review and comment.
- In early July 2009, MNO and RES agreed on capacity funding budget for review of ESR and participation in related meetings and processes.

Current Status of Consultation

Red Rock Band

RES is continuing consultation efforts with RRIB in order to determine the nature of RRIB's potential interest in the Project area, including traditional land use and archaeological interest.

At RRIB's request, RES has provided a letter of support in principle in relation to RRIB's request to regulatory authorities for a 10 MW transmission capacity expansion for a potential future phase of the Project.

RES and RRIB remain engaged in discussions relating to matters including capacity funding for review of ESR, and participation in related meetings and processes, possible development funding for potential future collaboration on new developments, potential employment and contracting opportunities relating to Project construction and decommissioning activities, wind technician bursary proposal, and RRIB non-objection to the Project, in the context of discussing possible understanding regarding these points.

Fort William First Nation

RES is continuing consultation with FWFN to determine the nature of its interest in the Project area, if any, including traditional land use and archaeological interest.

RES and FWFN remain engaged in discussions relating to capacity funding for review of ESR, and participation in related meetings and processes, possible development funding for potential future collaboration on new developments, potential employment and contracting opportunities relating to Project construction and decommissioning activities, wind technician bursary proposal, and FWFN non-objection to the Project, in the context of discussing possible understanding regarding these points.

Red Sky Métis Independent Nation

RES is continuing consultation with the RSMIN to determine the nature of its interest in the Project area, if any, including traditional land use and archaeological interest.

RSMIN and RES have agreed on capacity funding budget for review of ESR and participation in related meetings and processes, including vegetation field survey.

Métis Nation of Ontario (Thunder Bay Métis Council and Geraldton and Area Métis Council)

RES is continuing consultation with the Métis Nation of Ontario and Councils to determine the nature of their interest in the Project area, if any, including traditional land use and archaeological interest.

MNO and RES have agreed on capacity funding budget for review of ESR and participation in related meetings and processes.

4.3.2 Future Consultation

RES is committed to continuing to consult with Aboriginal communities having asserted potentially affected interests in relation to the Project area. In this regard, RES will comply with the requirements of the Aboriginal Consultation Agreement concluded with MEI. These consultations will be carried out by, among other things, the following measures:

- Continuing to meet and engage the said Aboriginal communities to better understand their interests in the Project area, to address any material concerns and to keep them apprised of the Project's development;
- Assessing need, and where appropriate providing capacity funding, for Aboriginal communities to effectively participate in the consultation process; and,
- Continuing attempts to determine potentially affected traditional land use and archaeological interests in the Project area. Where necessary, RES will formulate appropriate mitigation, approval and operation plans with affected Aboriginal communities.

- If required and appropriate, providing capacity funding for Aboriginal groups, noted above, to participate in the EA process.

4.4 Interest/Community Group Notification and Contact

All project related notices were sent to the following interest groups:

- Environment North
- Superior Renewable Energy Co-operative
- EcoSuperior
- Thunder Bay District Health Unit
- Northern Ontario Tourist Outfitters Association
- Friends of Fur
- Ontario Federation of Anglers and Hunters
- Fur Institute of Canada
- Ontario Fur Managers Federation
- Canadian National Trappers Alliance
- Northwestern Ontario Sportsmen's Alliance
- Northern Ontario Tourist Association
- Northern Ontario Native Tourism Association
- North of Superior Tourism Association
- Northern Ontario Aquaculture Association
- Superior North Community Futures Development Corporation
- Thunder Bay Ventures: Community Futures Development Corporation
- North of Superior Snowmobile Association
- Moose Lake Coalition Conservation Group
- North Shore Fishing Club
- Loon Lake/Bass Lake Concerned Citizens
- Private Citizens
- Local Trappers and Bait Fishers
- Ontario Parks Stakeholder Group

Project related correspondence with interest/community groups is provided in **Appendix B4 Correspondence with Interest Groups**.

Project representatives consulted with all interest groups that expressed concerns throughout the environmental screening process. In particular, consultations were held with:

- Coalition to Protect the Moose Lake Ecosystem – representative Paul Maybroda
- Loon Lake/Bass Lake Concerned Citizens – representative Bastien DePeuter,
- North Shore Fishing Club – representative Peter Hollinger

As well, communication was maintained with several members of the general public, throughout the project development, to discuss project details and to provide updates.

As required by MNR protocol, RES sent the Thunder Bay district MNR information request letters to be distributed to trappers and bait fishers who operate in the project area. MNR protocol prevents the Ministry from providing contact information for these individuals directly to the proponent. RES' intention was to engage local trappers and bait fishers on whether they had any concerns regarding the project with respect to trapping, bait fish collection, or other activities in the project area.

As a result, three (3) trappers with lines in the area responded and contacted RES directly. Additional information was provided to these individuals and commitments were made to keep them informed of project developments. None of the 3 individuals noted an objection to the project. RES made commitments to compensate the trappers for any losses versus quotas during the construction phase of the project or damage to any trap lines. RES made commitments to inform the trappers of construction activities and hold pre-construction meetings with the group to detail specific timing of construction activities in the areas of concern.

A copy of the letters sent to interest/community groups is contained in **Appendix B**. Letters received from interest/community groups in response to the Notice of Commencement and Notice of PIC, as well as any other general meetings/contact, can also be found in **Appendix B** along with a more detailed summary of correspondence.

A summary of discussions/meetings between RES and interest or community groups is provided in **Table 4.1**.

Table 4-1: Summary of Contact/Meetings with Interest Groups

Name	Group/Affiliation	Date of Contact	Topic
Thomas Quinn	Bowater Forest Products Canada Inc.	April 25, 2007	Discussion regarding mapping.
Paul Maybroda	Damphino Fishing Club (Coalition to Preserve the Moose Lake Ecosystem)	October 18, 2007 November 6, 2007	Provided with a copy of Notice of Commencement
Bastian DePeuter	Loon Lake/Bass Lake Concerned Citizens	November 4, 2007 November 6, 2007 January 19, 2008	General project and contact information
Citizens of Dorion	Town of Dorion	October 30, 2007	Project overview and general discussion.
Jed Ziegler	Moose Lake Coalition	September 30, 2008 October 6, 2008	Project overview – arrange a meeting - Fish habitat and access to site
Joan Collins	A Concerned Citizen	November 14, 2008	Asked questions about the project
Peter Hollinger	North Shore Fishing Club	October 10, 2008 June 26, 2009	Objects to the project – Discussion on the

		July 6, 2009 July 9, 2009	project and setup a meeting – Discussion regarding Peter's concerns relating to the project.
Harold Harkonen	Trails Director Thunder Bay Adventure Trails Snowmobile Club	February 2 and 4, 2009 June 17 and 19, 2009	Comments on project and impact on trails – Discussion on impacts to Trans-Ontario Snowmobile trails
Joan Collins	Resident	November 14, 2008	Discussion regarding First Nation rights.
David Landry	Area Trapper	July 2, 2009 July 8, 2009	Dillon contacts (message left) David to discuss area trapping – Discussion on natural and wildlife studies relating to the project.
Dean Schaap	Forester	July 2 and 3, 2009	Dillon contacted (message left) Dean to discuss his concerns relating logging in the area – Dean called back and had a discussion regarding forestry harvesting rights.
Bert Veenendan	Resident	July 2, 2009	Dillon contacted Bert to discuss the project in relation to the proximity to his residence.
Tony Johnson	Area Trapper	June 29, 2009	Discussion regarding the project and interest in employment opportunities – Tony also indicated that he was the only trapper in the area.
Stan Williamson	Area Trapper	July 9, 2009	Discussion regarding the project and trapping – Indicated he has no objections with the wind farm.

4.5 Agency Notification and Consultation

4.5.1 Federal Agencies

Federal agencies that received copies of all project-related notices included:

- Environmental Assessment and Federal Programs Section - Environmental Protection and Operations Division Ontario
- Environment Canada
- Department of Fisheries and Oceans, Fish Habitat Management
- Canadian Environmental Assessment Agency (CEAA)
- Transport Canada, Ontario Region
- CN Rail
- Department of Indian & Northern Affairs (INAC)
 - Environment & Natural Resources, Lands & Trust Services
 - Environment & Natural Resources
 - Specific Claims Branch
 - Litigation Management and Resolution Branch
 - Comprehensive Claims Branch
- Health Canada
 - Environmental Health Assessment, Services Healthy Environments and Consumer Safety Branch
- Canadian Environmental Assessment Agency
- Environment Canada
- Transport Canada
- Health Canada
- CN Rail

Copies of the project notices are provided in **Appendix B1 Notice of Study Commencement, B2 Public Information Centre #1, B3 Public Information Centre #2/Draft ESR Release and B9 Notice of Completion**. All letters received from federal agencies, and other general correspondence, is provided in **Appendix B5 Correspondence with Federal Agencies**.

A summary of the contact/meetings, with federal agencies is found in **Table 4.2** below.

Table 4-2: Summary of Meetings/Contact with Federal Agencies

Name	Group/Affiliation	Date of Meeting	Topic
Denise Fell	EA Officer – Environment Canada	August 22, 2007 September 18 and 20, 2007 April 1, 18, and 28, 2008 February 14, 2007 May 25, 2007 August-September 2007	Comments on project and proposed bird migration surveys – Initial letter introducing the project sent by Dillon – Fall migration monitoring plan update sent by Dillon – Confirmation of monitoring site locations received – Spring monitoring site descriptions sent by Dillon – Detailed comments and recommendations received – Background Review and Study Method Report sent by Dillon
Franklin Roy	Indian and Northern Affairs Canada (INAC)	October 11, 2007	Possible First Nation claims in the area.
Mohammad Murtaza	Senior Program Officer – Canadian Environmental Assessment Agency (CEAA)	October 30, 2007	Acknowledges receipt of Notice of Commencement.
Heather Ducharme	Program Officer – Canadian Environmental Assessment Agency (CEAA)	November 9, 2007	Acknowledges receipt of Notice of Commencement.
Jeremy Craigs	Environmental Officer – Transport Canada	November 15, 2007	Acknowledges receipt of Notice of Commencement.
Andrew Walker	Litigation Team Leader – Indian and Northern Affairs Canada (INAC)	December 19, 2007	Comments on any potential First Nation claims in the area.
Kevin Clement	Director, Comprehensive Claims – Indian and Northern Affairs Canada (INAC)	December 20, 2007	Comments on any potential comprehensive First Nation claims in the area.
Lynn Bernard	Director General, Comprehensive Claims – Indian and Northern Affairs Canada (INAC)	December 20, 2007	Comments on any potential comprehensive First Nation claims in the area.
Don Boswell	Senior Claims Analyst – Indian and Northern Affairs Canada (INAC)	August 30, 2007	Possible First Nation claims in the area.
Fred Hosking	Senior Claims Analyst, Special Claims Branch – Indian and Northern	November 20, 2007	Acknowledges receipt of notice and provides comments on First

	Affairs Canada (INAC)		Nation specific claims.
Haya Finan	Environmental Officer, Ontario Region – Transport Canada	September 10, 2008	Acknowledges receipt of notice and provides comments.

4.5.2 Provincial Agencies

Provincial agencies that received a copy of the Notice of Commencement in October 2007, and invitations to the PIC in September 2008 and June 2009, include:

- Ministry of Natural Resources
 - Nipigon District
 - Thunder Bay District
- Ontario Provincial Police
 - Northwest Region Headquarters
 - Thunder Bay Detachment
- Hydro One Inc.
- iSERV Ontario - IT Service Delivery
- Ontario Ministry of Aboriginal Affairs
 - Policy & Relationship Branch
 - Negotiations Branch
- Ministry of the Attorney General
- Ministry of Culture
 - Heritage Operations Section, Heritage and Libraries Branch, Ministry of Culture
- Ministry of Energy
 - Renewable Energy Supply
 - Strategic Policy Branch, Conservation & Strategic Policy Division
- Ontario Power Generation
- Ministry of Tourism and Recreation
- Ministry of Municipal Affairs and Housing
- Ministry of Northern Development and Mines
 - Policy Analysis & Development, Corporate Policy Secretariat
 - Regional Economic Development Branch
- Ministry of the Environment
 - Thunder Bay Regional Office
- Ministry of Natural Resources
- Ontario Ministry of Aboriginal Affairs
- Ontario Parks – Northwest Zone

Names of the individuals contacted at the above mentioned agencies are provided in the mailing list attached as an appendix.

Copies of the project notices are provided in **Appendix B1 Notice of Study Commencement, B2 Public Information Centre #1, B3 Public Information Centre #2/Draft ESR Release and B9 Notice of Completion**. All letters received from provincial agencies, and other general correspondence, is provided in **Appendix B6 Correspondence with Provincial Agencies**.

In addition, MNR provided comments on the Draft ESR. Copies of these letters can be found in Appendix B. Responses to these letters along with additional information where required, are found in Appendix D – Bird Studies and Appendix E – Bats. MOE also provided comments which were incorporated into the ESR.

A summary of the contact/meetings, with provincial agencies is found below in **Table 4.3**.

Table 4-3: Summary of Meetings/Contact with Provincial Agencies

Name	Group/Affiliation	Date of Contact	Topic
Jim Cameron	MNR	March 2007 December 12, 2007 September 22, 2008 July 9, 2009	Initial screening meeting – Comments provided on draft ESR from MNR and Ontario Parks – Dillon called to clarify some comments received from MNR, specifically with respect to Bear Management Plans (message left)
Stephanie Barnes	EA Coordinator – Ministry of the Environment	October 31, 2007	Acknowledges receipt of Notice of Commencement and provides comments.
Paige Campbell	Acting Archaeology Review Officer – Ministry of Culture	November 6, 2007	Acknowledges receipt of Notice of Commencement and provides comments.
Peter Heinz	Ministry of Northern Development and Mines (MNDM)	October – November 2007 October 16, 17 and 23, 2007	Discussion on mineral claims and surface rights.
Joan van Kralingen	Manager, Policy Analysis – Ministry of Northern Development and Mines (MNDM)	December 6, 2007	Acknowledges receipt of Notice of Commencement and provides comments.
Jim Cameron	Ministry of Natural Resources	December 11, 2007 July 23, 2008 February 15, 2007 September 19, 2008	Provided with notes on mineral claims and surface rights discussion; prescreening meeting.
James Harvey	Ministry of Northern Development and Mines (MNDM)	April 3, 2008 April 4, 2008 July 8, 2008	Project overview and discussion.
Blaine Bouchard	Ministry of Northern Development and Mines (MNDM)		Project overview and discussion.
Leoni Tarini	Planning Biologist (Thunder Bay District) – Ministry of Natural Resources	February 14 and 15, 2007 August 22 and 24, 2008 July 18, 2007 June 25, 2007 April 18, 2007	Provides comments on raptor and bat surveys – Initial letter introducing the project sent by Dillon – Pre-screening letter received from MNR – Background review and study methods received from MNR – Update on bat monitoring to be used sent by Dillon – Preliminary comments on background review and study methods from MNR – Confirmation of need for radar monitoring received from MNR – Background Review and Study Method Report sent by Dillon
Jim McKeever	Development Review Coordinator (Northwestern Region) –	September 12, 2008 October 1, 2008	Acknowledges receipt of the PIC notice.

	Ministry of Transportation		
Jim Cameron & Jeff Black	Ministry of Natural Resources	July 23, 2008	Project overview and discussion.
Carrie Hutchison	Environmental Assessment Coordinator – MOE	October 9 and 10, 2008 November 3, 11 and 13, 2008 December 10, 2008 January 12, 2009	Discuss concerns with project – Set meeting date Follow up to Oct 24 conference call – Provides contact list
Michèle Proulx & Tim Sullivan	Parks Ontario	September 24, 2008	Project overview and discussion.
Michèle Proulx & Tim Sullivan, Al Comeau	Parks Ontario	December 10, 2008	Discussion on park values.
Leona Tarini	Ministry of Natural Resources	February 15, 2007	Pre-screening meeting
Colin Hovi	Ministry of Natural Resources	February 15, 2007	Pre-screening meeting
Tim Sullivan	Ministry of Natural Resources	September 22, 2008 October 9, 2008 July 8, 2009	Added to EA distribution list – Comments provided on draft ESR.
Michele Proulx	Ontario Parks	October 9, 2008 November 3, 11 and 13, 2008 January 12, 2009	Discuss concerns with project – Set meeting date Follow up to Oct 24 conference call – Provides contact list
Al Comeau (Park Superintendant), Tim Sullivan (Zone Mgr.), Julie Sullivan and Michele Proulx (Park Planners) and Steve Kingston (zone ecologist) with Andrea (Dillon) and Nicholas (RES)	Ontario Parks	October 24, 2008	Conference call to discuss Ontario Parks and concerns with the project.
Al Comeau	Ontario Parks	July 9, 2009	Dillon called to clarify some comments provided on the draft ESR, specifically with respect to access to the project area and Ouimet Canyon Provincial Park and potential to disrupt access during the construction period (message left).

Alan Kerry	Ministry of Aboriginal Affairs	November 23, 2007	Acknowledges receipt of notice and provides contact information for First Nations.
Charles S. Esendal	Hydro One Networks	November 17, 2008	Confirms Hydro One Transmission facilities rated at 230kV are located within the study area
Andrew Hinshelwood	Ministry of Culture	October 15, 2008	Ministry accepts Stage 1 report into the provincial registry.
Tim Sullivan	Ontario Parks	January 12, 2009	Discuss project details and park values
Al Comeau	Ontario Parks	January 12, 2009	Discuss project details and park values
Glen Seim	Ministry of Northern Development and Mines	February 11, 2009	Provides claim holder information for the area
Bob Clements	Government Mobile Communications Office	June 16, 2009	Sent a revised turbine layout and open house invitation.
Hugh Lockwood	Ministry of Northern Development and Mines	June 17, 2009	Discuss project details and impact on claim holders in the project area
W.D. Baker	MNR – Thunder Bay District	July 8, 2009	Provided comments on the Draft ESR on behalf of the MNR – Thunder Bay District. Response to comments can be found in Appendix D & E.
Tim Sullivan	Ontario Parks – Northwest Zone	July 8, 2009	Provided comments on the Draft ESR on behalf of Ontario Parks – Northwest Zone. Response to comments can be found in Appendix D & E.
Al Comeau	Ontario Parks	July 9, 2009	Dillon called to clarify some comments provided on the draft ESR, specifically with respect to access to the project area and Ouimet Canyon Provincial Park and potential to disrupt access during the construction period (message left).
Gwen Fully	MNR – Thunder Bay District	July 9, 2009	Left message regarding obtaining more information on three Bear Management Areas (TB-13-015, TB-13-004 and TB-13-031).
Carrie Hutchinson	MOE – Northern Region	July 10, 2009	Provided comments on the Draft ESR. Comments were incorporated throughout the ESR.

4.5.3 Municipal Agencies

Municipal agencies that received copies of all project-related notices included:

- Township of Dorion
 - Reeve Linda Tolmonen
 - Councilor Ed Chambers
 - Councilor David Harris
 - Councilor Diane Poulin
 - Councilor Don Modin
 - Clerk Helena Tamminen
- Township of Shuniah
 - Reeve Maria Harding
 - Councilor Ron Giardetti
 - Councilor Donna Blunt
 - Councilor Ab Covello
 - Councilor Alana Bishop
 - Clerk Wendy Hamlin
 - CAO Eric Collingwood
- Dorion Volunteer Fire Department
- City of Thunder Bay
 - CAO Robert Petrie
 - Tourism and Economic Development Department
- Township of Nipigon
 - Reeve Richard Harvey

Copies of the project notices are provided in **Appendix B1 Notice of Study Commencement, B2 Public Information Centre #1, B3 Public Information Centre #2/Draft ESR Release and B9 Notice of Completion**. All letters received from municipal agencies, and other general correspondence, is provided in **Appendix B7 Correspondence with Municipal Agencies**.

A summary of the contact/meetings, with municipal agencies is found in **Table 4.4** below.

Table 4-4: Summary of Meetings/Contact with Municipal Agencies

Name	Group/Affiliation	Date of Meeting	Topic
Eric Collingwood	Chief Administrator Officer – Town of Shuniah	October 10, 15 and 30, 2007	Project overview and general discussion.
Shannon Blake	Town of Shuniah	October 15 and 30, 2007 November 13,	Provides information on interest groups.

Name	Group/Affiliation	Date of Meeting	Topic
		2007	
Mavis Harris Laurie Matychuk	Administrator – Town of Dorion Administrator – Town of Shuniah	September 16, 2008	Questions on public information centre.
Maria Harding Ab Covello Donna Blunt Alan Bishop Blair Arthur Craig Baumann	Reeve – Town of Shuniah Councillor – Town of Shuniah Councillor – Town of Shuniah Councillor – Town of Shuniah Fire Chief – Town of Shuniah Manager of Operations – Town of Shuniah	October 30, 2007	Project overview and general discussion.
Linda Tolmonen	Reeve – Town of Dorion	October 30, 2007, July 22, 2008 & January 25, 26 and 27, 2009	Project overview and general discussion – Also requests copy of RES pamphlet – Asks for guidance on employment creation
Council (including Dave Harris)	Town of Dorion	October 30, 2007	Project overview and general discussion.
Helena Tamminen Council	Clerk-Treasurer – Town of Dorion Town of Dorion	July 22, 2008	Project overview and general discussion.
Helena Tamminen	Clerk Treasurer – Town of Dorion	September 25, 2008	Provides letter of support.

4.6 Communication Tower Consultation

As per Radio Advisory Board of Canada (RABC) Communication Tower Consultation Guidelines (2007), the following agencies were sent project-related notices:

- Radio Advisory Board of Canada (RABC)
- Transport Canada- Aerodromes and Air Navigation Unit
- Royal Canadian Mounted Police – RCMP Communication Towers
- Department of National Defence – National Defence Communication Towers
- Environment Canada – Weather Radars
- Nav Canada – Civilian ATC Radars
- Department of National Defence – Military Air Defence and ATC Radars
- Canadian Coast Guard – Vessel Traffic System Radars

- Natural Resources Canada – Seismological Monitoring Arrays
- Thunder Bay International Airport
- Government Mobile Communications Office

Copies of the project notices are provided in **Appendix B1 Notice of Study Commencement**, **B2 Public Information Centre #1**, **B3 Public Information Centre #2/Draft ESR Release** and **B9 Notice of Completion**. Copies of letters sent to communication tower agencies, and other general correspondence, is provided in **Appendix B8 Correspondence with Communication Tower Agencies**.

Throughout the EA process, a number of updates were made to the turbine layout before it was finalized. Notices to all communication tower agencies (listed above) were reissued on May 15, 2009, seeking their comments on the final turbine layout and coordinates. A concise summary of the general contact with these agencies is found below in **Table 4.5**. The Royal Canadian Mounted Police, Environment Canada, Canadian Coast Guard and the Radio Advisory Board of Canada were sent reminder emails on June 23, 2009 indicating that a response from them relating to the May 15, 2009 Notice had not been received.

Table 4-5: Summary of Meetings/Contact with Communication Tower Groups

Name	Group/Affiliation	Date of Contact	Topic
	<ul style="list-style-type: none"> • Department of National Defence • Royal Canadian Mounted Police • Environment Canada • NAV Canada • Department of National Defence • Canadian Coast Guard • Natural Resources Canada • Transport Canada • iSERV Ontario – IT Service Delivery • Radio Advisory Board of Canada 	October 17, 2007	NOC sent requesting any information that these agencies may have relating to telecommunication, cellular, radio communication, radar and seismacoustic systems in the study area that may fall within the mandate of their agency.
	<ul style="list-style-type: none"> • Department of National Defence • Royal Canadian Mounted Police • Environment Canada • NAV Canada • Department of National Defence • Canadian Coast Guard • Natural Resources Canada • Radio Advisory Board of Canada 	July 15, 2008	Dillon sent a study area map.
	<ul style="list-style-type: none"> • Department of National Defence • Royal Canadian Mounted Police • Environment Canada • NAV Canada • Department of National Defence • Canadian Coast Guard • Natural Resources Canada 	September 8, 2008	PIC invite sent.
Cormack	Natural Resources Canada (NRCan)	September 16, 2008 May 15, 2009	Turbine layout sent.
Francine Boucher	Royal Canadian Mounted Police (RCMP)	September 16, 2008 May 15, 2009	Turbine layout sent.
	Weather Radars – Environment	September 16, 2008	Turbine layout sent.

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	Canada	May 15, 2009	
Ferris D.	NAV Canada	September 16, 2008 May 15, 2009	Turbine layout sent.
J. Lyons	Natural Resources Canada (NRCan)	September 16, 2008 May 15, 2009	Turbine layout sent.
Mojicajf	Canadian Coast Guard	September 16, 2008 May 15, 2009	Turbine layout sent.
Mark Bartley	Aerospace and Telecommunications Engineering Support Squadron – National Defence	September 16, 2008 May 15, 2009 (Layout/cords sent) May 20, 2009 (Replied)	Turbine layout sent. Final turbine layout and coordinates sent – Replies indicating he has no problems with current layout and coordinates.
Alex Beckstead	Radio Spectrum Engineer – Royal Canadian Mounted Police (RCMP)	August 5, 2008 September 22, 2008	Replied regarding turbine layout. No issues were identified.
Mark Bartley	Aerospace and Telecommunications Engineering Support Squadron – National Defence	September 9, 2008	Replied regarding turbine layout. No issues were identified
Lee Goldberg	National Systems Integration Engineer – Canadian Coast Guard	September 22, 2008 June 23, 2009	Replied regarding turbine layout. No issues were identified. Reaffirms that they have no problem with the current layout
Darrell Perala	Aeronautical Information Systems – NAV Canada	September 23, 2008 May 15, 2009 December 17, 2008 January 8, 2009	Replied regarding turbine layout requesting additional information (turbine height and location). Turbine location and ground elevations sent. Topographic map of the study area sent. NAV Canada Land Use Form sent.
Sheryl Lusk	Monitoring Science and Strategies – Environment Canada	October 6, 2008	Replied regarding turbine layout. No issues were identified.
Sheila Allan	Engineer, Monitoring Science and Strategies – Environment Canada	October 6, 2008	Replied regarding turbine layout. No issues were identified.
Lillian Yao	Engineer, Monitoring Science and Strategies – Environment Canada	September 11, 2008 October 6, 2008 November 19, 2008 July 2, 2009	Replied regarding turbine layout. No issues were identified – Also replied indicating they have no concerns with the final layout and coordinates.
	<ul style="list-style-type: none"> • Department of National Defence • Royal Canadian Mounted Police • Environment Canada • NAV Canada • Department of National Defence • Canadian Coast Guard • Natural Resources Canada 	November 10, 2008	Revised turbine location and elevation sent by Dillon

Mark Bartely	Department of National Defence	November 10, 2008	Advised that they have no concerns.
Paul Pinard (Land Use Specialist)	NAV Canada	December 16, 2008 December 18, 2008	Replies requesting a completed NAV Canada Land Use Form. Dillon sends wind farm template. Requests a copy of the completed Land Use Form
Janet Drysdale	NRCan - Seismologist	January 7, 2009 May 15, 2009 (Layout/cords sent) May 20, 2009 (Replied) January 14, 2009	Turbine layout re-sent. Final turbine layout and coordinates sent – Replies indicating he has no problems with current layout and coordinates. Replied regarding turbine layout. No issues were identified.
Jeremy Craigs	Environmental Officer – Transport Canada	May 1, 2009 May 5, 2009	Discussion regarding aerodromes and air navigation.
Clifford Frank	Acting Regional Manager – Aerodromes and Air Navigation Unit – Transport Canada	May 1, 2009 May 5, 2009	Project location sent.
Christopher Csatlos	NAV Canada – AIS Land Use	May 6, 2009 May 15, 2009 (Layout/cords sent) May 20, 2009 (Replied) June 8, 2009 June 22, 2009	Forwards internal email string to Dillon which states that “further discussions with proponent is required”. Final turbine layout and coordinates sent – Replies indicating requesting clarification on blade radius – Dillon responds. Christopher indicates that they will have the results of their assessment to us in the near future. NAVCanada indicates that the project is unlikely to affect air traffic operations – they have no problem with the final layout and coordinates.
Keith Reilly	Civil Aviation – Transport Canada	May 5, 2009 May 7, 2009	Discussion and email on when to submit an Aeronautical Obstruction Clearance Form. TC informed that they are only responsible for providing advice on turbine lighting should a project conflict with Canadian Aviation Requirements.
	<ul style="list-style-type: none"> Department of National Defence Royal Canadian Mounted Police 	June 5, 2009	Notice of PIC 2 and release of volunteer draft ESR

	<ul style="list-style-type: none"> • Environment Canada • NAV Canada • Department of National Defence • Canadian Coast Guard • Natural Resources Canada 		sent.
Ed Schmidtke	Business Development Manager, Thunder Bay International Airport	May 22, 2009	Discuss the project and impacts to airport radar.
Bob Clements	Mobile Radio Engineer – Government Mobile Communications Office	June 16, 2009	Final turbine layout map sent. Bob indicated in past reviews of the project that his office did not see any problems with the Greenwich Wind Farm layout/location.
	<ul style="list-style-type: none"> • Royal Canadian Mounted Police • Environment Canada • Canadian Coast Guard • Radio Advisory Board of Canada 	June 23, 2009	Final turbine layout map sent as part of a reminder email as these agencies did not respond to our initial May 15, 2009 email.
Michael Lucking	<ul style="list-style-type: none"> • Transport Canada – Aerodromes and Air Navigation Unit 	May 15, 2009 (Layout/cords sent) May 19, 2009 (Replied) June 5, 2009	Final turbine layout and coordinates sent by Dillon – Replies indicating that TC does not assess projects and only advises on lighting. Nikki Roehrig (RES) forwards Michael a Aeronautical Obstruction Form, map, wind farm layout and lighting proposal.
Grant Thorner	<ul style="list-style-type: none"> • Transport Canada – Aerodromes and Air Navigation Unit 	June 24, 2009	Approves Obstruction Clearance Form and lighting plan

4.7 Mining Claim Holders

Mining claim holders in the project area have been consulted during the environmental screening for the Greenwich Wind Farm. The project area overlies 49 unpatented mining claims and three mining leases. These claim holders were added to the project distribution list used for distributing project-related notices.

Unpatented mining claims are 16 ha units of Crown land that permit a claim holder to conduct mineral assessment work to determine the extent of mineral resources associated with that claim. The claim holder may have mining rights only or both mining and surface rights. Development of mineral resources is not permitted on unpatented claims.

The surface use rights for the majority (43) of the claims in the project area were set aside for wind power by Ontario in 2006 through a Public Lands Act Notification and as a result claims staked since the lands do not have priority for surface rights. Six claims were staked prior to the lands being set aside as a result the claim holders retain both the mining rights and priority for the surface rights.

In order for a claim holder to extract the mineral resource on Crown land, a mining lease is required. The mining lease gives the lessee the right to develop the mineral resource and can consist of mining rights only or both mining and surface rights. The tenure rights for three leases in the project area are for mining rights only.

Since mineral exploration and development and wind power land uses can conflict, RES has contacted claim and lease holders to provide information on the project and to discuss potential issues and solutions. Relevant claim holders were identified with support from the Ministry of Northern Development and Mines (MNDM) and by using the MNDM's CLAIMaps® on-line tool. Contact information for the leaseholder was obtained through a title search at Thunder Bay Land Registration Office. Claim and lease holders were subsequently contacted via telephone, email or by mail.

Initial discussions with claim holders indicates that there is potential for land use conflict with respect to potential exploration programs and mine development. RES has undertaken to address the specific concerns of claim holders and discussions with claim holders are ongoing. A summary of claim-holder contact and correspondence is provided in the Stakeholder Consultation Report in Appendix B.

As part of ongoing discussions with mining claim holders, RES has noted that new access roads built within the boundaries of the project area will be of use to mining claim holders to access previously remote areas. RES has also offered claim holders access to geotechnical information that they have obtained and will be obtaining for project design purposes.

RES commits to making all reasonable efforts required to come to business-to-business agreements with all mining claim holders who have claims staked prior to PLA notification, and this, prior to formal submission of Land Use Permit applications to the MNR. Additionally, RES commits to continue consulting with all claim-holders within the project area throughout the development, construction, and operation of the Greenwich Wind Farm, with a view towards ensuring the successful development of all claims of interest.

4.8 Public Information Centres

4.8.1 First Public Information Centre

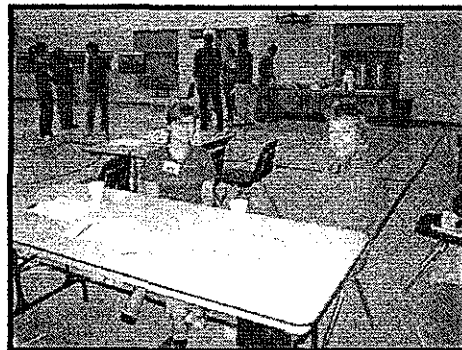
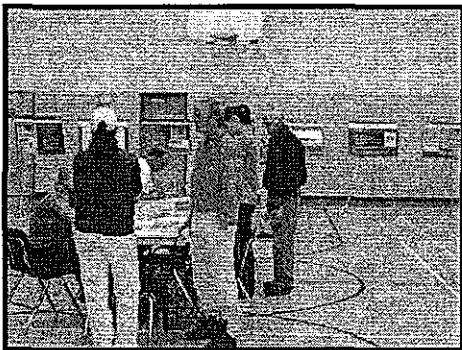
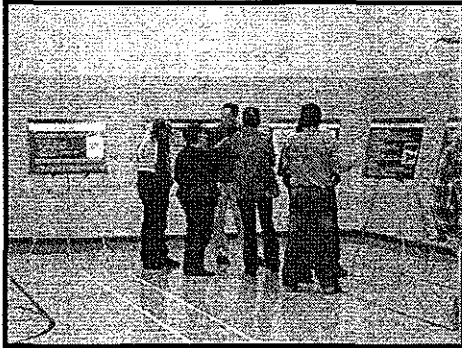
The first PIC was held on Tuesday, September 23, 2008 at the Dorion Community Centre (175 Dorion Loop Road) in the Township of Dorion from 4:00 pm to 9:00 pm. During the PIC, several information panels were displayed to provide the public with information about the project. Copies of the information panels can be found in the **Appendix B2 Public Information Centre #1**. The purpose of the PIC was to:

- make information about the project available to the public;
- provide the public with an opportunity to learn more about the EA process; and,
- to provide a venue for questions and for providing feedback to RES about the project.

Representatives from RES, Dillon Consulting and Northern Bioscience were present at the PIC to answer questions about the proposed project and to provide additional project information to the public. Photos taken at the PIC can be found below. There were approximately forty-eight attendees at the PIC. The completed sign-in sheets are available in **Appendix B2 Public Information Centre #1**. Several representatives of provincial agencies attended including: the MOE, MNR and Ministry of Northern Development and Mines (MNDM). A summary of the comments and subsequent follow-up actions from the project team are included in **Appendix B2 Public Information Centre #1**. Consenting individuals

who signed-in, with a full address or email, or submitted questionnaires, were added to the project distribution list.

Photo 1-4: PIC #1



4.8.1.1 PIC # 1 Questionnaires

Thirty-six questionnaires were returned during the PIC. A summary of the results are provided in **Appendix B2 Public Information Centre #1**. Among the attendees, three were representatives from the Township of Dorion; seven representatives were from the Government of Ontario; four representatives were from stakeholder interest groups; one representative was from the Red Rock Indian Band; and one representative was from the local public school. The remainder of the attendants were residents.

Among the attendants who returned completed questionnaires, the majority indicated that they heard about the PIC through a community advertisement and most of the attendees identified themselves as property owners.

Based on the questionnaires returned from the PIC, the majority of respondents identified themselves as property owners in the area. The most common concerns expressed at the PIC by residents, which are addressed in the Environmental Screening Report (ESR) and through ongoing consultation, were:

- Visual impacts;
- Impacts on wildlife;
- Impacts on trap lines;
- Impacts on sensitive fisheries, i.e., Brook Trout;

- Impacts on recreation, i.e., snowmobiling;
- Power line routing;
- Cumulative social and environmental impacts from multiple wind power generation projects;
- Impacts to birds and bats;
- Industrial applications in a remote, rural setting;
- Timing of the project; and
- Location of the turbines.

When asked what the most important benefits to the project respondents stated:

- renewable energy is more environmentally friendly;
- decrease in fossil fuel-based energy as a result;
- increased income (tax base) for the Township (Dorion); and,
- job creation and economic spinoffs.

Respondents were also asked to identify what they thought were the most important benefits or opportunities of the project. Thirteen respondents acknowledged that renewable energy is more environmentally friendly than traditional sources of power such as fossil fuels; ten respondents indicated increased income (tax base) for the Township; and ten indicated job creation and/or other economic spinoffs.

Respondents were also asked whether they were supportive of the proposed project. Twenty-four out of the thirty-six respondents answered the question in the following manner: eighteen respondents indicated that they are supportive; three had no opinion; two were neutral; and one indicated that they are not supportive of the project.

Following PIC #1, the following actions were undertaken:

- Email correspondence with the Moose Lake Coalition Conservation Group;
- Addition of Ontario Parks (Michele Proulx) to the project mailing list;
- Initial telephone meeting with Ontario Parks scheduled and subsequent meeting on December 10th 2009;
- Meeting with representatives of the Moose Lake Coalition Conservation Group on October 6, 2008 with Dillon aquatic biologists; and
- Follow-up with the Ministry of Northern Development and Mines (MNDM) regarding mineral claims in the study area.

4.8.2 Second Public Information Centre

The second PIC was held on Wednesday, June 17, 2009 at the Dorion Community Centre (175 Dorion Loop Road) in the Township of Dorion from 4:00 pm to 9:00 pm. During the PIC, several information panels were displayed to provide the public with information about the project. Photos of the second PIC can be found below. Copies of the information panels can be found in the **Appendix B3 Public**

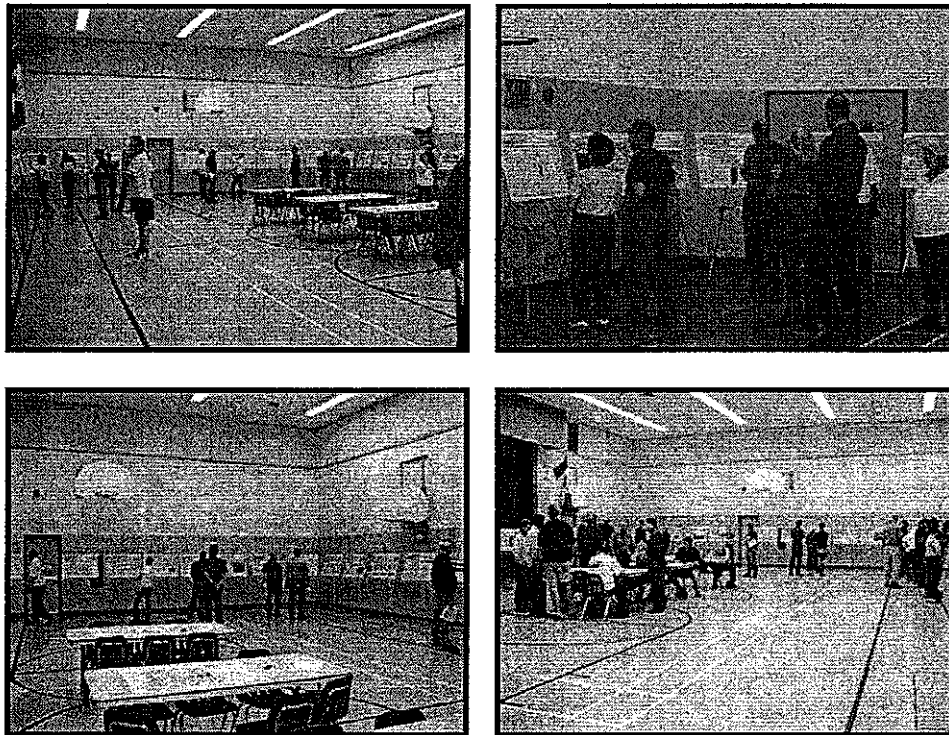
Information Centre #2. Handouts, including copies of the PIC panels and other project-related information, were also provided to attendees. Like the first PIC, consenting individuals who signed-in with a full address or email, or submitted questionnaires, were added to the project distribution list. The purpose of the PIC was to:

- make information about the project available to the public;
- present the complete project infrastructure and transmission layout; and,
- receive feedback on the project design and completed environmental studies.

Representatives from RES, Dillon Consulting and Northern Bioscience were present at the PIC to answer questions about the proposed project and to provide additional project information to the public. There were approximately ninety attendees at the PIC. The completed sign-in sheets are available in **Appendix B3 Public Information Centre #2.**

Several representatives of provincial agencies attended including: the Lakehead Region Conservation Authority (LRCA), MNR, Ontario Parks and the MNDM. There were also representatives from the Township of Dorion, including Ed Chambers and Linda Tolmonen, and from interest groups including the Ouimet Retreat & Campground, Thunder Bay Adventure Trails and Outland Camps. Further details, including a complete list of those who were in attendance at the second PIC, are provided in **Appendix B3 Public Information Centre #2.**

Photo 2:4: PIC #2



At the second PIC, a local trapper, David T. Landry also indicated that he had a trap line in the project area. RES attempted to follow-up with Mr. Landry to further understand his activities in the area, to identify any potential concerns, and to locate his trap line in relation to the Project. After a couple of

attempts, RES successfully contacted Mr. Landry to discuss his concerns. Please see section 1.3 (above) for a summary of the discussion. As the project moves forward, RES will continue efforts to consult and engage local trappers in the area.

4.8.3 PIC Questionnaires

Forty-three questionnaires were returned during the second PIC. A summary of the results, most of which are in support of the project, are provided in **Appendix B3 Public Information Centre #2**. A variety of organizations and individuals submitted completed questionnaires including property owners and representatives from the Township of Dorion, Ouimet Retreat & Campground, Dorion Public Library, Environment North, Red Rock Indian Ban Lake Helen Reserve, Wolf River Campground, Red Sky Metis Independent Nation, and Ontario Nature.

The second PIC was very positive as most attendees were anxious to hear about the project's progress and potential employment opportunities. Among the attendees who returned completed questionnaires, the majority indicated that they heard about the PIC through the newspaper and most of the attendees identified themselves as local residents, followed by local industry and government agency representatives.

Based on the questionnaires returned from the second PIC, the most common concerns expressed at the PIC by residents, all of which are addressed in the ESR or through ongoing consultation with various stakeholders, were:

- impacts to existing trap lines and fur bearing animals;
- impacts to logging activities; and
- increased access to previously remote natural areas.

When asked what the most important benefits to the project respondents stated:

- employment opportunities and related spinoffs;
- increased tax base for the community, in particular for Dorion;
- more tourists in the area; and,
- renewable energy is more environmentally friendly.

Respondents were also asked whether they were supportive of wind power development in Ontario. Forty-one respondents indicated that they were, and two indicated that they were not. In addition, when asked if they were generally satisfied with information made available about the project, thirty-nine indicated that they were, three indicated partly, and one indicated that they were not.

For the most part, the atmosphere at the second PIC was positive and most attendees were interested in learning more about potential employment opportunities related to the project construction and operation.

Several follow-up telephone calls were placed to individuals and government agencies, who attended the second PIC (see **Tables 1.1 to 1.4**) to discuss various concerns including impact on trapping, logging and access to remote areas.

4.9 Release of Draft Environmental Screening Report

Voluntary Release of the ESR for Agency and Public Review

On June 9 of 2009, the draft ESR was voluntarily released by RES, in advance of the filing of the Notice of Completion and the formal 30-day review period. A pre-draft version of the ESR was also made available to the MNR, 2 weeks prior to this voluntary release as required by the Applicant of Record Status agreement with the MNR for this project. Environment Canada was informed of the availability of the draft via the online website. The draft ESR was voluntarily released to the public beginning June 9, 2009. The availability of the report was advertised in the *Nipigon-Red Rock Gazette* and the *Thunder Bay Chronicle Journal*. The ESR was made available for public review at the following locations:

- Township of Dorion Municipal Office; and,
- The Greenwich Wind Farm website (www.greenwichwindfarm.com).

On June 8, 2009, hard-copies of the draft ESR were also sent to the following stakeholders at their request:

- Red Rock Band (Chief Pelletier);
- Fort William First Nation (Chief Peter Collins);
- Métis Nation of Ontario (Glen Lipinski, Coordinator, Nat. Res., Env. & Comm. Relations);
- Red Sky Métis Independent Nation (Leigh Whyte, Environmental Coordinator); and,
- Ministry of the Environment (Carrie Hutchinson, Environmental Planner/EA Coordinator).

The MOE, Environmental Assessment and Approvals Branch, was also sent a complete copy of the draft ESR for review in mid-June 2009.

4.10 Notice of Completion and Release of Environmental Screening Report

On July 13, 2009, the Greenwich Wind Farm filed its Notice of Completion informing the general public, stakeholders, Aboriginal communities, and the MOE that the environmental screening undertaken for the project was complete. A copy of the Notice is provided in **Appendix B9 Notice of Completion**. The Notice will be published in the *Thunder Bay Chronicle Journal* and the *Nipigon Red Rock Gazette* on Saturday, July 11 and 18, 2009 and Tuesday, July 14 and 21, 2009, respectively. The Notice provided a map showing the location of the Greenwich Wind Farm, a summary of background project information and contact information for both the MOE and project proponents. The Notice also stated that a copy of the ESR, as well as the Notice of Completion, will be posted on the project website at www.greenwichwindfarm.com on July 13, 2009. The Notice further indicated that the ESR would be available for review and comment for 30 days beginning July 13, 2009 and provided instruction for those interested in submitting an elevation request for an individual EA. Hard copies of the ESR and supporting technical reports were filed with the MOE, MNR and the Township of Dorion. Hard copies were also provided to several Aboriginal communities upon request.

Letters were also mailed to all project stakeholders. The letters provided background information on the project and informed stakeholders that the environmental assessment for the Greenwich Wind Farm was

completed. Email notices were also sent out to those individuals who expressed an interest in receiving any project-related notices electronically.

4.11 Future Consultation Commitments

RES will continue its stakeholder consultation and communications through project construction and implementation phases. Planned stakeholder consultation and communications activities will include:

- In lead up to and during construction: weekly ads in local newspapers and radio stations on project progress;
- Web site with updates on project progress;
- 1-800 number for messages during construction to relay messages to construction crew;
- The appointment of a construction community liaison officer who shall directly address issues raised by the community during the construction phase of the project;
- Project update bulletin or bulletins as required, mailed or hand delivered to keep area residents apprised of the progress of construction, dates and timing 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;
- Meetings with municipal and other local and provincial government authorities;
- Ongoing consultation and meetings with local Aboriginal communities and organizations;
- Post-construction: Sponsor an article or insert periodically in the Nipigon-Red Rock Gazette or the Chronicle Journal on the Greenwich Wind Farm, wind energy and/or energy efficiency; and
- Post-construction: public gathering to present post-construction study results.

5. Environmental Features Screening

As required by MOE regulation 116/01 and the “*MOE Guide to Environmental Assessment Requirements for Electricity Projects*”, a screening of environmental features was undertaken. The MOE screening criteria as contained in Appendix C of the “Electricity Project EA Guide” was used as a basis for the screening and has been reproduced in **Table 5.1**. A “No” listing in the table indicates that the environmental feature will not be affected by the proposed project and is not considered further in the environmental screening. A “Yes” listing indicates the possibility of the environmental feature being affected by the project. As in the Electricity Project EA Guide, mitigation or impact management measures are not to be considered in completing this table. Environmental features, which could be affected by the project, were then assessed in greater detail as described in this section of the report. A summary of effects and mitigation can be found in **Section 6.24** and **Table 6.5**.

Table 5-1: Provincial Screening Checklist

Provincial Screening Checklist			
Criterion: Will the project.....	Yes	No	Additional Information
1. Surface and Ground Water			
1.1 have negative effects on surface water quality, quantities or flow?	X		<ul style="list-style-type: none"> Potential for effects on water quality (sediments) and flow obstruction from the construction of access roads and the need to cross one watercourse. No surface water will be required for the project. See Section 6.2 for effects assessment/mitigation.
1.2 have negative effects on ground water quality, quantity or movement?		X	<ul style="list-style-type: none"> Affect on groundwater levels not expected. See Section 7.4 for effects assessment/mitigation.
1.3 cause significant sedimentation, soil erosion or shoreline or riverbank erosion on or off site?	X		<ul style="list-style-type: none"> In-water works for access roads and electrical lines could increase erosion/sedimentation rates in watercourses. It is expected that these effects can be mitigated. The movement of the turbine crane through watercourses could also result in sedimentation See Section 6.2 for effects assessment and mitigation measures.
1.4 cause potential negative effects on surface or ground water from accidental spills or releases to the environment?	X		<ul style="list-style-type: none"> Fuels and lubricants will be required during all project phases. As with any infrastructure project, there is the potential for spills of these materials. The quantities of these materials to be used are not large. Some temporary storage at the project construction site compound is likely. See Section 6.2 for effects assessment/mitigation
2. Land			
2.1 have negative effects on residential, commercial or institutional land uses within 500 metres of the site?		X	<ul style="list-style-type: none"> There are no built land uses in the vicinity of the turbines See Section 6.10 for effects assessment/mitigation
2.2 be inconsistent with the Provincial Policy Statement, provincial land use or resource management plans?		X	<ul style="list-style-type: none"> The project respects the pertinent Provincial Policy Statement
2.3 be inconsistent with municipal land use policies, plans and zoning by-laws?		X	<ul style="list-style-type: none"> Turbines are a permitted land use for the project lands that are located within Dorion Township. A zoning by-law has been adopted by the township of Dorion to allow for the construction of the project.
2.4 use hazard lands or unstable lands subject to erosion?		X	<ul style="list-style-type: none"> The turbines are located outside of hazard lands (i.e. flood plain).
2.5 have potential negative effects related to the remediation of contaminated land?		X	<ul style="list-style-type: none"> As lands required for the project are rural and remote. It is very unlikely that the lands are contaminated and require remediation.

Provincial Screening Checklist			
Criterion: Will the project.....	Yes	No	Additional Information
3. Air and Noise			
3.1 have negative effects on air quality due to emissions of nitrogen dioxide, sulphur dioxide, suspended particulates, or other pollutants?	X		<ul style="list-style-type: none"> The operation of the wind farm will not result in air emissions. During the construction period, air emissions from construction machinery and related traffic will occur, although there are no receptors nearby. Movement of construction equipment and excavation activities could increase TSP levels in a localized area, although there are no receptors nearby. See Section 6.5 for effects assessment/mitigation.
3.2 cause negative effects from the emission of greenhouse gases (CO ₂ , methane)?		X	<ul style="list-style-type: none"> The construction machinery will emit greenhouse gases. The operation of the wind turbines will not result in the release of greenhouse gases. See Section 6.5 for effects assessment/mitigation.
3.3 cause negative effects from the emission of dust or odour?	X		<ul style="list-style-type: none"> During the construction period there is the potential for increased dust levels. No odours are expected during operations. See Section 6.5 for effects assessment/mitigation.
3.4 cause negative effects from the emission of noise?	X		<ul style="list-style-type: none"> The operation of the construction equipment will result in noise increases in a localized area. The operation of the turbines will result in noise, The closest occupied building from a wind turbine is 2.2km (for the expanded project) and 5km (for the first phase positions) - Scott's campground. Increased road traffic from the construction workforce could increase road traffic noise levels in area. See Section 6.12 or effects assessment/mitigation.
4. Natural Environment			
4.1 cause negative effects on rare, threatened or endangered species of flora or fauna or their habitat?	X		<ul style="list-style-type: none"> 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 effected by the project. Potential Peregrine Falcon habitat is located within the project area and appropriate mitigation measures have been proposed. . See Section 6.9 for effects assessment and proposed mitigation.
4.2 cause negative effects on protected natural areas such as ANSIs, ESAs or other significant natural areas?		X	<ul style="list-style-type: none"> There are no known ANSIs or ESAs in the study area. See Section 6.9 for effects assessment/mitigation.
4.3 cause negative effects on wetlands?	X		<ul style="list-style-type: none"> There is the potential for some effects on wetlands from access road and power line ROW clearing.

Provincial Screening Checklist			
Criterion: Will the project.....	Yes	No	Additional Information
4.4 have negative effects on wildlife habitat, populations, corridors or movement?	X		<ul style="list-style-type: none"> The construction and installation of project components has the potential to result in effects to wildlife. See Section 6.8 for effects assessment/mitigation.
4.5 have negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g. water temperature, turbidity, etc.)?	X		<ul style="list-style-type: none"> It will be necessary to cross several watercourses with the access roads, electrical collector lines and the 230 kV transmission line – this could result in effects to fish and fish habitat. Crossings will be designed to minimize effects on aquatic habitat The Lakehead Regional Conservation Authority is being consulted with regards to this issue. See Section 6.3 for effects assessment/mitigation.
4.6 have negative effects on migratory birds, including effects on their habitat or staging areas?	X		<ul style="list-style-type: none"> The operation of the wind farm has the potential to result in effects on migratory birds through collisions and habitat alteration. The scale and significance of these effects has been assessed in this EA. See Section 6.6 for effects assessment/mitigation.
4.7 have negative effects on locally important or valued ecosystems or vegetation?	X		<ul style="list-style-type: none"> Natural vegetation will need to be cleared for the turbines, access roads and transmission line. See Section 6.8 for effects assessment/mitigation.
5. Resources			
5.1 result in inefficient (below 40%) use of a non-renewable resource (efficiency is defined as the ratio of output energy to input energy, where output energy includes electricity produced plus useful heat captures)?		X	<ul style="list-style-type: none"> Wind, a renewable resource, will be used to generate the electricity.
5.2 have negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands?		X	<ul style="list-style-type: none"> The turbines are located outside of agricultural lands. See Section 6.13 for effects assessment/mitigation.
5.3 have negative effects on existing agricultural production?		X	<ul style="list-style-type: none"> The turbines are located outside of agricultural lands. See Section 6.13 for effects assessment/mitigation.

Provincial Screening Checklist			
Criterion: Will the project.....	Yes	No	Additional Information
5.4 have negative effects on the availability of mineral, aggregate or petroleum resources?	X		<ul style="list-style-type: none"> The project has the potential to affect the extraction of mineral resources. Discussion with mineral claim holders and the MNDM are ongoing.
5.5 have negative effects on the availability of forest resources?	X		<ul style="list-style-type: none"> Much of the forest in the study area has already been cut. The study area is within the Lakehead and Black Sturgeon Forest Management Plan (FMP) areas. Given the relatively small percentage of the overall surface area that needs to be cleared for a wind farm, this project will not greatly reduce the ability to harvest forest resources.
5.6 have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas?	X		<ul style="list-style-type: none"> The project is located in an area that is used for recreational hunting and fishing. The area has a trap line running through it None of the affected lands can be considered as inaccessible. See Section 6.3, 6.8, and 6.16 for effects assessment/mitigation.
6. Socio-Economic			
6.1 have negative effects on neighbourhood or community character?		X	<ul style="list-style-type: none"> There are no communities in the vicinity of the project See Section 6.14 for effects assessment/mitigation.
6.2 have negative effects on local businesses, institutions or public facilities?		X	<ul style="list-style-type: none"> There are no businesses in the vicinity of the project that could be negatively affected The development of the wind project will result in economic benefits in the area through employment creation and demand for supplies and services. See Section 6.10 and 6.10.2.2 for effects assessment and mitigation measures.
6.3 have negative effects on recreation, cottaging or tourism?	X		<ul style="list-style-type: none"> The project could temporarily affecting hunting activity in the area during construction. Disruption during operations is not expected. No cottages are within the project area. Ouimet Canyon Provincial Nature Reserve is located in proximity to the project area about 1.8km from Targeted Turbine - T31 and 1.3km from Expansion Turbine – S57. See Section 6.16 for effects assessment/mitigation.
6.4 have negative effects related to increases in the demands on community services and infrastructure?	X		<ul style="list-style-type: none"> Potential (although low) for demand on emergency service in the event of an accidental event. RES is to provide funding for appropriate training to local emergency services, specifically, the Dorion volunteer fire department.
6.5 have negative effects on the economic base of a municipality or community?		X	<ul style="list-style-type: none"> There will be no negative effects on the area economy. The project will result in positive economic impacts through taxes that will be paid to the

Provincial Screening Checklist			
Criterion: Will the project.....	Yes	No	Additional Information
			municipality and job creation. Supplies and services will be obtained in the local area as much as possible.
6.6 have negative effects on local employment and labour supply?		X	<ul style="list-style-type: none"> It expected that the project will result in positive effects through the creation of employment opportunities.
6.7 have negative effects related to traffic?	X		<ul style="list-style-type: none"> The turbines and other related supplies will be transported to the study area by truck. This could create some short term road congestion during the construction period. A transportation permit will be required to transport turbine components to site. See Section 6.17 for effects assessment/mitigation.
6.8 cause public concerns related to public health and safety?	X		<ul style="list-style-type: none"> There exists the potential for public safety issues during the construction and operation period as the project is located on public land. Safety protocols and procedures will be established to limit access to construction areas. As this project will not emit any greenhouse gases, it will offset electrical production from other generation sources that could have public health impacts. Project Health and Safety concerns have been responded to – local residents are generally supportive of the project See Section 6.18 for effects assessment/mitigation.
7. Heritage and Culture			
7.1 have negative effects on heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes?	X		<ul style="list-style-type: none"> The project has the potential to affect archaeological resources. See Section 6.20 for effects assessment/mitigation.
7.2 have negative effects on scenic or aesthetically pleasing landscapes or views?	X		<ul style="list-style-type: none"> The wind farm will be visible throughout the study area. This will change the landscape of the area. There also exist the potential for flicker effects. See Section 6.21 for effects assessment/mitigation.
8. Aboriginal			
8.1 cause negative effects on First Nations or other Aboriginal communities?	X		<ul style="list-style-type: none"> At this time, it is not anticipated, subject to RES' continuing consultations with the relevant Aboriginal communities and appropriate mitigation measures, where needed, that there will be any significant adverse effects on Aboriginal communities' interests arising from the Project.
9. Other			

Provincial Screening Checklist			
Criterion: Will the project.....	Yes	No	Additional Information
9.1 result in the creation of waste materials requiring disposal?	X		<ul style="list-style-type: none"> ▪ The project will result in the creation of some solid waste materials such as packaging and other constructed related materials and used lubricants. ▪ RES will contract licensed commercial waste collection and disposal companies and develop a disposal plan that includes the use of a landfill that has a Certificate of Authorization that covers the project area. The requirements of the licensed operator and the associated operational regulations will determine how they will handle disposal. ▪ See Section 6.11 for effects assessment/mitigation.
9.2 cause any other negative environmental effects not covered by the criteria outlined above?	X		<ul style="list-style-type: none"> ▪ Effects to navigable waterways. ▪ Effects to air navigation. ▪ See all of Section 6 for effects assessment/mitigation.

6. Effects Assessment and Mitigation

The construction, operation and maintenance of the Greenwich Wind Farm have the potential to affect the environment, including the social and natural environment. This section examines the interactions between the project activities and the natural and social features that they could potentially affect.

The *Guide to Environmental Assessment Requirements for Electricity Projects* and the *Environmental Impact Statement Guidelines for Screening of Inland Wind Farms under the Canadian Environmental Assessment Act* both require that for each project specific issue identified through the environmental screening checklist (**Table 6.1**) the following analysis be completed:

- **Existing Environment** - describes the potentially affected environmental feature.
- **Potential Effects** – describes the potential effects, both positive and negative, to the environment that may occur as a result of the Project.
- **Mitigation Measures** – Recommends specific mitigation measures that will be implemented to minimize any potential negative effect of the Project on environmental features.
- **Net Effects and Significance** – Describes the residual effects after mitigation measures have been applied. Determines the significance of the net effects. The criteria for assessing the level of significance of net effects after mitigation measures have been applied are illustrated in **Table 6.1**, as described in the *Environmental Impact Statement Guidelines for Screening of Inland Wind Farms under the Canadian Environmental Assessment Act*.

Table 6-1: Determining Significance of Net Effects

Level	Definition
High	Potential impact could threaten sustainability of the resource and should be considered a management concern. Research, monitoring and/or recovery initiatives should be considered.
Medium	Potential impact could result in a decline in resource to lower-than-baseline but stable levels in the study area after project closure and into the foreseeable future. Regional management actions such as research, monitoring and/or recovery initiatives may be required.
Low	Potential impact may result in a slight decline in resource in study area during the life of the project. Research, monitoring and/or recovery initiatives would not normally be required.
Minimal	Potential impact may result in a slight decline in resource in study area during the construction phase, but the resource should return to baseline levels.

According to MOEs Guide to Environmental Assessment Requirements for Electricity Projects. In determining the significance of any negative net effects of the project, the proponent should consider the value or importance:

- Resource affected;
- Magnitude of the effect;
- Geographic extent of the effect;

- Duration and frequency of the effect;
- Irreversibility of the effect; and
- Ecological/social context.

The following section describe the potential for projects effects considering the results of the screening that was undertaken as previously documented in **Table 5.1**. For each component of the environment that was considered, a description of the following is provided: existing conditions, potential effects, proposed mitigation, and the net effect/effect significance.

Natural Environment

The proposed project site lies on Crown land, partially within the Township of Dorion and partially on MNR-administered unorganized territory, in the district of Thunder Bay, Ontario. The site extends east and south of Greenwich Lake and west of Black Bay shore (see **Figure 2.1**).

A significant portion of the project area has been logged in recent years and an existing network of forestry access roads covers the site. The topography is rolling and well suited for wind farm development. The wind regime has been well defined through both mesoscale mapping of the area and direct measurements made by 3 meteorological towers installed on the site. Wind speed, direction, and consistency have been predicted and a determination has been made that the site is suitable for the development of a wind farm.

6.1 Physiography/Topography

6.1.1 Existing Environment

The overall area sits within the Precambrian Canadian Shield physiographic region; specifically the Nipigon plain. The Nipigon plain, centred on Lake Nipigon, northeast of Thunder Bay, is a region of deeply incised valleys and cliffs dominated by flat-lying gabbroic sills overlying Archean and Proterozoic rocks.

Based on topographic information obtained from the Ministry of Natural Resources website, the site lies at elevations ranging from 400 metres above sea level (m asl) to 520 m asl. The topography across the site includes numerous table-like hills. Due to the rolling topography, bog and swamp areas with organic and peat deposits are likely present in low-lying areas. Several small creeks and lakes are located near or within the site. Greenwich Lake and Mackenzie Lake are the most prominent lakes in the area.

Based on the Quaternary Geology of Ontario Map 2554, West-Central Sheet, the overburden consists of phazerozoic organic deposits (peat and muck) and fluvial deposits (gravel, sand, silt and clay, deposited on modern flood plains). Surficial materials expected at the site are a till veneer and fine grained glaciolacustrine deposits (sand, gravelly sand and gravel; nearshore and beach deposits). Based on the geological information, it is expected that the overburden at the site will range between 3 and 14 m thick.

The Bedrock Geology of Ontario, Map 2542, West-Central Sheet, indicates the bedrock in the area is Precambrian in age (undifferentiated igneous and metamorphic rock, exposed at surface or covered by a discontinuous, thin layer of drift). Specifically, the bedrock consists of a mix of proterozoic aged conglomerate, sandstone and shale with diabase sills and archean aged massive granodiorite to granite and metasedimentary rocks.

6.1.2 Potential Effects

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. This could result in localized alterations to topography. MOE guidelines on blasting activities will be consulted.

No potential effects are anticipated during the operation of the wind farm.

6.1.3 Mitigation Measures

During construction, the extent of grading will be minimized as much as possible so as to not substantially alter drainage patterns in the area. No mitigation measures are required as there are no anticipated effects during the operation of the wind farm.

6.1.4 Significance of Net Effects

There will be localized permanent alterations to topography, however, these do not significantly affect the areas physiography or topography.

6.2 Surface Water Quality and Soil Erosion

This section refers to items 1.1, 1.3, 1.4 and 2.4 of the MOE's environmental screening checklist" will the projects:

- *Have negative effects on surface water quantity, quantities or flow?*
- *Cause significant sedimentation, soil erosion or shoreline or riverbank erosion on or off-site?*
- *Cause potential negative effects on surface or ground water from accidental spills or releases into the environment?*
- *Use hazard lands or unstable lands subject to erosion?*

6.2.1 Existing Environment

The study area contains many small lakes and streams. In general, watercourses, lakes, and/or wetlands flowing through the study area drain southerly via the Coldwater Creek, Wolf River, and Mackenzie River systems, which all empty along the north shore of Lake Superior. The lakes are understood to be groundwater fed. During a September 2008 site visit, field biologists observed that in the streams and rivers, the surface water was generally clear and clean throughout, as most of it was actively flowing over consolidated substrates (i.e., cobble, rock, boulder) with very little bank erosion (again likely due to the presence of hard substrates).

Abundant surface water was contained within marshy wetland pockets and relatively small lakes/ponds. The water quality appeared to be good as it was clean and clear. Again, very little erosion was observed around the wetlands or lakes; however, the water levels appeared to be high everywhere (i.e., most features were at or near bank full).

6.2.2 Potential Effects

It will be necessary to cross several watercourses with the turbine access roads and electrical lines. It will be necessary to install culverts so as to not obstruct the flow of water from access road construction.

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 230 kV transmission line). These temporary disturbances may include downstream sediment transport and bed and bank disturbance and will be minimized as much as possible. The selection of the appropriate crossing techniques and culvert design, will be determined in consultation with the Lakehead Region Conservation Authority (CA) and the MNR. For the portions of the project with Dorion Township (where the CA has jurisdiction), it is expected that permits will be required from the CA under the "Regulation of Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses" (Reg. 180/06) and a Work Permit from MNR. For areas outside of the CA's jurisdiction, it is expected that the MNR would advise on issues relating to surface water protection.

6.2.3 Mitigation Measures

Where there is the potential for effects to watercourses 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);
- The MNR Technical Guidelines- Erosion and Sediment Control (1989); and
- Forest Management Guide for Conserving Biodiversity and the Stand and Sites Scales, draft (2008).

To provide source controls and minimize adverse impacts, the following drainage mitigation will be incorporated into the environmental protection plan (EPP) that the project constructor will be requested to comply with:

- 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 mitigation measures determined. Alternative watercourse crossing locations should be considered if 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;
- Refueling 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 if required.

RES will provide MOE an Erosion and Stormwater Management Plan after the completion of the EA process but prior to construction.

There are no anticipated effects during the operations phase of the wind farm.

6.2.4 Significance of Net Effects

Most of the surface water related effects will occur during a 6-month construction window and thus will be relatively short term, localized, and reversible. Mitigation measures will be implemented to minimize these effects. As a result, none to minor adverse effects are expected.

Net effects are expected to be of low magnitude and temporary in nature. The affected watercourses are not considered to be sensitive. As a result, the net effects are not considered to be significant.

6.3 Fisheries Habitat

This section refers to items 4.5 and 5.6 of the MOE's environmental screening checklist: will the project:

- *Have negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g. Water temperature, turbidity, etc)?*
- *Have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas?*

6.3.1 Existing Environment

To collect background information, the Moose Lake Coalition was contacted to obtain existing fisheries/aquatic information for watercourses and lakes in the study area. There is no specific background fish community information or record for any of the watercourses or lakes (Jed Ziegler, Moose Lake Coalition, Pers. Comm.). However, most are known to be groundwater fed containing self-sustaining brook trout fisheries. According to Mr. Ziegler, many of the streams connecting the various lakes and/or wetlands appear to be coldwater systems as they convey groundwater flow and contain trout fisheries. Greenwich Lake itself (i.e., west side of the study area) is known to sustain lake trout, whitefish and northern pike populations and is an angling destination for anglers in the area. Verbal information from a local interest group indicated that lakes in the northern part of the study area have been restocked. The Thunder Bay District of MNR was contacted to acquire fisheries information/data (John Connor, Area Biologist, pers. Comm.).

In general, watercourses, lakes, and/or wetlands flowing through the study area drain southerly via the Coldwater Creek, Wolf River, and Mackenzie River systems, which all empty along the north shore of Lake Superior. Aquatic features within the study area that flow in an easterly direction generally drain to Coldwater Creek. Many of these features represent headwater areas within these systems. Aquatic features flowing to the north drain to the Wolf River, and those flowing to the south ultimately drain into the Mackenzie River. All three systems are known salmonid rivers and are popular angling destinations.

Field Reconnaissance

On October 6th, 7th, and 8th, 2008, a total of fourteen (14) aquatic feature stations were chosen based on their proximity to proposed wind turbine access roads and/or aboveground transmission line crossings. Furthermore, given the limited access within the study area, aquatic stations were chosen at existing access road crossings to provide a representative look at typical fish habitat conditions within the study area as a whole and to determine appropriate mitigation measures that may be needed. Watercourse crossings not accessible by road have not yet been assessed. Detailed habitat assessments will be undertaken at each specific crossing during the culvert permitting process.

Each station examined within the project area (see **Figure 6.1**) that contained fish habitat was given a sensitivity ranking ranging (i.e., low, moderate, or high), depending on factors observed such as fish presence at the time of investigation, connectivity with downstream aquatic resources, flow regime, and habitat type. Fish presence was determined by actual observation of fish at the culvert(s) and/or known fish presence downstream with appropriate habitat conditions at the crossing. Fish absence was determined by observing physical limitations/barriers in the channel at or immediately downstream of the chosen culverts (e.g., steep gradient, beaver dams, no defined channel, dry condition etc). Baitfish and sport fish species were not distinguished as fish community sampling was not undertaken and no specific background information was available for these watercourses.

For the most part, stations were selected at existing road crossings that were accessible or at locations that were representative of the nearest actual crossing but not accessible at the time of investigation. At each station, basic physical and biological characteristics were noted, and representative photographs were taken. **Table 6.2** describes current conditions at the time of survey, including the anticipated sensitivity to impacts of construction activity, and rationale for its sensitivity ranking. Corresponding photographs of each crossing can be found in **Appendix C**.

Based on recent investigations done this fall and information obtained from the Moose Lake Coalition, preliminary sensitivity rankings for the aquatic systems are described using the following criteria:

Low Sensitivity

- No fish present during the field investigations;
- Identified as an ephemeral system at or nearby downstream; and
- Poor or no connectivity to permanent downstream resources (e.g., in-stream barriers).

Moderate Sensitivity

- Baitfish presence observed during field investigations;
- Identified as an ephemeral or intermittent system with evidence of recent flow;
- Seasonal baitfish habitat observed; and
- Seasonal connection with permanent downstream fisheries resources.

High Sensitivity

- Identified as a permanent watercourse;
- Both game and baitfish species present and/or sensitive species present (SAR); and
- Annual connectivity to known downstream fisheries resources.

The sensitivity rankings are preliminary and were determined in the field using the most obvious channel characteristics and information resources available (e.g., flow status, in-stream barriers, observation/previous knowledge of fish etc). Habitat sensitivities at each crossing will be confirmed during detailed habitat assessment.

Greenwich Wind Farm Figure 6.1 Aquatic Feature Stations

Legend

- Station Location
- ⊗ Watercourse Crossing
- ⚡ Targeted Turbines
- ⚡ Expansion Turbines
- ⊠ Substation
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV Transmission Line
- Existing HONI 115KV Transmission Line
- Proposed Transmission Line Routing
- Phase I Access Roads
- Phase II Access Roads
- ~ River/Streams
- ▭ Project Boundary
- ▨ Grid Cells Under AOR Status
- ▨ Forested Lands
- ▨ Waterbody



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2008 Greenwich\Mapping\ESR July 2008\FIGURE 6.1 Aquatic Features Stations.mxd

Cavern Lake
Provincial Nature
Reserve

Oulmet Canyon
Provincial Nature
Reserve

Mockanito River

Hudson Lake

Malheur Lake

Acres Lake

Goodwin Lake

Uman Lake

Oulmet Canyon

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Table 6-2: Existing Fish and Fish Habitat Conditions Summary Table

Station #	Flow (Oct 6-8 th 2008)	Substrate Type	Approx. Channel Measurements (m)	In-stream Cover (main type)	Habitat Type	Potential Sensitivity	Rationale for Sensitivity Ranking / Comments
1	- active flow present (backed-up on US side due to dam)	- boulder, cobble (DS) - sand, silt, org. debris (US)	wetted width = 2.5 depth = 0.5 (US), 0.10-0.15 (DS)	- cobble/boulder (DS) - emergent veg. (US)	- wetland (US) - riffle/run/pool (DS)	HIGH	- evidence of beaver activity - no fish observed - appears connected to DS fishery - permanent watercourse
2	- active flow present (pooled on US side due to blocked culvert)	- cobble, boulder, bedrock	wetted width = 0.4 – 0.5 depth = 0.05 – 0.10 (DS), >1m (US)	- deep pool (US) - few boulders (DS)	- wetland (US) - run/pool (DS)	HIGH	- evidence of beaver activity - no fish observed - appears connected to DS fishery - permanent watercourse
3	- active flow present (trickle DS only)	- sand, gravel, cobble, few boulders	wetted width = 0.5 – 1m depth = 0.05 – 0.10	- emergent veg.	- wetland (US) - riffle, run (DS)	MODERATE	- evidence of beaver activity - no fish observed - appears seasonally connected to DS fishery due to flow barrier - may be intermittent in nature
4	- no active flow	- cobble/boulder	wetted width = n/a depth = n/a	- cobble/boulder	- likely riffle/run when flowing	LOW	- numerous barriers present (poor connectivity) - intermittent channel - appears to be indirect habitat
5	- active flow present (2 perched csp)	- cobble/boulder	wetted width = 1 – 2 depth = 0.10 – 0.5	- cobble/boulder - coarse woody debris	- riffle/run/flats	MODERATE	- in-stream barrier present (at road – perched culverts) - no fish observed - appears seasonally connected
6 & 7	- active flow present (GW seepage in ditch)	- sand, gravel, cobble	wetted width = 0.30 – 0.50 depth = 0.05	- cobble - overhanging vegetation	- wetland (DS) - run, riffle (US)	LOW	- poor connectivity (culvert perched) - no fish observed - indirect habitat
8, 9, 10	- active flow present	- cobble, gravel, boulder	wetted width = 1 – 3 depth = 0.05 – 0.40	- cobble, coarse woody debris, undercut banks	- riffle/run/pool	HIGH	- abundant refuge habitat - no fish observed - permanent watercourse - good connectivity to DS fishery
11	- active flow present	- sand, silt, debris, cobble	wetted width = unknown due to size of wetland/lake depth = 0.2 – 0.5 (at culverts only)	- coarse woody debris - emergent veg along margins	- shallow lake (US) - wetland (DS)	MODERATE	- baitfish observed (lake resident) - seasonally connectivity due to beaver activity - braided through grassy hummocks
12 & 13	- active flow present	- silt, sand, gravel in run - cobble/boulder	wetted width = 2 – 6 depth = 0.30 – 0.60 (run), 0.10 – 0.20 (riff)	- emergent veg along margins - some undercut	- riffle/run/pool	HIGH	- permanent watercourse with known brook trout fishery - great connectivity to DS resources

Station #	Flow (Oct 6-8 th 2008)	Substrate Type	Approx. Channel Measurements (m)	In-stream Cover (main type)	Habitat Type	Potential Sensitivity	Rationale for Sensitivity Ranking / Comments
		in riffles		banks, woody debris			(no barriers)
14	- active flow present (more depositional)	- sand, silt, debris - few boulders	wetted width = 5 depth = > 0.5	- overhanging bank veg. - some submergent veg, coarse woody debris	- run	HIGH	- permanent watercourse with known brook trout fishery - great connectivity to DS resources (no barriers)

6.3.2 Potential Effects

The main effects of the project are summarized in **Table 6.3** below. There are 2 major activities proposed at or near the anticipated stations that have the potential to negatively affect fish and fish habitat. These activities are described below.

Overhead Line Construction for Transmission Line Installation

For the transmission line, about 8 watercourses will need to be crossed. It is expected that the transmission line will span all of the crossings and there would be no required in-water works for these crossings. Although fish habitat occurs throughout a water system, it is the riparian habitat that is most sensitive to overhead line construction. Riparian vegetation occurs adjacent to the watercourse and directly contributes to fish habitat by providing shade, cover, and spawning and food production areas. Potential impacts to fish and fish habitat include excessive loss of riparian vegetation, erosion and sedimentation resulting from bank disturbance and loss of plant root systems, rutting and compaction of stream substrate at crossing sites, and disruption of sensitive fish life stages.

Culvert Crossings for Access Road Construction

Based on the proposed project layout, about 11 new watercourse crossings will be required for the turbine access roads. Further, there may be a need to upgrade about 10 existing road-watercourse crossings including the Ouimet Canyon Rd. bridge that crosses Coldwater Creek. The total number and location of the crossings and their sensitivity is to be confirmed in future planned field work. The risks to fish and fish habitat associated with isolated open cut stream crossings to install a culvert include the potential for direct damage to substrates, release of excessive sediments, loss of riparian habitat, stranding of fish in dewatered areas, impingement/entrainment of fish at pump intakes, and disruption of essential fish movement patterns. Similarly, dry open-cut stream crossings pose a risk to fish and fish habitat due to potential harmful alteration of substrates, loss of riparian habitat, and release of excessive sediment once stream flows resume.

6.3.3 Mitigation Measures

The majority of road crossings over small to medium watercourses will be handled by installing an appropriately-sized culvert by open cutting creek/drain beds to install at an acceptable elevation to ensure proper fluvial function and fish passage. Conversely, electrical wires are generally suspended and installed over aquatic features. Standard mitigation measures to address typical negative impacts resulting from construction of access roads and overhead power lines are presented in **Table 6.3** below.

Table 6-3: Potential Impacts, Mitigation Measures, and Net Effects

Potential Impact	Appropriate Mitigation/Restoration	Net Effects (if any) / Rationale
Erosion and sedimentation/silt release (due to bank disturbance, loss of root systems, rutting, and compaction of stream substrates)	<ul style="list-style-type: none"> - install sufficient silt fencing, rock/straw bail check dams, erosion blankets to control exposed surfaces - work during dry/frozen conditions or create dry conditions (i.e., dam and pump) - cross watercourses at straight sections where banks are more stable 	<p>NO Net Negative Effect</p> <p>- mitigation measures will catch the majority of release</p>
Site dewatering & fish stranding (due to cofferdam installation to create	<ul style="list-style-type: none"> - install filter bags/sediment basins/splash pads to capture and filter 	<p>NO Net Negative Effect</p> <p>- mitigation measures will filter</p>

Potential Impact	Appropriate Mitigation/Restoration	Net Effects (if any) / Rationale
dry work conditions)	sediment-laden water prior to reentry - capture and relocate stranded fish prior to dewatering any enclosures	the discharge - relocated fish will be well downstream of the work area
Disturbance to or removal of existing vegetation and banks (due to site access for heavy equipment)	- use existing trails, cut-lines, roads to avoid/minimize unnecessary removal and keep within the utility ROW - replant and/or reseed disturbed areas as required using native species - reshape bank to original or better shape	LOW Net Negative Effect - limited riparian vegetation is expected to be removed per site - exposed areas will be restored and re-vegetated ASAP
Disturbance (compaction) to or removal of existing substrates (due to crossing of heavy equipment and culvert footprints)	- operate machinery only in channel area proposed to be disturbed (e.g., footprint of the culvert) - similar or improved substrate will be installed throughout the new culvert	LOW Net Negative Effect - some native substrate will be removed within the footprint of the new culvert - disturbed substrate will be replaced with same or better
Disruption to sensitive life stages (due to untimely in-water work)	- adhere to the appropriate MNR In-water Construction Timing Window.	NO Net Negative Effect - avoids spawning, incubation, and rearing times
Introduction of deleterious substances (due to heavy equipment on-site and in-water)	- ensure that machinery used is clean and free of fluid leaks - refuel and store fuel far back from the watercourse and keep a spill kit ready on-site	NO Net Negative Effect - standard measures will prevent petroleum products from entering the watercourse
Impingement of fish at pump intakes (due to cofferdam dewatering or dam and pumping – if methods utilized)	- prevent fish from gaining access to pump intakes by using screens and temporary gravel berms	NO Net Negative Effect - standard measures will protect fish
Disruption of migratory movements (due to cofferdam or dam and pumping construction methods)	- work in a manner that minimizes time in the channel - work outside of migratory times	NO Net Negative Effect - disruption is temporary and to occur within the approved In-water Construction Timing Window

As detailed in the above table, few net effects will remain after appropriate mitigation measures have been implemented. These effects are considered minor and can generally be compensated through the implementation of basic restoration activities to replace what was lost (e.g., riparian plantings, reseeded, substrate enhancement/replacement etc).

For more detailed information on environmental mitigation and protection appropriate to these types of watercourse crossings, the DFO Operational Statements for “Overhead Line Construction” and “Isolated or Dry Open-Cut Stream Crossings” should be consulted.

As seen in **Table 6.2**, the majority of the sampled streams have been identified to be of high sensitivity given the current condition of the existing habitat (e.g., good riffle/run/pool sequencing, natural morphology, and hydraulic connectivity). To minimize or prevent impacts to direct fish habitat, implementation of the mitigation measures listed in **Table 6.3** and in **Appendix C - Attachment 4** would be required to prevent the occurrence of Harmful Alteration, Disruption or Destruction (HADD) in the vicinity of these stations.

6.3.4 Significance of Net Effects

A summary of negative residual effects of anticipated construction activities is provided in **Table 6.3**. This assessment of residual effects was used to determine the potential risk of the project, and subsequently the determination of HADD from proposed activities. There are no known Species at Risk associated with the watercourse crossings within the study area.

Considering that the proposed activities have been previously discussed in specific Operational Statements drafted by DFO (see **Appendix C – Attachment 4**), the low net effects identified in **Table 6.3** are not considered to be significant provided that mitigation recommendations are followed as directed. However, due to the high sensitivity ranking given to many features in the study area, some of the proposed in-stream works may result in a HADD of fish habitat and as such, may require more detailed investigations (e.g., habitat within specific development footprints).

Permitting and Construction Considerations

The Conservation Authority and/or DFO, depending on the crossing location and the nature of impact on fish habitat, will be consulted with regarding the need for approval under the federal *Fisheries Act*. Additional field work at each crossing location is planned to confirm its aquatic habitat sensitivity and to assist in the development of the mitigation plan and additional approval requirements. Any potential impacts on fish habitat from access road crossings or aboveground transmission lines for the proposed turbine locations should be mitigated (by following the OP statements). When the harmful alteration, disruption or destruction (HADD) of fish habitat cannot be avoided, an Authorization will be required from DFO and fish habitat compensation measures may need to be implemented.

6.4 Groundwater Quality

This section refers to items 12 and 1.4 of the MOE's environmental screening checklist: will the project:

- *have negative effects on ground water quality, quantity of movement?*
- *Cause potential negative effects on surface or groundwater from accidental spills or releases to the environment?*

6.4.1 Existing Environment

Regional groundwater flow is generally southward from the higher elevation areas in the northern toward Lake Superior. Regional recharge occurs mainly where thick units of coarse sand and gravel are exposed and from bedrock topographic highs. Groundwater recharge occurs through direct infiltration of precipitation, and recharge from surface streams and wetlands.

The area is moderately or highly vulnerable to groundwater contamination due to the relatively thin to nonexistent overburden above the bedrock and the proximity of the water table to the ground surface.

6.4.2 Potential Effects

As the project will result in the creation of very limited impervious areas (wind turbine base, transmission line pole base), the project will not alter infiltration rates and thus affect groundwater recharge.

Groundwater supplies could be affected by spills of hazardous material such as fuel and oils. There may be temporary fuel storage at the project site compound during the construction phase. Given the volume of materials to be used is relatively small; the potential for these types of effects is minimal. In addition, once operational, lubricant oils within the turbine nacelle are contained in sealed mechanism to prevent any seepage. Again, given the volume of materials is relatively small; the potential for these types of effects is minimal.

No potential effects are anticipated during the operation of the wind farm. Fuels and lubricants will be required during all project phases. As with any infrastructure project, there is the potential for spills of these materials. The quantities of these materials to be used are not large. Some temporary storage at the project construction office is likely.

Hazardous wastes such as lubricants will be collected, contained, and then transported to an off-site facility that collects hazardous waste.

During the operation phase, where oils and lubricants will be used to maintain turbines and ancillary equipment will be collected and where possible recycled. These spent oils and lubricants will be transported off site by a licensed transporting company and recycled or disposed of according to provincial regulations. RES Canada will submit a Generator's Registration Report for each waste generated by the wind farm and its ancillary facilities, according to O.Reg 347 of the *Environmental Protection Act*.

6.4.3 Mitigation Measures

Fuels and oils will be managed per provincial requirements. In the event of a spill of hazardous materials, clean-up procedures will be undertaken as per provincial protocols and legislation as governed by the *Environmental Protection Act* and the *Ontario Water Resources Act*. Further information is supplied in the Environmental Management Plan provided in Appendix L.

RES will contract licensed commercial waste collection and disposal companies and develop a disposal plan that includes the use of a landfill that has a Certificate of Authorization that covers the project area. The requirements of the licensed operator and the associated operational regulations will determine how they will handle disposal.

6.4.4 Significance of Net Effects

Groundwater supplies will not be adversely affected by the project given the mitigation measures to be implemented. No significant effects to groundwater supplies are anticipated.

6.5 Air Quality

This section refers to items 3.1, 3.2 and 3.3 of the MOE's environmental screening checklist: will the project:

- Have negative effects on air quality due to emissions of nitrogen oxide, sulphur dioxide, suspended particulates, or other pollutants?*
- Cause negative effects from the emission of greenhouse gases?*
- Cause negatives effects from the emission of dust or odour?*

6.5.1 Existing Environment

Air quality in the study area is considered to be very good. The following was reported in the Ministry of the Environment's (2007) *Air Quality in Ontario 2006 Report*:

- In 2006, Ontario's AAQC for ozone was exceeded at 35 of the 38 Air Quality Index (AQI) stations on at least one occasion. Thunder Bay was one of three sites that did not record any hours of ozone above the one hour AAQC of 80 parts per billion (ppb).
- The 20 designated Canada wide Standard (CWS) reporting sites recorded 8 hour ozone averages above the CWS of 65 ppb for ozone in 2006 with the exception of Thunder Bay where the CWS calculated ozone value was 57 ppb.
- A comparison of O₃ and PM_{2.5} at 12 cities in the Great Lakes Basin area was conducted for 2001 to 2005. Overall, based on these two pollutants, the air quality of the six Ontario cities, including Thunder Bay, was generally better than the other six U.S. cities, Milwaukee, Chicago, Grand Rapids, Detroit, Cleveland and Buffalo.
- Based on the 4th highest ozone eight hour daily maximum – for designated sites across Ontario, all of the sites exceeded the CWS of 65 ppb for ozone, with the exception of Thunder Bay where its 2006 CWS was 57 ppb.
- Air quality in the very good and good categories ranged from approximately 86 per cent at Sarnia to 98 per cent at Thunder Bay.

6.5.2 Potential Effects

Project related air quality effects would largely occur during the construction phase. This would include emissions from construction equipment and increased dust levels during soil excavation and from road traffic. As the construction areas are generally well removed from receptors, air quality related effects are expected to be minimal and would be temporary.

As electricity is to be generated through wind, during the operations period there will be no negative effects on air quality due to odor or emissions of nitrogen dioxide, sulphur dioxide, suspended particulates or other pollutants, including greenhouse gases.

6.5.3 Mitigation Measures

During the construction period, the contractor will implement standard practices to minimize air emissions including:

- Use new or 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.
- Avoid excavation and other construction activities with potential to release airborne particulates during windy and prolonged dry periods;
- Stabilize stockpiled excavated soils in areas that are upwind of sensitive receptors;
- Cover or otherwise contain loose construction materials that have potential to release airborne particulates during transport, installation or removal;
- Use of Spray water and environmentally friendly dust suppressants applied at an environmentally acceptable rate may be used to minimize the release of dust from gravel, paved areas and exposed soils only where necessary on problem areas as monitored during the construction period; and
- Restore disturbed areas as soon as possible to minimize the duration of soil exposure.

6.5.4 Significance of Net Effects

Given the large separation distances from receptors, air related effects during the construction period would be minimal and not dissimilar to forestry activities having been performed in the area. Effects would also be temporary.

The operation of the wind farm will result in a net benefit to air quality by offsetting the need to produce electricity from other sources such as fossil fuel generators that emit greenhouse gases.

Construction related air quality effects would be of short duration, low in magnitude and limited to the general area of construction. They are therefore not considered to be significant. During the long-term operations periods, the project will contribute to improved air quality in the Province by offsetting other forms of electricity production.

No adverse significant net effects are anticipated.

6.6 Birds

This section refers to item 4.6 of the MOE's environmental screening checklist: will the project:

- *Have negative effects on migratory birds, including effects on their habitat or staging areas?*

The following provides a summary of the bird survey and assessment work. Details of this work are provided in **Appendix D**.

Please note the MNR has provided comments on the Draft ESR. Copies of these letters can be found in Appendix B – Consultation. Responses to these letters along with additional information where required, are found in Appendix D – Bird Studies and Appendix E – Bats.

6.6.1 Existing Environment

Agency Correspondence and Consultation

An initial letter introducing the project and general study methods for seasonal bird surveys was sent to the MNR and EC on February 14, 2007. This was followed by an April 18, 2007 report summarizing natural environment and avian background information to scope potential issues and to communicate study methods to agencies.

EC provided detailed comments on their understanding of potential issues and additional study requirements they recommended for birds on May 25, 2007. Similarly, the MNR provided detailed comments on August 24, 2007 regarding bird and bat study requirements. All EC and MNR recommendations were integrated into the methods used to collect baseline information for this project.

Further consultation took place with the MNR (Liona Tarini – Management Biologist, Jim Cameron – District Planner, Ricardo Velasquez – Forester, and Ben Bartlett – Forester), Al Harris (Consulting Biologist) and Brian Ratcliff (Consulting Biologist). This consultation was focused on setting appropriate buffers/constraints for a variety of natural features and species at risk in the study area.

The intent of surveys is to spread sampling throughout the entire migration window. The number of visits and general time frame for surveys conducted were the subject of consultation with the MNR as well as EC. In addition, based on survey protocols which followed the scope agreed to in coordination with EC staff, surveys were conducted based on specific habitat types and availability; not individual or groupings of turbines.

Determination Level of Concern Category

During the initial stages of the project the study area was best described as having a high site sensitivity designation based on Table 1 in *Wind Turbines and Birds: A Guidance Document for Environmental Assessments* (Environment Canada March 2007b). This designation occurs as a result of the:

- Presence of Species at Risk (e.g. bald eagle and peregrine falcon);
- Presence of BCR 8 priority species; and
- Fall raptor migration corridor along the north shore of Lake Superior.

The proposed size of the wind farm at that time was a utility scale project with up to 100 turbines. This, in conjunction with the site sensitivity score of high put this project in Level of Concern Category 3.

Methods

Methods to be used during this study were communicated to EC and the MNR (Dillon Consulting April 2007) and formed part of the pre-consultation for this project. Both EC and the MNR provided comment on the proposed methods. Specific recommendations from both agencies were integrated into the methods detailed below. A summary of methods used during each seasonal survey to acquire information regarding the existing conditions for bird species in the study area have been provided below. For a full account of results and discussion regarding bird species observed in the study area see the Bird Reports contained in **Appendix D** of the ESR. In addition, a map of the locations of all bird survey locations is provided in **Appendix D** of the ESR.

Background Review

Several sources, including: Natural Heritage Information Centre database; Breeding Bird Atlas (<http://www.birdsontario.org/atlas/atlasmain.html>); Important Bird Areas (<http://www.ibacanada.ca>); federal *Species at Risk Act* (SARA) Public Registry (http://www.sararegistry.gc.ca/default_e.cfm); and provincial Species at Risk (SAR) (<http://www.mnr.gov.on.ca/MNR/speciesatrisk/status.html>) formed the basis of the background review. The Ontario Ministry of Natural Resources Ontario Digital Geospatial Information was used to obtain aerial photos (1995-1999) and mapping of habitat in or immediately adjacent to the study area.

Consultation with OMNR Thunder Bay District Office staff, including Liona Tarini (Management Biologist), Jim Cameron (District Planner) and Colin Hovi (Land Management Intern) was also completed as part of the background review. Information provided included an MNR values map for the area, as well as information on the type and general location of natural features (e.g. Provincial Parks, ANSI's, etc.), rare species and other notable natural environment data was added to that collected from the NHIC.

Forest Resource Inventory (FRI) digital mapping for the study area forests was collected from local forest companies including Bowater Inc and Greenmantle Forest Inc. Shapefiles and attribute tables provided followed the Northwest Ontario Forest Ecosystem Classification System (Sims et. Al 1997) and were examined for forest habitat types which could be condensed into similar habitats, which better represented major habitat types within the study area. This information on major habitat types in the area was used to direct monitoring efforts to all habitat areas.

Spring Migration

Passage Migration

To assess the level of Common Loon, waterfowl, and raptor migration in the study area, we established three monitoring stations at various distances from Lake Superior. Site 1 is 15 km inland from Black Bay, Lake Superior. Site 2 was on the Ouimet Canyon Road 3.5 km inland from Black Bay, and Site 3 was in a cutover west of White Granite Lake 20 km inland. Both Site 1 and Site 3 are about 20 km north of the north end of Thunder Bay, Lake Superior. These sites are arranged to allow an assessment of migration activity as one moves inland from Lake Superior. Passage migration counts were conducted on 13 dates between April 23 and May 30 2008. This includes a block of 10 consecutive days encompassing the peak common loon migration period.

Three monitoring stations were used concurrently on each date. Site 3 was inaccessible on April 23 due to snow cover on the road. An alternate site at Hurkett on Black Bay, Lake Superior was used on this date. Site 1 was not covered on May 8 when one of the observers was unexpectedly unavailable.

Monitoring consisted of standing at a suitable vantage point and recording the numbers of migrating raptors, waterfowl, and other birds. The monitoring period covered six hours beginning one half hour before sunrise. Bird observations were summarized into height zones related to the turbines and distance from the station. Wind direction, temperatures, and other weather parameters were recorded.

In total, 74 hours of migration monitoring on 13 days between April 23 and May 30 2008 were completed.

Waterfowl Staging

Surveys for staging waterfowl were conducted on six dates between April 23 and May 30th. Sites included 4 inland lakes, a wetland, fields at Ouimet and Black Bay. Lakes in the study area were mostly ice covered until early May. It is noted that the Black Bay site was added at the request of Environment Canada to monitor waterfowl and loon movements on Black Bay to determine the general abundance of birds using the area.

Waterfowl Pair Survey

An aerial survey for waterfowl pairs was conducted on May 21 2008. Ice cover and poor weather prevented it from being completed earlier. The western portion of the study area, where the wind turbines are expected to be installed, was flown using a Bell LongRanger helicopter. Species, number, sex and social status (e.g. lone male, pair, groups) were recorded for all waterfowl. The total survey area encompassed 141 ha.

Raptor nest observed along shorelines and cliffs near the survey route were documented as observed.

Breeding Birds

From background information sources and discussions with local experts it was known that there was potential for Species at Risk and Bird Conservation Region 8 birds to breed in the study area. Breeding Bird Surveys were undertaken to qualify their presence and location in the study area. Survey methods used were adapted from Environment Canada 2007a.

Point Counts

Point counts were conducted at 90 locations following the Forest Bird Monitoring Program protocol (Canadian Wildlife Service). Counts consisted of ten-minute non-fixed radius counts recording all bird species observed or heard. Each station was visited twice (once in late May or early June and once in late June). Point counts were distributed to represent the range of forest habitat types representative of the study area.

Area Search

The area search encompassed approximately 53 km of drivable roads and the forest between the point count locations (approximately 40 km on foot total). The search was focused on wetlands, streams, lakeshores, clearings, and roadsides that were not thoroughly covered by the point counts. Area search results were supplemented with some incidental observations in 2008.

Tape Playback

Tape playback surveys were conducted for Sora, Yellow Rail and Virginia Rail, Barred, Northern Saw-whet and Boreal Owls and Whippoorwill in suitable habitat. Visual and auditory searches were also undertaken for other nocturnal species, including American Woodcock, Wilson's Snipe, and Common Nighthawk.

A survey for nocturnal bird species was conducted between 20:20 and 23:20 on July 5 2007. The survey consisted of a 10 minute listening stop at each location. Tape recordings of owls, rails and whippoorwill were played in suitable habitat.

Breeding Bird Atlas

Records of additional bird species were compiled for the Breeding Bird Atlas squares overlapping the study area. The study area is a part of Ontario Breeding Bird Atlas (BBA) Region 38 – Thunder Bay. Four squares associated with this region overlap the study area, including: 16CU69, 16CU79, 16CV60 AND 16CV70). There was no data for 16CU69 or 16CV60.

Fall Migration - Diurnal Migration and Staging Areas

To assess the level of migrating waterfowl, shorebird and raptor activity in the Hurkett-Red Rock and Black Bay Peninsula as compared with the study area, three monitoring stations were established at various distances from the lake. Site 1 was on the shoreline at Hurkett Conservation Area on Black Bay, Lake Superior. Site 2 was on the Ouimet Canyon Road 3.5 km inland from Lake Superior, and Site 3 was in a cutover west of White Granite Lake 20 km inland. These sites are arranged to allow an assessment of migration activity as one moves inland from Lake Superior. A figure illustrating the location of these sites is provided in the bird study report in located **Appendix D**.

A total of 163 hours of migration monitoring on 12 days between September 8 and November 26 2007, were completed.

Hawk Migration Association of North America (HMANA) (<http://www.hmana.org/index.php>) standards were followed for these surveys. These standards are used by Hawk Ridge at Duluth, Whitefish Point, and other raptor migration monitoring stations. Following these standards provided a quantitative measure of migration that can be compared with other stations to assess the significance of the Greenwich site.

Monitoring consisted of standing at a suitable vantage point and recording the numbers of migrating raptors, waterfowl, and other birds. The monitoring period covered six hours beginning one half hour before sunrise. From September 1 to October 14, six hours of monitoring was conducted at each of the three sites. After October 14 (when the number of migrating birds typically drops significantly) the Hurkett Site was monitored for 6 hours while the two inland sites were monitored for approximately 3 hours each.

Bird observations were summarized into height zones related to the turbines and distance from the station. Wind direction, temperatures, and other weather parameters were recorded.

Surveys of inland lakes in the study area were also conducted for elevated numbers of waterfowl during migration.

Winter Residents

Line transects and area searches (Environment Canada 2006) were conducted and are repeatable for follow-up monitoring if necessary.

Line transects

Transects covered most of the road-accessible portion of the study area where wind turbines are planned to be installed and consequently were not randomly located. The transects were covered on foot along roads and snowmobile trails and ranged in length from approximately 1 to 3 km. All bird species seen or heard were recorded and the distance class (0 to 25 m, 25 to 50 m, 50 to 100 m and > 100 m) from the transect was estimated. Surveys were conducted from approximately sunrise until 6 hours after sunrise.

Transects 1, 4 and 5 were inaccessible after the first visit due to deep snow and were replaced by transects 7, 8, and 9. Other transects were sampled at least twice.

Area Searches

Area searches were conducted while traveling between transect locations. Also surveyed were the Dorion municipal dump and the farmland near the east end of the study area on each of the three survey dates. All bird species observed in the study area were recorded.

6.6.2 Potential Effects

General Overview

Studies undertaken around the world indicate that, with few exceptions, very low numbers of bird fatalities occur at wind energy facilities (Kingsley and Whittam 2005, Erickson et al. 2001, Gill et al. 1996, Langston and Pullan 2002). Furthermore, there is no evidence that any large-scale kills are occurring at night similar to those commonly reported at tall buildings and tall communications towers (Anderson et al. 1999). Wind turbine related mortality has been far less than that reported for many other sources of human-caused avian mortality (Erickson et al. 2001).

While avian mortality has been of primary concern in North America at operating wind farms, it has not proven to have had significant impact on any bird populations (Kerlinger 2001). Average mortality rate was estimated at 1.83 birds/turbine/year outside California (Erickson et al. 2001). A more recent estimate of average mortality placed it at 2.3 birds/turbine/year outside California, and this increase was largely due to a single site in Tennessee (NWCC 2004). Mortality rates in agricultural sites may be below one bird/turbine/year (NWCC 2004, Koford et al. 2004, Johnson et al. 2003). According to James (2008) mortality between 2.0 and 2.5 birds/turbine/year was estimated for the Erie Shores wind farm, which is located in southern Ontario along the north shore of Lake Erie.

It is not possible to accurately predict potential mortality through pre-construction surveys of numbers of birds present in an area (Thelander and Rugge 2001, Gill et al. 1996). Behavioural studies demonstrate that the reason collision fatalities are rare at wind turbines is a result of the fact that birds apparently see the turbines, recognize them as obstacles, change flight direction when they encounter them and fly around the turbines (EchoTracks 2005, Kerlinger 2003). Birds have excellent vision with very quick motor control and spend much of their life avoiding obstacles at close range in the habitat they fly through. Birds can readily detect slowly rotating turbine blades, and tend to avoid operating turbines, but easily fly close to and among turbines when not operating (Nelson and Curry 1995). Radar observations have shown that birds will generally be able to detect and avoid a wind turbine (Pederson and Poulsen 1991, EchoTracks Inc. 2005).

Summary of Avian Collisions with Human-made Structures

It has been estimated that from 100 million to well over 1 billion birds are killed annually in the United States due to collisions with human-made structures, including vehicles, buildings and windows, powerlines, communication towers, and wind turbines. Although wind energy is generally considered environmentally friendly it has been associated with the deaths of birds colliding with turbines and other wind plant structures, especially in California. It is commonly recognized that seasonal concentrations of birds, geographic and weather conditions can potentially increase the risk of avian mortality with respect

to wind power structures. In order to put the issue of avian mortality associated with windpower into perspective with other sources of avian collision mortality across the U.S, Erickson et al. (2001) reviewed several sources of avian mortality. Reviewed reports indicated that the following estimated annual avian collision mortality in the United States:

- Vehicles: 60 million - 80 million;
- Buildings and Windows: 98 million - 980 million;
- Powerlines: tens of thousands - 174 million;
- Communication Towers: 4 million - 50 million; and
- Wind Generation Facilities: 10,000 - 40,000.

The large differences in total mortality from these sources are strongly related to the differences in the number (or miles) of structures in each category. There are approximately 4 million miles of road, 4.5 million commercial buildings and 93.5 million houses, 500,000 miles of bulk transmission lines (and an unknown number of miles of distribution lines), 80,000 communication towers and 15,000 commercial wind turbines (by end of 2001) in the U.S. Even if wind plants were quite numerous (e.g., 1 million turbines), they would likely cause no more than a few percent of all collision deaths related to human structures (Erickson et al. 2001).

Where communication towers are greater than 150m in height, some large numbers of dead birds have been found. Studies at communications towers across the United States, including northern states at similar latitudes to southern Ontario, indicate that towers less than about 135 m have not been involved in mass mortality events (Kerlinger 2000, Kemper 1996, Ugoretz 2001). The taller the structure the greater the number of birds likely to be killed (Manville 2001). The wind turbines to be used in this project are shorter than 135 m.

Literature which examines the impacts of wind turbines on the bird community identifies three main (and often interactive) factors that contribute to avian mortality at a particular site. These three factors include weather conditions, the density of birds in an area and landscape features funneling birds through the area (e.g. raptors). Literature also suggests that appropriate sighting of wind turbines is the best way to reduce bird interactions with wind turbine infrastructure. Density of birds and landscape/habitat features of the study area have been reported above. Mean density (birds per ha), along with mean birds per station, total species richness, relative abundance, % frequency and standard deviations are provided in Appendix D of the ESR (Breeding Bird Monitoring Summer 2007 Tables 4-11).

Weather Conditions

At many sites, nocturnal migrant collisions tend to occur during episodes of poor weather with low visibility. Although most examples appear to be isolated incidences, weather conditions should be kept in mind if a site is being proposed in an area that has a large number of poor visibility days (<200m) during the spring and fall, and has other confounding factors (e.g. large numbers of nocturnal migrants and landform features such as ridges present).

Inclement weather can increase the risk of bird collision with wind farm structures. (Winkelman 1995, Strickland et al. 2001, Johnson et al. 2002). Even then mortality has been only a tiny fraction of passing birds (Crockford 1992, Winkelman 1985, 1995, Pearson 1992). For example, clouds have an influence on the altitude of migrants by forcing higher flying migrants to lower altitudes, which increases the density of migrants near the ground and increases the probability of collisions with tall obstacles. A

cloud ceiling that drops to near or below the height of the turbines will affect high altitude migration, inducing migrants to move at or below treetop level (Robbins 2002 in Environment Canada 2007c). Drizzle and fog impair visibility and also cause birds to fly at lower altitudes, to follow topographical clues. Combined with lighting that may attract migrating birds, migrants may collide with turbines or they may circle the structure until exhausted, falling to the ground where they are at risk of dying due to exposure or predation. If there are a high proportion of fog days during migration at the project site, there may be an increased risk of collision. Even in bad weather there has never been a mass kill of birds at a wind turbine. The largest recorded mortality event in North America was 14 birds at 2 turbines following a severe thunderstorm (Johnson et al. 2002).

Operational Effects

Operational effects primarily focus on two distinct factors including:

- Direct Mortality from collisions with turbines or power lines; and
- Displacement as a result of turbine infrastructure. Displacement can include displacement from breeding territories, staging areas and other changes in migratory behaviour.

The evaluation of birds which appear to be at greatest risk of either mortality or disturbance in the RES Greenwich Project area is based on:

- Literature related to direct mortality and displacement;
- High numbers observed;
- Behavioural attributes; and
- Presence of a well defined major migratory route.

The effects assessment of species/groups is largely discussed below as an aggregate (e.g. Waterfowl and Raptors). The full list of birds found during the surveys is provided in **Appendix D**. Consideration of the full list of birds was undertaken and the potential impacts to those species that were found and not mentioned below were determined to present a relatively low risk.

6.6.2.1 Peregrine Falcons

Disturbance

Studies examining the home range of peregrine falcons suggest considerable variation in distances traveled and these variations seem to depend on proximity to feeding habitat (Enderson and Craig, 1997). Visual observations of peregrines by Beebe (1974), Bird and Aubry (1982), and Hunter et al. (1988) reported that peregrines hunted up to 14 km from the nest site, with the majority of foraging flights within 3 km of the nest site. Two other reports by Craighead and Craighead (1956) and White et al. (2002) noted that both female and males regularly hunted up to 5 km from the nest site. Weir (1978) noted that Scottish peregrines catch most prey within 2 km of the nest sites but can range as far as 6 km away. Porter and White (1973) reported that peregrines in Utah foraged 0.23 to 29.8 km (average 12.2 km) from the nest site and may hunt at favoured feeding localities from 19-24 km from a nest. Studies have shown that Peregrine falcons maintain a nesting territory of at least one kilometre radius. This prevents other pairs from nesting too close and protects nearby hunting areas. They also have an extended, undefended territory or home range that can extend up to 27 km from the nest

(http://www.sararegistry.gc.ca/species/speciesDetails_e.cfm?sid=29).

Telemetry studies indicate peregrines forage farther from the nest site than the visual observation studies. A telemetry study in California indicated that a nesting pair traveled in all directions from the nest site but did not range more than 8 km from the nest, while a female in Colorado was tracked up to 19 km from her nest (Enderson and Kirven, 1983). Enderson and Craig (1997) telemetry studies noted that 60% of the distances were less than 8 km from the nest site, but about 20 % of the locations for females exceeded 23 km. Also of note was that several hunting flights were as far as 20-43 km from the nest sites, and were much greater than previously reported in the literature. In South Africa, two males had home ranges of 115 and 192 km², and average daily ranges of 22.3 and 22.8 km². The distance of excursions from the nest sites ranged from 0.6 km to 83.5 km (average 21.9 km) for one male and 0.5 km to 75.0 km (average 21.7 km) for the second male. The distances traveled by two females was 0.2 to 43.5 km (average 10.3 km) and 1.4 to 49.6 km (average 12.7 km) (Jenkins and Benn 1998). In southern Scotland, two females were monitored and one female moved a maximum of 18 km from its nest, and the two females had maximum hunting ranges of 23 km² and 117 km² respectively (Mearns, 1985).

Peregrine falcon nest sites in Scotland were buffered by a circle of radius 2 km from wind turbines based on research (Weir 1997) that 70% of foraging behaviour is expected to occur within 2 km of the nest (Bright, et al. 2006).

Mortality

Based on literature for peregrine falcons and many other raptors potential collisions do not appear to be of high concern where abundance is low, turbines are well dispersed and no migration route concentrates birds through rows of turbines. There are at least two reports indicating peregrine falcon being at wind farms, on at Orkney Islands (Meek et al 1993) and on at Flanders (Everaert 2003). See Other Raptors Section for further discussion.

Displacement

See Other Raptors Section for discussion.

Site Conditions

The MNR *Stand and Site Guide* defines a traditional nest site as an area currently or historically occupied by a pair of peregrines falcons. The traditional nest site extends vertically from the base to the top of the cliff face and horizontally across the cliff face to include ledges currently or previously used for nesting and any suitable ledges within 500 m of used sites. In the field, the top and bottom of the cliff face is defined by the point where the canopy cover of trees is $\geq 25\%$. If nest sites used by the same pair in different years are on distinct cliffs, each cliff face is a separate traditional nest site. No historical or existing sites are known in the study area. A traditional nest site has been identified to the east of the study area.

This nest site (**Figure 6-2**) has been successful at fledging young each year since 2002 (Ratcliff, 2007), and was once again a successful nesting site in 2008. The nest site is 8.9 km from the closest turbine in the initial project development phase and 7.7 km from a turbine once the project is fully built out. Peregrines have been observed hunting over the fields east of Ouimet Canyon and at Hurkett in May 2008, probably from the pair at the known nest site. The open fields near Ouimet Canyon and Black Bay, situated in the opposite direction from the project area, are probably significant hunting areas.

Ratcliff and Foster (2005) undertook a peregrine falcon habitat analysis of cliffs in Lakehead Forest that involved looking at air photos and topographical maps. They identified one good cliff site, and two potential cliff sites just east of the Greenwich Wind Farm Study Area. During a waterfowl survey of the study site on May 21, 2008, Northern Bioscience located an additional potential cliff site at Nolan Lake that had an active red-tailed hawk nest. See **Figure 6-2** for the location of the existing and potential nest sites. These potential nest sites and hunting areas exist along the eastern portion of the study area. Much of the western part of the study area lacks both nesting cliffs and good quality hunting areas.

On October 27, 2008, a helicopter flight to assess potential peregrine nesting habitat identified in the area was conducted. Although it was outside the peregrine falcon nesting season (March 15 to August 31), observers were able to assess the cliffs and surrounding landscape for potential nesting habitat quality. Potential peregrine nesting habitat was photographed and a GPS track was recorded along the cliff rim above the suitable habitat. Observers for this study were Brian Ratcliff and Allan Harris of Northern Bioscience.

For the existing nest site, research on the home range of peregrine falcons indicates that these birds will travel considerable distances to forage for food. Sight observations studies note that within their home range, most of the foraging takes place between 2 and 6 km from the nest site. Telemetry studies data extends the average foraging distances to 8-22 km from a nest site. The distance from the existing nest site to the closest proposed turbine is 7.7 km when the project is fully built out, which approximates the distance that peregrine falcons frequently forage as reported in 3 of the 4 telemetry studies. This 7 km separation distance is deemed adequate based on the previous MNR *Peregrine Falcon Guidelines* (1987) as well as the new MNR *Stand and Site Guide*. No additional setback is required to protect this existing nest area.

Potentially suitable peregrine nesting habitat in northwestern Ontario has previously been defined as cliffs with suitable ledges and a vertical drop of at least 15 m and a linear cliff length of at least 100 m (Ratcliff and Foster 2005). “Good” habitat has a vertical cliff face of at least 30 m and a minimum cliff length of 250 m. “Marginal” habitat has a vertical cliff face of 15 to 30 m and a minimum cliff length of 100 m. Good foraging habitat typically consists of open fields, shorelines and wetlands.

Potential peregrine falcon nesting habitat cliffs including Nolan Lake, Crow Lake and Goodmorning Lake were confirmed along the eastern boundary of the study area (Figure 2 in **Appendix D**) based on the October 27, 2008 field work. The Nolan Lake and Crow Lake sites were confirmed to be marginal nesting habitat. The Good Morning Lake site was confirmed as “Good” nesting habitat.

Goodmorning Lake cliff is approximately 3 km from closest proposed wind turbine (T31) to the south, and 2.6 km from the closest proposed wind turbine (T24) to the west under the proposed wind farm layout. The closest turbine (T30) is approximately 300m from Nolan Lake and the closest turbines to Crow Lake are (S57) 3 km and (T31) 3.6 km. The proposed transmission line route passes within 350 m of Crow Lake.

The potential effect of numerous turbines adjacent to the Nolan Lake site is difficult to define. However, consultation completed as part of this project suggest that the proposed turbines could result in the inability for the Nolan Lake site to attract nesting peregrine falcons during the operation of the wind farm (which is a ‘marginal’ potential site). This effect does not impact the current population or any individuals. In isolation, the effect is unlikely to have any impact on the recovery or expansion of the population in Northern Ontario. As nesting sites are likely one of the main limiting factors for population expansion of this species in Northern Ontario the removal of this site could have a cumulative impact if other potential sites are made less suitable in the future as well.

6.6.2.2 Other Raptors

Mortality

Hawks, eagles, and falcons have been a major concern for wind farm developments in North America. However, they have experienced problems primarily at older facilities in California, and largely in one location, where there are several factors contributing to the problem (Arnett et al. 2007). In 1989, the California Energy Commission issued a report that reviewed data on bird collisions with wind turbines in this state between 1984 and 1988 (California Energy Commission 1989). Observations and mortality searches were conducted for six seasons examining a sample of approximately 16% of the 7000 turbines at Altamont. Of the 183 dead birds found during this study, 119 (65%) were raptors, the majority of which were Red-tailed Hawks (*Buteo jamaicensis*), American Kestrels (*Falco sparverius*), and Golden Eagles (*Aquila chrysaetos*). Approximately 55% of all raptor deaths were attributed to turbine collision, 8% to electrocution, 11% to wire collision, and 26% could not be determined (Orloff and Flannery 1992).

Differences in fatalities between Californian sites appear to be related to raptor density as well as turbine type and spacing (Arnett et al. 2007). For Altamont, which has the highest fatalities, there is a high prey base of small mammals in the uncultivated grasslands to attract large numbers to the area. The raptor mortality has been associated with the clustering of prey near the turbines, the perching of birds on the turbines, where other perches are unavailable, and the foraging of birds living among the turbines for long periods (Nelson and Curry 1995). Several turbine factors were proposed as posing the greatest risk to raptors such as, end-row turbines, turbines within 500m of a canyon and turbines with a lattice-type tower (Orloff and Flannery 1992). High raptor mortality in the Altamont Pass area continues to be seen. Between 1998 and 2000, 256 dead birds were found, 139 (54.3%) of which were raptors (Erickson et al. 2002, Hunt 2002).

Another wind energy site that has had significant raptor mortality is in Tarifa, Spain. This site is on the edge of the Strait of Gibraltar and forms a “bottleneck” that concentrates bird migration in the Mediterranean basin. Soaring birds are generally of greatest concern, since at least 30,000 individual raptors and huge numbers of storks pass through the area in the autumn. Many collisions with the turbines have been recorded, including those of 14 protected species. A total of 106 individuals were estimated to have been killed over the span of one year (Marti and Barrios 1995). A subsequent study over 14 months including 2 autumn migration periods recorded over 72 000 birds during 1000 hours of observation. But, only 2 bird carcasses were found, including one Griffon Vulture (*Gyps fulvus* – of 45 000 seen) and one Short-toed Eagle (*Circus gallicus* – of 2500 seen). This indicates that death rates can vary year to year and from area to area (Janss 2000). Studies in both California and southern Spain clearly indicate that there is a disproportionately high mortality at a relatively few turbines on ridges (Barrios and Rodriguez 2004, Hoover and Morrison 2005).

There have been very few raptor fatalities reported at the several thousands of other wind farm locations other than Altamont and Tarifa. It is recognized that a major contributor to raptor fatalities at these two facilities was the use of lattice towers, appropriate for perching, the low rating and close spacing of turbines (50m from each other) and fast rpm of the small blade. In the U.S. outside of California, raptors comprise only 2.7% of turbine-related deaths (Erickson et al. 2001, Kerlinger 2001). A comparison of the different mortality rates between older and newer facilities in the United States completed by Arnett et al. (2007) is in agreement with this finding three of the four older sites reported higher fatality rates than at all newer, larger turbine sites.

Results from 14 avian fatality studies at newer sites, where surveys were conducted using a systematic process for a minimum of one year and appropriate correction factors were incorporated into the

estimates, indicate that combined mean fatality rate for these sites are 0.03 raptors per turbine and 0.04 per megawatt (Arnett et al. 2007). Landscapes vary from mountains, plateaus, and ridges, to areas of low relief, but aside from size of rotor-swept area, all of these facilities had new generation turbines with lower rotational speeds (~15-27 rpm, tips exceeding 280km/hr) and primarily underground transmission lines. These results are in-line with a study (James 2008) completed for the Erie Shores site, located along the north shore of Lake Erie, which has a similar landscape and habitat matrix to the subject site.

Based on 2 years of post-construction observations for the Erie Shores wind farm near Port Burwell, Ontario no elevated mortality occurred with respect to raptors, despite the presence of large numbers in the fall and turbines near the shoreline. Five raptors including 1 Turkey Vulture were found over the 2 years of post-construction monitoring. These five raptors represent approximately 8.5% of all bird fatalities. Based on the correction factors applied a mortality rate of about 0.04 raptors/turbine/year, including residents and the thousands of migrants in the wind farm each year was estimated (James 2008). In addition, approximately 15,000 raptors move along the north shores of Lake Ontario in autumn, none were found dead at either the Pickering or the Exhibition Place turbines, both within 100 m of the lakeshore.

Bald Eagles are apparently at comparatively low risk of collision with wind turbines. The foraging behaviour of raptors appears to affect mortality. Red-tailed Hawks and American Kestrels are active hunters. Concentrating on hunting rather than paying attention to where they are flying, when among turbines, may make them more susceptible to collision. Species such as ravens, vultures and Bald Eagles that may be largely scavengers, do not often hunt among turbines and appear to suffer less mortality (Orloff 1992). In a Wyoming study around 69 turbines, Bald Eagles were considered 5th highest species at risk in winter. Yet none were found dead there in three years of searches (Young et al. 2003). Turkey Vultures are at far higher population levels in California than in Ontario and rarely collided with turbines (Kerlinger 2001).

Displacement

There is little information on how raptor species react behaviorally to turbines but do appear to be among the least likely birds to be displaced by wind turbines. In Washington/Oregon, nesting of raptor species was slightly higher after construction; new nest sites were discovered in the wind facility area after construction; and avian use surveys showed only a slight decrease in raptor numbers after construction (Erickson et al. 2004). In California, raptors were considered less likely to display evasive avoidance behaviour in relation to wind turbines than any other group (McCrary et al. 1986). In the Altamont Pass, observations of behaviour indicated that the distribution of raptors in areas of many turbines was similar to areas where there were no turbines (Orloff and Flannery 1992). In Minnesota, 80 % and 74.8 % seen in two successive years flew 31 m or more from turbines, and 5 % and 14 % flew within 16 m. The group of birds most likely to migrate near the turbine in the Yukon was raptors (Mossop 1998).

Based on anecdotal information reported by James (2008) it would appear that raptors continue to use the landscape and habitat similar to the way they did prior to turbine development and easily avoid collisions during migration.

Site Conditions

Bald eagles were recorded using the study area during fall migration (see **Appendix D**). Otherwise, fall migrating raptors were low in number. Broad-wing hawks usually migrate along Great Lake shorelines in higher numbers than were recorded during field work. 2007 was considered a slow year for this species at the nearby Thunder Cape Bird Observatory. Higher numbers of broad-wings passing through the study

area could possibly occur in future years. During the fall season approximately half of raptors observed at sites 2 and 3 were flying above 80m. Raptors found flying below 80m were usually in the early morning before thermals had developed. Most raptors at site 1 were flying below 40m with most being bald eagles foraging along the shoreline. The effects for raptor species is considered low as large numbers of most species were generally not found in the study area.

6.6.2.3 Common Loons and Waterfowl

Mortality

Waterfowl appear to be among the least susceptible birds to collision with wind turbines, despite considerable numbers in areas studied. In some cases, sea ducks are believed to learn to avoid turbines, resulting in fewer collisions over time (Percival 2001). In terms of dabbling ducks, sites reporting the most fatalities are those with year-round waterfowl use, with waterfowl making up to 10% or more of the total number of fatalities. However, numbers of fatalities are still very small, especially in relation to the number of ducks that use the areas (Erickson et al. 2002). Based on a recent study completed for the Erie Shores wind farm (James 2008), which is located along the north shore of Lake Erie east and west of Port Burwell, no waterfowl mortality occurred over a two year post-construction period.

In Minnesota, Canada Geese and Mallard (with Greater White-fronted Goose and Snow Goose) were considered at high risk because of numbers flying through the site at rotor height during spring and fall, prior to construction. Following the erection of 73 turbines and the completion of two years of post-construction monitoring only one dead duck was found (Osborne et al. 1998). After four years of searches, no geese, and three ducks were found (Johnson et al. 2002).

In the Montezuma Hills, California, 600 turbines were erected in a pass between two wildlife sanctuaries where thousands of waterfowl moved between two wetlands. In two years of post construction surveys, no waterfowl were found dead. More than 15,000 observations of waterfowl flying through the pass indicated waterfowl avoided flying near the turbines and avoided collision (Howell and Noone 1992, Gipe 1995).

In several European studies involving large numbers of wintering and migrating diving ducks, it was clear that waterfowl clearly avoided flying near turbines and that mortality was low (Guillemette et al. 1998, Lowther 2000, Winkelman 1985, Dirksen et al. 1997, Musters et al. 1996).

In Iowa, an 89-turbine facility was located between three Wildlife Management Areas which attracted waterfowl species including up to 40,000 Canada Geese and 20,000 ducks each year. No fatalities were recorded during a year of post-construction searches at 26 turbines (Koford et al 2004).

At a 16 turbine facility in Oregon in wheat fields and grasslands Canada Geese were abundant with nearly 5000 birds observed flying through the area prior to construction. Only 2 individuals were killed in the year following construction, apparently in conditions of poor visibility (Johnson et al. 2003).

In an Oregon/Washington project Canada Geese were one of the four most common species reported on avian surveys and during incidental observations. One fatality was recorded in 2.5 years of searches at this 273-turbine facility. There was also only one Mallard fatality in 2.5 years, although they were not nearly as numerous in the area as geese (Erickson et al. 2004).

At the turbine located in Pickering, varying numbers of Canada Geese flew past within 100 m of the turbine daily for most of the year with no fatalities (James 2003). Likewise Mallards, although much less common, flew past the turbine and landed in a small marsh close to the tower and even nested there below the extent of the turning blades and suffered no mortality (James 2003). Canada Geese regularly flew within 100 m of the Exhibition Place wind turbine much of the year and no mortality was recorded (James and Coady 2004).

At the Nysted off-shore wind farm in Denmark a mortality rate of 1.4 collision/year/turbine was estimated for Common Eiders based on a validated predictive model (Desholm 2006). The wind farm consists of 72, 2.3 MW turbines with a hub height of 69m and blade length of 41m.

Displacement

Disturbance effects have been of greater concern than mortality in European studies and are probably of greater importance to waterfowl than potential mortality (Kingsley and Whittam 2005). Desholm (2006) demonstrated that there is indeed an avoidance effect for at least Common Eiders. It was also noted a reduction in flight height and adoption of a straight line flight path were behavioural changes which reduced exposure to turbines blades and towers. However, much of these European studies have been directed toward diving ducks, and there appears to be very species-specific reactions to wind turbines, with even closely related species showing different effects (Kingsley and Whittam 2005).

Other waterfowl appear to be less likely to be displaced. In Washington/Oregon, with 454 turbines, with 47 m rotors, spaced only 70 or 105 m apart, in strings 800 m apart, avian use surveys showed a slight increase in waterfowl two years after construction (Erickson et al. 2004). In Minnesota, with 73 turbines with 33 m rotor diameter, spaced 91 – 183 m apart, in 10 strings, Mallards were the second most common bird seen in avian surveys (Osborne et al. 1998). In Iowa, with 86 turbines located between three Wildlife Management Areas, observations found 270 flocks of geese foraging in the wind farm area in fields with and without turbines (Koford et al 2004), although the proportion in the two types of field was not given.

At Pickering Canada Geese regularly flew within 100 m of the turbine and walked to the base of the turbine when foraging, on numerous occasions (James 2003). They also regularly flew in the gap between the turbine and other buildings as close on the other side. Canada Geese also regularly flew within 100 m of the Exhibition Place wind turbine, although ground conditions were not conducive to foraging close (James and Coady 2004). Mallards regularly approached the Pickering turbine, flying within 50 m of the blades to a small marsh below the blade tips. One pair nested below the blades in this wetland (James 2003). In Minnesota, a Mallard nested within 31 m of a turbine base (Osborne et al. 1998).

In European studies Winkelman (1992) listed Mallard as sensitive to disturbance however; this may have resulted from much closer turbine spacing. Studies at several coastal wind farms indicated that flights of waterfowl flocks were the same in areas with and without wind turbines. The waterfowl were well aware of and readily avoided the turbines (Dirksen et al. 1997).

Site Conditions

Significant numbers of migrating loons were observed on several dates. These were probably birds that were staging on Black Bay and Thunder Bay on Lake Superior. Loons observed were migrating through the study area with no observations of individuals landing in the study area. Most common loons (72%) migrated above the turbine height. Loons tended to migrate at higher elevation at Site 3 than the other two sites, perhaps related to the greater distance from Lake Superior. Migrating loons tend to gain elevation as they fly inland from Lake Superior (pers. obs.). Based on the experience of other wind projects with

waterfowl, it is expected that the loons would exhibit turbine avoidance behaviour while flying through the project area.

Waterfowl staging and breeding pair density in the study area did not appear to be exceptionally high. Large numbers of waterfowl (up to 2000) were staging on Black Bay at Hurkett this spring. The predicted significance of net effects to common loons and waterfowl is low.

6.6.2.4 Bird Conservation Region (BCR) 8 Landbird Species and Species at Risk

Mortality

It is recognized that nocturnal migrants typically fly in broad fronts through southern Ontario. As a result many areas can experience a high proportion of individuals at anyone time during spring or fall migration. Several radar studies and ceilometer studies at seven sites in New York, Vermont, Maine and North Dakota, at similar latitudes to this project, found that migration traffic rates detected would suggest that mortality rates would be less than 1/1000th of 1 % of populations of common species that would likely be involved in spring migration (Kerlinger 2003). Studies at Sandusky, Ohio, indicated a passage rate of nocturnal birds at 5380 birds/mile of front/hour during peak migration. In four migration seasons, only one dead bird was found (Rogers et al. 1997). Radar studies in Minnesota indicated that approximately 3.5 million birds migrated over the 354-turbine wind farm each year. From 4 years of searches (1996 – 1999), adjusted for predator removal and observer ability, the fatality rate estimate for migrant passerines was about 1.5 birds/turbine/year (Johnson et al. 2002).

Most nocturnal migrants also fly at elevations too high to encounter the largest turbines (Parslow 1969, Able 1999, Richardson 2000). Birds apparently climb quickly once they set out, reaching as high as 2000 m within 10 minutes (Parslow 1969). Radar studies operating at St. Catherines found that most birds are above 350 m with some above 1100 m (Black 1998, 2000). In the fall of 2004 Natural Resource Solutions Inc. conducted a radar monitoring study for the purpose of documenting the general height of nocturnal migrants (birds and/or bats) flying over the Kingsbridge Wind Power Project (Natural Resource Solutions Inc. 2004), which is located along the shore of Lake Huron, near Goderich. Monitoring was conducted on September 28, October 19, and November 2, 2004 for a total of eight hours each night. Radar observations showed that the average height was well above turbine sphere height. However the average of targets that flew at turbine sphere height was 18.6%.

Migrant songbirds have always been considered at highest risk among birds, as they constitute the majority of collision victims. In North America songbirds comprise about 78 % of all fatalities (Erickson et al. 2001). However, only in conditions where nocturnal migrating birds are suddenly overtaken by poor weather conditions is higher than normal mortality likely to be experienced, and even in such situations only a tiny fraction of passing birds are involved (Crockford 1992, Winkelman 1985, 1995, Pearson 1992). The timing and location of poor weather is unpredictable and cannot be used as a determinant of turbine placement in inland locations (Hanowski and Hawrot 2000, Evans 2000). Even in poor weather, there has never been a mass kill of birds at a wind turbine. The largest recorded mortality event in North America was 14 birds, seven at each of two turbines, following a severe thunderstorm (Johnson et al. 2002).

Displacement

The greatest threat to songbirds is habitat loss and destruction. Very little detailed information is available regarding the effects of wind energy developments on landbirds, with the exception of grassland

species. It has been shown that turbines may displace many (but not all) grassland species. Leddy et al. (1999) found a linear relationship between breeding bird density (males/100ha) and distance from turbines (0-180m). Densities decreased by more than 50% within the increments measured (180-80m, 80-40m and 40-0m). Species richness also appears to be impacted in areas closer than 180m. It remains unknown if nesting grassland birds will become habituated to turbines and return to areas from where they were previously displaced. It should also be noted that not all grassland species are displaced by turbines. At the Ponnequin Wind Energy Facility in Colorado, grassland songbirds like Horned Larks forage directly beneath turbines and Western Meadowlarks (*Sturnella neglecta*) were also found to forage directly beneath turbines at Altamont in California (Curry and Kerlinger cited in Kerlinger 2003b).

Site Conditions

The impact of turbines on forest nesting birds has only been examined once in North America, during a short-term study at Searsburg, Vermont (Kerlinger 2003b). It was found that disturbance to most birds was low, with several species nesting in the forest within 20-30m of the turbines. A few species were, however, found to avoid the clearing where the turbines were located and some appeared to move further into the forest, most notably Swainson's thrush. It is unclear whether this movement was related to avoidance of the turbines or of the clearing (Kerlinger 2003b).

Of the 7 species at risk observed in the study area (peregrine falcon, bald eagle, short-eared owl, common nighthawk, olive-sided flycatcher, rusty blackbird and Canada warbler) most were observed in very low numbers. Bald eagles were observed in high numbers during fall migration as noted above. Canada warblers are considered a common nesting species in the study area and were recorded at 35 point count locations. Canada warblers will likely lose some potential breeding habitat as forest land is cleared for turbine placement, however this should be a relatively negligible amount of lost habitat. Due to low numbers the significant net effects to species at risk, with exception to peregrine falcons is considered low. See peregrine falcon discussion above.

All but 5 of the 30 BCR 8 priority species that were located within the study area are birds that use forested habitats. As with the Canada warbler, it is likely that some habitat will be lost as forest is cleared for turbines, but this should be a relatively small amount of lost habitat and it is not likely that populations will experience a significant negative effect, though local declines may occur close to turbines. Due to the high number of BCR 8 priority species present in the study area and the high conservation responsibility that BCR 8 has for most of these species, the significant of net effects for BCR 8 birds is considered medium.

6.6.2.5 Project Construction

Construction activities for each turbine are expected to take place in forests (apart from roadside transmission line work) and will involve only a very small part of any habitat (1-1.5 acres). In some instances disturbance may occur at watercourse/drain crossings as a result of access roads and result in some localized disturbance. Watercourse crossing have been identified in the Aquatic Section of this document. Potential effects that could occur during construction may include:

- Disruption of nests;
- Potential temporary displacement of breeding birds during construction in the immediate vicinity of a turbine or watercourse crossing; and
- Site specific protection of species at risk habitat.

The *Migratory Bird Act* prohibits the destruction of birds, their nest or young.

6.6.3 Mitigation Measures

The potential for effects on wildlife and wildlife habitat has largely been addressed through turbine placement. Mitigation measures to be implemented were discussed with OMNR staff (Ricardo Velasquez [Forester] and Ben Bartlett [Forester]). In addition, specific consultation with Brain Radcliff, an expert in Peregrine Falcon monitoring in the Thunder Bay area, Al Harris and Robert Foster of Northern Bioscience were contacted to inform setback recommendations to protect existing and potential nesting habitat for Peregrine Falcon in proximity to the study area. From these discussions and as guided by the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales (OMNR November 2008) setbacks were developed.

Setbacks specific to birds that will be observed include the following:

- **1km Goodmorning Lake Potential Peregrine Falcon Nest Site Setback** – A 1 km buffer has been placed around the Goodmorning Lake potential nest site which is considered to be of “high” quality. The Nolan Lake and Crow Lake sites, both considered to be of “marginal” quality, have not been buffered. While turbine sites are proposed in the vicinity of the Nolan Lake cliff site (approximately 300m), the closest turbine to Crow Lake is 1.9 km to the west. The proposed transmission line does, however, pass within approximately 350m of Crow Lake (to the south). This separation distance should be enough to minimize effects to this potential nest site as well. Regarding Nolan Lake, the area surrounding the lake has been assessed as having some of the best wind resources in the study area. The decision to not provide setback around this potential nest site was to provide a balance between the economic viability of the project and the need to protect potential nesting habitat for future peregrine falcon population growth in the region. The protection of Goodmorning Lake sites provides additional cliff sites for future population expansion. Provided other potential sites in the region remain available, no impact to the future recovery of the peregrine falcon is anticipated.
- **200m Stick Nests Setback**– existing stick nest regardless of size will be buffered by a 200m setback. Breeding season will be defined as March 1 to July 31 for raptors. The non-breeding season is considered August 1 to February 28. If new nests are found that apply to a more restrictive group an OMNR biologist should be notified.

Figure 6.2 shows the location of the setbacks above as well as those proposed for other wildlife.

Other mitigation measures to be implemented include:

- The setbacks and timing restrictions proposed in the Stand and Site Guide were developed mainly in association with forestry operations. This was to deal with disturbances associated with seasonal woodlands operations that were not permanent. It is difficult to predict the disturbance values of one development activity verses. Therefore, it is recommended that further discussion between with the MNR occur to confirm the setbacks being recommended. This is especially relevant for Peregrine Falcons.
- A management plan will be developed for any construction activities within 2 km of any potential nesting habitat. The management plan should include identification of nesting and feeding habitats, minimum setbacks, timing restrictions for construction, and monitoring requirements.

- An aerial survey of all cliffs sites within the Study Area will be undertaken to assess their potential as peregrine falcon habitat during the breeding season (March 15 to August 15) to confirm the presence or absence of nesting peregrines prior to construction.
- Potential nesting habitat will be monitored as part of the post-construction monitoring (i.e. Environmental Management Plan).
- Due to the high numbers of common loons and likely presence of a flyway through the study area, a monitoring program will be implemented to track the impact to this species.
- Monitoring of BCR 8 species in the study area will be implemented to assess the impact to this group.
- If construction does take place during the core breeding season (May 1 to August 15), it is recommended that a qualified biologist will conduct nest searches in areas to be cleared (e.g. watercourse crossing) 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.
- Where consultation with the MNR and EC requires additional baseline monitoring, it can be completed in the northwest portion of the study area prior to the development of the second phase of this project.

Avian Monitoring Program

The Avian Monitoring Program will consist of post-construction monitoring surveys over a two-year period (please see Appendix K). It currently includes:

- Bird and band mortality monitoring;
- Species at Risk Monitoring;
 - Peregrine Falcon;
 - Other Species at Risk;
- BCR 8 – Priority Species;
- Common loon and waterfowl;
- Raptor monitoring;
- Based on comments received from the MNR on the Draft ESR, we have committed to adding raptor monitoring which will follow similar methods conducted for the base line studies; and
- Spring migration monitoring which was requested by the MNR in the Draft ESR comments will be fulfilled during the planned common loon and water fowl monitoring program above.

Greenwich Wind Farm
Figure 6.2a Natural Features and Constraints

Legend

- Targeted Turbines
- Expansion Turbines
- Receptors
- Buildings
- Substation
- Switchyard
- Site Compound
- O&M Building
- Batch Plant
- Proposed Transmission Line
- Highway
- Secondary Road
- Railway
- Existing HONL 230KV Transmission Lines
- Existing HONL 115KV Transmission Line
- Stormable Trail
- River/Streams
- Project Boundary
- Grid Cells Under ADR Status
- Provincial Park
- Moose Fawing Site
- Moose Aquatic Feeding Area
- Pit or Quarry
- Forested Lands
- Waterbody
- Wetlands
- Red Tailed Hawk Nest
- Active Peregrine Falcon Nest Cliff
- Potential Peregrine Falcon Nest Cliff -
- Good Site
- 51.25m Local Road Setback
- 90m Stream/Fishery Setback
- 100m Lake Setback
- 150m Road Setback (Bals)
- 120m Wetland Setback
- 120m Moose Caking Area Setback
- 120m Moose Aquatic Feeding Area Setback
- 120m Interior Leased Property Setback
- 200m Red-Tail Hawk Setback
- 200m Receptor Setback
- 1km Potential Peregrine Falcon Nest Cliff Setback (Documenting Lake Site)

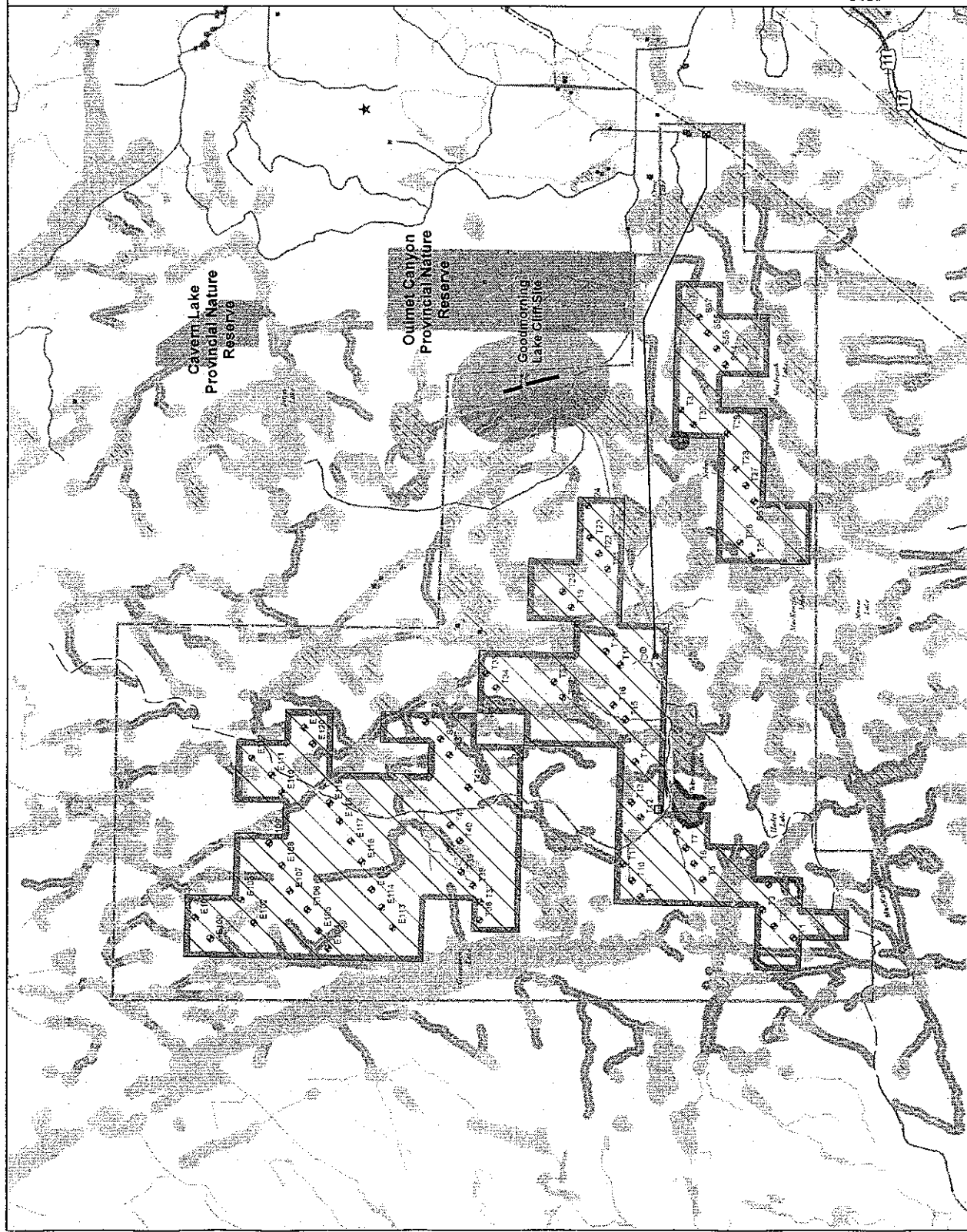


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DILLON
CONSULTING INC.

No known Leach's PBC, Marsh Nest, Open Nest, Marsh, Trail Lake, Abandoned Logging Camp, Hummock, Swamp, Pile, Forest Research Plot, Provincially Significant Wetlands, Wildlife Assessment Plot, Other Sensitive Areas

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Map of Natural Features and Constraints





Greenwich Wind Farm Figure 6.2b Natural Features and Constraints

Legend

- Targeted Turbines
- Expansion Turbines
- Receptors
- Buildings
- Substation
- Switchyard
- Site Compound
- O&M Building
- Batch Plant
- Watercourse Crossing
- Phase I Access Road
- Phase II Access Road
- Proposed Transmission Line
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV Transmission Lines
- Existing HONI 115KV Transmission Line
- Snowmobile Trail
- River/Streams
- Project Boundary
- Grid Cells Under AOR Status
- Provincial Park
- Moose Fawning Site
- Moose Aquatic Feeding Area
- Pit or Quarry
- Forested Lands
- Waterbody
- Wetlands
- Red Tailed Hawk Nest
- Active Peregrine Falcon Nest Cliff
- Potential Peregrine Falcon Nest Cliff - Good Site
- 51.25m Local Road Setback
- 90m Stream/Fishery Setback
- 100m Lake Setback
- 150m Road Setback (Bats)
- 120m Wetland Setback
- 120m Moose Calving Area Setback
- 120m Moose Aquatic Feeding Area Setback
- 120m Interior Leased Property Setback
- 200m Red-Tail Hawk Setback
- 200m Receptor Setback
- 1km Potential Peregrine Falcon Nest Cliff Setback (Goodmorning Lake Site)

No known Locations/TBC: Hairy Woodpecker, Osprey Nest, Brook Trout Lakes, Abandoned Logging Camp, Permanent Sample Plot, Forest Research Plot, Provincially Significant Wetlands, Wildlife Assessment Plot, Other Sensitive Lands

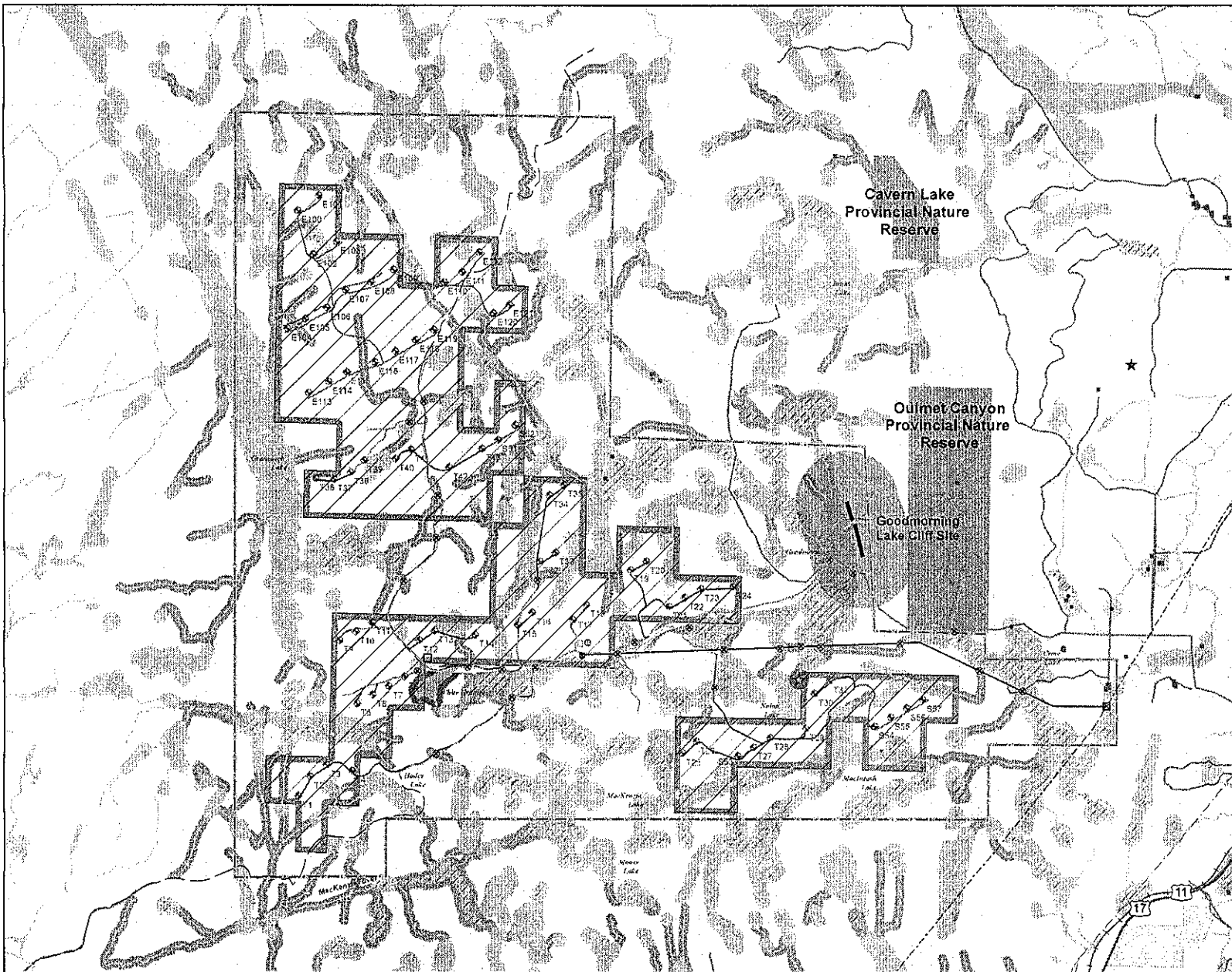
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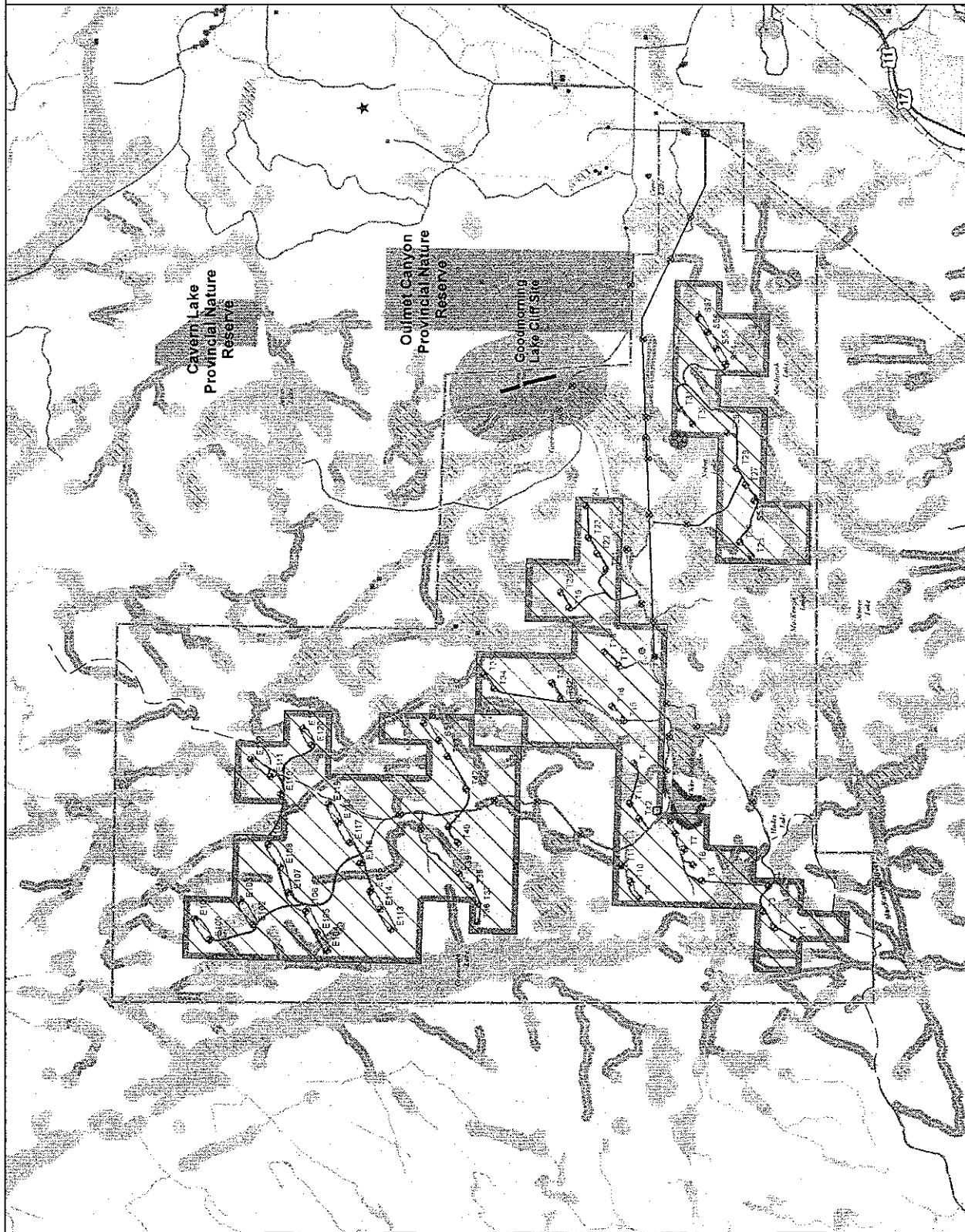
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ENVIRONMENTAL



Greenwich Wind Farm

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6.6.4 Significance of Net Effects

Some species at risk were noted through background studies and fieldwork. Mitigation measures have been implemented that protects the immediate lakeshore migration pathway and critical habitat for species at risk. Other species or groups which were identified as potential concerns through initial consultation either did not occur in the study area in high numbers or had alternative foraging areas in the immediate environment to alleviate any local displacement. Based on existing literature for both mortality and displacement effects the proposed wind farm poses a well defined low risk to the majority of birds and bird habitats and does not suggest any negative population effects. The significance of net effects for species discussed above include the following:

- Evidence available suggests that the potential significance of net effects on peregrine falcons is medium/high depending on future management decisions effecting potential nesting sites in Northern Ontario. The removal of one potential nest site deemed as 'marginal' is not expected to have a population effect.
- The best evidence available suggests that the potential significance of net effects on other raptors is low and not a threat to their populations.
- The predicted significance of net effects to common loons and waterfowl is low.
- Due to the high number of BCR 8 priority species present in the study area and the high conservation responsibility that BCR 8 has for most of these species, the significance of effects for BCR 8 birds is considered medium.

6.7 Bats

Please note the MNR has provided comments on the Draft ESR. Copies of these letters can be found in Appendix B – Consultation. Responses to these letters along with additional information where required, are found in Appendix D – Bird Studies and Appendix E – Bats.

6.7.1 Existing Environment

Extensive bat surveys were conducted in the study area as per the input and recommendations received from the Ontario MNR. Radar and acoustic data were collected simultaneously from sunset to sunrise at 4 sampling sites within the study area and one control site. The location of each sampling station is indicated on Figure 3 in the bat study report, located in Appendix E of this document. The sampling ran from the end of July to early October in 2007. The primary tool for data gathering in this study was EchoTrack's patented Radar-Acoustic surveillance system. Using radar, 185,100 individual flights of night migrants on 24 nights of radar-and stationary-acoustic sampling were recorded from sunset to sunrise. Three additional nights were conducted of acoustic-only sampling.

Radar-determined flight activity of night migrants fluctuated over the migration season. Flight activity of birds was greatest between 22 to 25 September. Bats plus unclassified individuals peaked in activity 28 to 31 July and 22 to 25 September. The nightly pattern of radar-determined bird and bat flight activity was consistent with other sites; a peak one hour after sunset, decreasing gradually to sunrise. However, the acoustic-determined bat activity peaked almost five hours after sunset, which was not the pattern observed at other proposed or permitted wind sites in Canada.

Of the eight species of bats potentially present in the study area, five were recorded, including: the Hoary bat, the Big Brown or Silver-haired bat, which are not distinguishable by voice, the Red bat, the Northern long-eared and the Little brown bat. No species classified as “at risk” were found. Bat diversity was low compared to other sites in southern Ontario; a Simpson index of 0.56 at Greenwich Lake was established. The most common species on all plots is the little brown bat and then the red bat.

There was no evidence of hibernacula at the Greenwich Wind Farm site. There were no swarming events observed in August or September as would be expected if bats were making nocturnal visits to the site they intended to use for hibernation.

Comparison of the survey results from other locations with similar land use and topography that were sampled using the same radar-acoustic technology, and within the same season and year, suggests that the Greenwich Wind Farm site has a low concentration of night bat migrants.

The clear cut forest at bat survey site E4 (see Figure 3 in Appendix E) was associated with high activity (birds and bats) across the opening in the forest. The proportion of birds and bats at risk did not increase at the forest edge nor was there any attraction to the forest edge. Most flights observed were beyond (meaning either above or below) blade height. Bats were observed to use linear clearings (roads) in particular. This suggests that roads developed for the project will provide transit opportunities for bats.

There were two seasonal periods of maximum activity of night migrants; the third week of July and the third week of September. These peaks in activity at Greenwich Lake are comparable to another site in northern Ontario already developed for wind. However, the activity between 15 August and 23 September is much lower at Greenwich Lake than the already developed site.

The time of night of highest flight activity for all migrants is one hour after sunset. Bat calling did not peak until almost five hours after sunset. This is likely due to the different range of detection for radar versus acoustics.

Determination Level of Concern Category

The project area has been assigned a Sensitivity Rating of 2 (Medium) in relation to bats, based on criteria provided by the MNR (MNR 2007). The major concern for the project area is historical evidence of bat hibernacula and large concentrations of roosting bats located at Cavern Lake Provincial Nature Reserve. The closest turbine Cavern Lake Provincial Nature Reserve is more than 7 km away.

6.7.2 Potential Effects

Concerns for bat collision mortality at wind farms have increased recently due to some recent accounts of high bat mortality events (Kerns and Kerlinger 2004, Kerns *et al* 2005, Nicholson *et al* 2005). According to Johnson’s 2005 report summarizing bat mortality data from 4 areas in the United States, 80% of bat mortalities at wind farms were migratory tree bats (45.5% hoary bats, 26.3% Red Bats and 11.4% Silver-haired bats). Locating wind farms close to landscape features important to bats, particularly forested ridges are believed to be a major factor in increasing risk of bat deaths. Johnson *et al* (2003, 2004) found that the number of bat deaths decreases as the distance of a turbine from a forest increases and that the number of bat passes increases as the proportion of turbines within 100m of woodlots increases.

Post construction monitoring reports conducted in 2006 at the Erie shores wind farm in southern Ontario, found a total of 74 bat carcasses from 6 species, including *Myotis* sp. (11 individuals), Silver-haired Bat (13 individuals), Big Brown Bat (26 individuals), Eastern Red Bat (13 individuals) and Hoary Bat (11

individuals). Surveys in 2007 found 89 bat carcasses from 7 species, including *Myotis* sp. (1 individual), Little Brown Bat (5 individuals), N. Long-eared Bat (6 individuals), Silver-haired Bat (11 individuals), Big Brown Bat (34 individuals), Eastern Red Bat (24) and Hoary Bat (8 individuals)(James 2008).

The study results for nocturnal migrant birds and bats suggest that the risk at Greenwich Lake is low. An average of 78% of the total flights of bats and birds through the proposed development area were outside the sweep area of the blades, leaving an average of 22% of airborne animals (24% for bats) potentially exposed to a collision. This exposure is expected to be further reduced by an increase in flight height and increased avoidance behaviour after the installation of turbines. Wind direction apposing the southward direction of migration tended to increase the proportion of bats within the blade sweep.

The site of highest activity for all migrants within the study area was site E2. In the study area in general, the habitat of highest activity was forest clearings as determined by both radar and acoustics.

Weather is another factor that may affect bat mortality (Arnett et al 2005, 2006). It was noted by Arnett et al (2005) that the majority of bat mortality occurs on low wind nights. It has also been hypothesized that reduced visibility could increase the collision risk to night migrants (EC 2005). To test for this, meteorological data (i.e., wind speed, wind direction, temperature and barometric pressure) from an on-site meteorological tower were correlated with heights and activity patterns of night migrants (birds and bats). Based on a comparison of weather data downloaded from an on-site meteorological station and radar data collected during this study, wind direction had more of an effect on flight behaviour during night migration than did wind speed. Winds in the direction of the fall migration (from the north to northeast) were associated with a higher flight activity of birds than were winds in a direction that apposed the direction of migration (i.e., winds from the southeast, southwest and from the west). The proportion of bats at risk (i.e., in the area of the blades) was 10% to 20% higher in winds from the east-southeast (Fig. 18; proportion at risk).

6.7.3 Mitigation Measures

It is recommended that a 100 m buffer be placed around water bodies which are expected to be an attractant to bats in the project area.

In addition to the 1 year of pre-construction bat monitoring that was conducted, the MNR bat guideline document indicates that at least two years of post-construction monitoring will be required from May through September. RES Canada will enter into discussions with the MNR regarding the need for post-construction mortality monitoring for bats for this project.

6.7.4 Significance of Net Effects (Federal authority)

The study results suggest that the risk to night bats is low and the site of highest combined activity and proportion of flights in the blade area is the control site, outside the area where wind turbines will be erected. Significant impacts to bats are not expected.

6.8 Wildlife and Wildlife Habitat

This section refers to item 4.2, 4.4, 4.7 and 5.6 of the MOE's environmental screening checklist: will the project:

- *Cause negative effects on protected natural areas such as ANSIs, ESAs or other significant natural areas?*

- *Have negative effects on wildlife habitat, populations, corridors or movement?*
- *Have negative effects on locally important or valued ecosystems or vegetation?*
- *Have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas?*

Details regarding natural heritage conditions are contained in **Appendix C**.

6.8.1 Existing Environment

Methods

Several sources, including: Natural Heritage Information Centre database; Atlas of Mammals of Ontario (Dobbyn 1994); Ontario Herpetofauna Atlas (Oldham and Weller 2000); Breeding Bird Atlas (<http://www.birdsontario.org/atlas/atlasmain.html>); Important Bird Areas (<http://www.ibacanada.ca>); federal Species at Risk Act (SARA) Public Registry (http://www.sararegistry.gc.ca/default_e.cfm); and provincial Species at Risk (SAR) (<http://www.mnr.gov.on.ca/MNR/speciesatrisk/status.html>) formed the basis of the background review. The Ontario Ministry of Natural Resources Ontario Digital Geospatial Information was used to obtain aerial photos (1995-1999) and mapping of natural features in or immediately adjacent to the study area.

Initially aerial photographs (1995-1999) were used to assess overall habitat characteristics in the study for the purpose of informing preliminary fieldwork planning. Forest Resource Inventory (FRI) digital mapping for the study area forests was collected from local forest companies including Bowater Inc and Greenmantle Forest Inc. Shapefiles and attribute tables provided followed the Northwest Ontario Forest Ecosystem Classification System (Sims et. Al 1997) and were examined for forest habitat types which could be condensed into similar habitats, which better represented major habitat types within the study area. For example, NW-V1 through to NW-V4, were combined into a single Hardwood Mixed major habitat type. This process was completed for all Northwest Forest Ecosystem Classification units as well as other non forested units, resulting in 7 major habitat type groups including Cutover, Hardwood Mixed, Mesic Conifer, Upland Hardwood, Wetland (Peatland, Open Muskeg), Bare Rock and Thicket.

Consultation with MNR Thunder Bay District Office staff, including Liona Tarini (Management Biologist), Jim Cameron (District Planner) Colin Hovi (Land Management Intern) and Jeff Black (Management Biologist) as well as the Natural Heritage Information Centre database was completed as part of the background review. Information provided included an MNR values map for the area, as well as information on the type and general location of natural features (e.g. Provincial Parks, ANSI's, etc.), rare species and other notable natural environment data. The Ontario Ministry of Natural Resources Ontario Digital Geospatial Information was used to obtain mapping of natural features in or immediately adjacent to the study area.

Further consultation took place with MNR staff Ricardo Velasquez (Forester) and Ben Bartlett (Forester) as well as Al Harris (Consulting Biologist), Brian Ratcliff (Consulting Biologist), Robert Foster (Consulting Biologist), Dr. Rhonda Millikin (EchoTracks Inc.) during the month of August 2008. This consultation was focused on setting appropriate buffers for a variety of natural features and species at risk in the study area.

Summary of Results

Provincial Parks

Three Provincial Parks and/or wilderness areas were documented within the vicinity of the study area including:

- Ouimet Canyon Provincial Nature Reserve – Provincial Park;
- Cavern Lake Provincial Nature Reserve – Provincial Park; and
- Bat Cave – Wilderness Area.

These features are discussed in greater detail in **Appendix C** of the ESR.

Major Habitat Types

Forest Resource Inventory (FRI) digital mapping, which classified forest units by the Northwest Ontario Forest Ecosystem Classification System (Sims et. Al 1997) documented seven major forest and other habitat groupings in the study area. These major habitat types include: Cutover, Hardwood Mixed, Mesic Conifer, Upland Hardwood, Wetland (Peatland, Open Muskeg), Bare Rock and Thicket.

Ontario Bird Conservation Region 8

The RES-Greenwich Lake study area is located in the Boreal Softwood Shield, Ontario Bird Conservation Region 8 (ON BCR 8). ON BCR 8 encompasses 429,300 km² (44%) of Ontario's total area (Ontario Partners in Flight, 2006) and generally corresponds to the northern portion of Environment Canada's Boreal Plain Ecozone. The natural environment in ON BCR 8 can be described as predominantly forested, with coniferous forest being the most prevalent land cover; however, deciduous forest, successional forests, wetlands and non-forested uplands are also represented in this region.

Important Bird Areas

There are no Important Bird Areas in or adjacent to the RES-Greenwich Lake study area.

Breeding Birds – Breeding Bird Atlas Data

The study area is a part of Ontario Breeding Bird Atlas (BBA) Region 38 – Thunder Bay. Four squares associated with this region overlap the study area, including: 16CU69, 16CU79, 16CV60 AND 16CV70). There was no data for 16CU69 or 16CV60. A total of seven man-hours were spent surveying during the second BBA for squares that overlap the study area. As a result, BBA data may not be representative of the overall diversity of species found in the area. See **Appendix E** of the ESR for details on BBA data.

Resident Birds – Christmas Bird Count Data

The Christmas Bird Count (CBC) for the Thunder Bay region from 2001 to 2005 had little fluctuation in the number of species observed from year to year. The species total for the Thunder Bay CBC ranged from 44 to 48 species.

Mammals

Mammals potentially occurring in the study area are taken from Dobbyn (1994). See **Appendix D** for details on mammals potentially occurring in the study area and **Appendix E** for information on Bat observations in the study area.

Herpetozoa

Herptile species potentially occurring in the study area are taken from Oldham and Weller (2000) and summarized in **Appendix C**.

Significant Wildlife Habitat

Portions of the study area function as moose winter and calving habitat. It is understood there are moose aquatic feeding areas throughout the study area. The entire study area is in a relatively natural state (e.g. forest or regenerating). In a broad perspective, the entire area functions in some capacity as a corridor.

There is historical evidence of bat hibernacula located at Cavern Lake Provincial Nature Reserve, which is approximately 5 km north of the study area. During bat work completed for this project there was no evidence of elevated activity in the study area as a result of the Cavern Lake Provincial Natural Reserve area bat caves. This is discussed in greater detail in the Bat Monitoring Report and subsequent follow-up memo produced by EchoTrack Inc and contained in Appendix E.

Caribou

According to MNR's report, *Recovery Strategy for the Woodland Caribou (Rangifer tarandus caribou) (Forest-Dwelling, Boreal Population) in Ontario* (2008), woodland caribou have disappeared from much of their historical range. In Ontario, it has been estimated that the range of forest-dwelling woodland caribou has decreased by 40% to 50% since the mid-1800s. The decline in caribou range and populations has been attributed to several inter-related factors, including human settlement and land clearing, forest harvesting, landscape fragmentation, past over-hunting, disease and predation. As such the Province has commenced the Woodland Caribou Recovery Strategy.

Through consultation with the MNR it has been confirmed that the Greenwich Wind Farm is not located in caribou habitat and is therefore not an area of concern for this environmental screening.

6.8.2 Potential Effects

6.8.2.1 Designated Natural Heritage Features

Several natural heritage features have been identified in the study area (see **Figure 6.2**). The importance of these areas for maintaining wildlife habitat and biodiversity in the study area was identified during the initial stages of the project. Turbines have been placed greater than 7km from the Cavern Lake Provincial Nature Reserve, which was previously documented for its large concentrations of roosting bats. Turbines are over 1km away from Ouimet Canyon Provincial Nature Reserve. Both Ouimet Canyon and Cavern Lake Provincial Nature Reserve – Provincial Park are known for their rare vegetation communities and subarctic and boreal biota of provincial and regional significance.

No impacts to designated natural features are anticipated.

6.8.2.2 Seasonal Concentration Areas

The Ministry of Natural Resources Values Map provided at the onset of this project did not document any seasonal concentration areas in or immediately adjacent to the study area. Fieldwork conducted in the study area did not identify bat hibernacula in the study area. See the Bat Report in **Appendix F** of the ESR for more details. Seasonal concentrations of birds were not observed by Northern Bioscience during their fieldwork. See the Bird Report in **Appendix D** of the ESR for more details.

No potential effect to seasonal concentration areas has been identified

6.8.2.3 Specialized Habitats

Specialized habitats documented in the study area include moose aquatic feeding areas, moose calving areas and cliffs. Cliff locations and potential nesting significance for peregrine falcons are discussed in the Breeding Bird Report found in **Appendix D**.

There may be a limited effect on the use of moose aquatic feeding areas and moose calving areas during the construction of the wind farm. Construction equipment and noise may temporarily displace moose from habitat in the closest proximity to turbines. Mitigation measures being implemented should reduce these impacts to a minimum. Once construction is complete there is not anticipated to be an effect.

6.8.2.4 Animal Movement Corridors

Given the fairly undeveloped nature of the study area animal corridors are anticipated to be diffused throughout the study area.

The development of wind turbines in this area is not expected to impact species to any greater degree than current forestry operations.

6.8.2.5 Project Construction

Construction activities for each turbine are expected to take place in forests (apart from roadside transmission line work) and will involve only a very small part of any habitat (approximately 1-2 ha per turbine). In some instances, disturbance may occur at watercourse/drain crossings as a result of access roads and result in some localized disturbance. Watercourse crossing have been identified in the Aquatic Section of the ESR document. Potential effects that could occur during construction may include:

- Removal of 2 hectares of forest habitat per turbine; and
- Potential temporary displacement of breeding birds, gray fox and caribou as well as other wildlife during construction in the immediate vicinity of a turbine or watercourse crossing.

The *Migratory Birds Conventions Act* prohibits the destruction of birds, their nest or young. Recommendations for conformance with the *Migratory Bird Conventions Act* is discussed in Section 6.6.

6.8.3 Mitigation Measures

The potential for effects on wildlife and wildlife habitat has largely been addressed through turbine placement. Mitigation measures to be implemented were discussed with MNR staff including Jeff Black (Management Biologist), Jim Cameron (District Planner), Ricardo Velasquez (Forester) and Ben Bartlett

(Forester). Setbacks were generally adopted from the Forest Management Guide for Conserving Biodiversity at the Stand and Site Scales - Draft (OMNR November 2008). Prior to the release of the Stand and Site Guide more restrictive setbacks were in place for Moose Aquatic Feeding Areas and Moose Calving Areas. These more restrictive setbacks come from the Operational Prescriptions for Areas of Concern for the Lakehead Forest Management Plan – 14 as directed by previous MNR technical documents also replaced by the Stand and Site Guide. These more restrictive setbacks have been retained in the guidance below. In the case of bats, no setbacks are provided for bat foraging habitats. Therefore, recommended setbacks identified below were developed based on site specific studies for bats. The Potential Peregrine Falcon Nest setback has been applied to Good Morning Lake site only.

Mitigation measures include the following:

- **90m Lake/Stream/Pond Fisheries Setback** – A setback will be established along the shoreline of the stream or lake and will be measured in the field from the edge of vegetation communities capable of providing an effective barrier to the movement of sediment. This will normally be those communities with $\geq 25\%$ canopy cover of trees, tall ($\geq 1\text{m}$ high) woody shrubs such as alder or willow, or low ($\leq 1\text{m}$ high) woody evergreen shrubs such as Labrador tea or leatherleaf. Rather than establish a series of more restrictive setbacks based on increasing slope as indicated in the Stand and Site Guide, the most restrictive buffer will be used in all cases.
- **100 m Waterbody Setback for Bats** – The edges of waterbodies (lakes) are a potential attractant to bats.
- **120m Wetland Setback** – This setback is to be established from permanent and seasonal wetland types as identified using FRI mapping. Because of their small size and potentially temporary nature wetlands may not be fully identified based on FRI mapping. Additional wetlands should be marked in the field as they occur and less restrictive setbacks can be applied as detailed in the Stand and Site Guide.
- **120m Moose Calving Area Setback** - A 120 metre setback will be established around the perimeter of identified moose calving areas. Moose in the study area usually calve during a 2 week period from mid to late May (Al Harris, Pers. Comm.). Construction activities adjacent to moose calving setback areas should be limited during this time period.
- **120m Moose Aquatic Feeding Area Setback** - A 120 metre setback will be established around the perimeter of identified moose aquatic feeding areas. The area of concern will be measured from where the average height of continuous woody vegetation is at least 2 metres. Construction activities adjacent to moose aquatic feeding areas should be limited in these areas during use, which is generally during late summer (July-August) (Al Harris, Pers. Comm.)
- **200m Stick Nests Setback**– existing stick nest regardless of size will be buffered by a 200m setback. Breeding season will be defined as March 1 to July 31 for raptors. The non-breeding season is considered August 1 to February 28. If new nests are found that apply to a more restrictive group an OMNR biologist should be notified.
- **1km Goodmorning Lake Potential Peregrine Falcon Nest Site Setback** – this potential nest site will be protected with the above setback.

In addition to the above recommendation and mitigation measures implemented during the siting of turbines, additional recommendation are proposed in the ESR to ensure compliance with the Migratory Birds Convention Act, 1994.

Furthermore, a variety of setbacks have been identified in the draft regulations of the new *Green Energy Act*. Consideration was given to these setbacks and it has been confirmed that no turbines fall within these new constraints.

For the proposed undertaking, the constraints identified preclude the placement of wind turbines and where possible, the development of any associated infrastructure. If necessary, associated infrastructure or equipment encroachment into these constraint areas will follow the Standards and Guidelines identified in the Stand and Site Guide.

Recommendation

- In some cases, despite due diligence, some environmental features that are identified in the Stand and Site Guide (e.g. hawk nests, vernal pools, etc.) may not be identified until some operations have been conducted in the general area. In these cases, when any new value is identified during construction mitigation measures should be implemented that comply with the direction to the extent practical and feasible identified in the Stand and Site Guide. It is recommended that prior to construction, the construction contractor and its employees be trained to identify these features and understand the relevant content of the Stand and Site Guide and its contents so that appropriate buffers, timing restrictions as well as other prescriptive mitigations measures set out in the document can be implemented, as necessary.

6.8.4 Significance of Net Effects

The risk to bird species are discussed in greater detail in Section 6.6, The risk to wildlife and wildlife habitat in the area is low, provided mitigation measures are implemented. No adverse significant effects are expected.

6.9 Threatened, Rare or Endangered Species

This section refers to items 4.1 of the MOE's screening checklist: will the project:

- *Cause negative effects on rare, threatened or endangered species of flora or fauna or their habitat?*

6.9.1 Existing Environment

Rare Vegetation Communities

The Natural Heritage Information Centre (NHIC) database identifies a number of rare plant species within or adjacent to the study area. None of these species are listed under the Species at Risk Act (SARA) or Endangered Species Act (ESA) however they range from vulnerable (S3) to imperiled (S2) to critically imperiled (S1) in the province of Ontario. The majority of these species appear to be associated with both the Cavern Lake Provincial Nature Reserve and the Ouimet Canyon Provincial Nature Reserve. The first rare vegetation community is the Basic Open Glaciere Talus Type community located once in the Cavern

Lake Provincial Nature Reserve and once in the Ouimet Canyon Provincial Nature Reserve. This community is considered critically imperiled (S1) in the province of Ontario by the OMNR. The second is the Boreal Acidic Sandstone Open Cliff Type community located within the Cavern Lake Provincial Nature Reserve. This community is considered imperiled (S2) in the province of Ontario by the OMNR.

The potential presence of these and other rare species will be examined in areas adjacent to turbine and access road footprints, once the turbine layout has been determined. A list of these species is summarized below.

- Arnica (*Arnica lonchophylla* ssp. *lonchophylla*) (S1)
- Laurentian Bladder Fern (*Cystopteris laurentiana*) (S2S3)
- Appalachian Fir-clubmoss (*Huperzia appalachiana*) (S3?)
- Clinton's Leafless-bulrush (*Tichophorum clintonii*) (S2)
- Moss (*Grimmia teretinervis*) (S2)
- Liverwort (*Anastrophyllum saxicola*) (S1S2)
- Moss (*Myurella tenerrima*) (S1)
- Braun's Holly Fern (*Polystichum braunii*) (S3)
- Ross' Sedge (*Carex rossii*) (S2)
- Smooth Woodsia (*Woodsia glabella*) (S3)
- Purple Reed Grass (*Calamagrostis purpurascens*) (S1)
- Large-leaved Sandwort (*Moehringia macrophylla*) (S2)
- Moss (*Aulacomnium acuminatum*) (S2)
- Moss (*Aulacomnium turgidum*) (S2)
- Moss (*Orthothecium chryseum*) (S1)
- Moss (*Hyprum fertile*) (S2)
- Moss (*Mnium thomsonii*) (S2)
- Fir-clubmoss (*Huperzia selago*) (S3S4)
- Low Sandwort (*Arenaria humifusa*) (S2S3)
- Emory's Sedge (*Carex emoryi*) (S3)
- Northern Oak Fern (*Gymnocarpium jessoense*) (S3)
- Northern Marsh Violet (*Viola epipsila*) (S3)
- Moss (*Tetraplodon mnioides*) (S2)
- Liverwort (*Arnellia fennica*) (S1S3)
- Lichen (*Stereocaulon subcoralloides*) (SU)
- Lichen (*Pannaria conoplea*) (SU)
- Cinquefoil (*Potentilla gracilis*) (S2)

Rare Wildlife

The NHIC database also identifies an historic record of northern long-eared bat, which is considered vulnerable (S3) in the province of Ontario. Fieldwork conducted by EchoTrack Inc. confirmed this species presence in the study area.

Mammal species of conservation concern historically present in the vicinity of the study area include gray fox and caribou. Gray fox is listed as threatened under Schedule 1 of the federal *Species at Risk Act* (SARA) and threatened under the provincial *Endangered Species Act* (ESA). However, the gray fox is not considered to have a breeding population in the study area and any individuals that may occur have likely wandered over from Minnesota (Al Harris, Pers. Comm.). Caribou is listed as threatened under Schedule 1 of the federal *Species at Risk Act* (SARA) and threatened under the provincial *Endangered Species Act* (ESA). Caribou have not occurred in the study area for 50-100 years and the range of this species is contracting northward. Currently, caribou habitat is not managed for in the study area by the MNR (Al Harris, Pers. Comm.).

The Ontario Herpetofaunal Atlas does not identify any reptiles, or amphibians of conservation concern both federally or provincially in the vicinity of the study area.

Seasonal bird surveys carried out by Northern Bioscience for the study area documented seven Species at Risk as potentially breeding in the study area: peregrine falcon, bald eagle, short-eared owl, common nighthawk, olive-sided flycatcher, Canada warbler, rusty blackbird. Three Species at Risk were observed during fall migration: peregrine falcon, bald eagle and rusty blackbird, bald eagles in substantial numbers.

Bald Eagle

The Bald Eagle is Not at Risk (NAR) in Canada but is identified as Special Concern in northern Ontario under the provincial Endangered Species Act. No bald eagle nests were observed during breeding bird surveys, but adult and immature birds were observed flying overhead on numerous occasions. Suitable nesting habitat occurs on many of the lakes in the study area. During fall migration monitoring a total of 111 bald eagles (Special Concern in northern Ontario) were recorded over half of which (61) were at Site 1 as referenced and mapped in the Fall and Spring Migration Bird reports contained in **Appendix D**.

Short-eared Owl

The short-eared owl is ranked as special concern in Canada and in Ontario. A short-eared owl was observed hunting over fields at the east end of the study area in May 2008. Although no further evidence of nesting was observed, the field appears to be suitable nesting habitat.

Common Nighthawk

Common nighthawk is currently considered threatened by COSEWIC though it is not yet regulated. A single adult was observed displaying over a cutover on July 5. Several others were observed on roads just outside the study area. Suitable nesting habitat occurs in cutovers and on rocky ridges in the study area.

Peregrine Falcon

The peregrine falcon is considered Threatened in Canada and listed as Endangered in Ontario (anatum race); the peregrines observed here could not be identified to race). Although no peregrine falcons were

observed during breeding bird surveys, they are known to nest on cliffs 7 km east of the study area (Brian Ratcliff, pers. comm.). See **Appendix D** for more detailed information regarding this species and potential nesting areas. Five peregrine falcons were observed during the fall migration monitoring period, all of which were on the Lake Superior shoreline at Site 1 (see Fall and Spring Migration Bird reports contained in **Appendix D**).

Rusty Blackbirds

Rusty blackbirds have recently been evaluated by COSEWIC as Special Concern and recommended to be regulated under the Species at Risk Act. Currently this species is not protected under the Species at Risk Act and is not ranked provincially. During breeding bird surveys a single male was observed May 26 – June 2 at a roadside pond. It was not seen after this date despite repeated searches. During fall migration small flocks of migrating rusty blackbirds were observed at Site 1 and Site 3 (see Fall and Spring Migration Bird reports contained in **Appendix D**).

Olive-sided Flycatcher

Olive-sided flycatcher's have recently been evaluated by COSEWIC as Threatened and recommended to be regulated under the Species at Risk Act. Currently this species is not protected under the Species at Risk Act or ranked provincially. Olive-sided flycatchers were heard at 10 locations during breeding bird surveys typically in peatlands along the shores of small lakes.

Canada Warbler

The Canada warbler is currently considered threatened by COSWEIC though it is not yet regulated. Canada warbler is a fairly common nesting species in the study area (recorded at 35 point count locations during breeding bird surveys) in a range of habitat types.

6.9.2 Potential Effects

No effect is anticipated for floral species identified in Ouimet Canyon Provincial Nature Reserve or Cavern Lake Provincial Nature Reserve – Provincial Park as they are confined to the deep canyons for life processes.

No effect is anticipated on gray fox and caribou as these species are not expected to occur in the study area.

Detailed discussion on the potential effect, mitigation and significance of net effect of the project on bird species at risk is discussed in **Appendix D**.

6.9.3 Mitigation Measures

Except peregrine falcons, no specific mitigation measures are required for species at risk.

6.9.4 Significance of Net Effects

Effects to peregrine falcons are discussed in detail in Section 6.6. The risk to wildlife and wildlife habitat in the area is low, provided mitigation measures are implemented. No adverse significant effects are anticipated.

Social Environment

6.10 Population, Land Use and Economics

This section refers to items 6.2, 6.4, 6.5 and 6.6 of the MOE's screening checklist: will the project:

- *Be consistent with municipal land use policies, plans and zoning by-laws?*
- *Have negative effects on local businesses, institutions or public facilities?*
- *Have negative effects related to increases in demand on community services or infrastructure?*
- *Have negative effects on the economic base or a municipality of community?*
- *Have negative effects on local employment and labour supply?*

6.10.1 Existing Environment

The location of the proposed Greenwich Wind Farm is approximately 75 kilometres northeast of Thunder Bay near the community of Dorion. The site is entirely on Crown land, except for 2 lots of land required for the transmission infrastructure, for which RES holds options to lease. MNR is responsible for planning and development on Crown land.

Secondary source data used to describe the socio-economic environment was collected primarily from the following sources:

- Township of Dorion;
- Township of Shuniah;
- Thunder Bay District;
- Ministry of Natural Resources.

6.10.1.1 Jurisdictional Boundaries

Township of Dorion

The Township of Dorion is a small rural community located at the top of Lake Superior on the shore of Black Bay and is approximately 70 kilometres east of the City of Thunder Bay (Township of Dorion, 2008). Dorion primarily consists of northern boreal forest that plays an important role in the local economy, for mining, forest harvesting and tourism. Ouimet Canyon Provincial Nature Reserves is located in the township, attracting tourists and environmental enthusiasts (please see Section 6.16.1 for further information on the reserve). Since 2001, Dorion has experienced difficult times economically with the downturn of the Northern Ontario forestry industry. Many small logging and milling operations closed leading to out migration patterns and decreasing student enrollment rates.

The study area boundary of the proposed wind farm abuts the southern edge of Ouimet Canyon Provincial Nature Reserve which is located in Dorion and continues west of the park beyond the western boundary of the municipality, continuing onto Crown land.

Township of Shuniah

The southern portion of the Greenwich Wind Farm study area includes land in the Township of Shuniah. Shuniah is roughly 40 kilometres east of Thunder Bay and south of Dorion. The Township of Shuniah

covers approximately 569 square kilometres bordering Lake Superior (Stats Canada 2008). The area is a popular cottage destination. The community has very little commercial development being in such close proximity to the city of Thunder Bay (Township of Shuniah 2008).

Crown Land

The western half of the proposed Greenwich Wind Farm is Crown land. This land is subject to specific provincial policy for rural areas under the MNR. The role of MNR is to protect and manage Ontario's natural resources for wise use throughout the province (MNR 2008).

Thunder Bay District

The project area is located in the Thunder Bay District. Established in 1871, the Thunder Bay District is a district and census division in Northwestern Ontario. The Thunder Bay District is made up of the City of Thunder Bay, Municipality of Greenstone, Municipality of Neebing, Municipality of Oliver Paipoonge, Town of Marathon, Township of Conmee, Township of Dorion, Township of Gillies, Township of Manitouwadge, Township of Nipigon, Township of O'Connor, Township of Red Rock, Township of Schreiber, Township of Shuniah, and the Township of Terrace Bay. The Thunder Bay District covers approximately 103,706 square kilometres and acts as the access region to northwestern Ontario, providing important shipping links for Ontario and the Great Lakes (Stats Canada 2008). The region contains thick forest and the logging industry is active throughout the District.

6.10.1.2 Land Use

The Greenwich Wind Farm consists of a land parcel of approximately 17,047 ha located immediately north of Highway 11/17, between Greenwich Lake and Ouimet Canyon Provincial Nature Reserve. More than half of the property lies on unorganized Crown land under the provision of MNR. Most of the remaining portion of the proposed site lies in the Township of Dorion, with a small portion also in the Township of Shuniah. The project properties located in Dorion include: the eastern half of Lots 1-4, Concession 8; Lots 1-4, Concession 9; Lots 1-8 and half of Lot 9, Concession 10; Lots 1-8 and half of Lot 9, Concession 11; Lots 1-8 and half of Lot 9, Concession 12; and Lots 1-14, Concession 13. Project properties within the Township of Shuniah include: Section 1, Concessions 4-8 and half of Concession 3; and the northern half of Section 2, Concessions 4-8; and the north-western quarter of Section 2, Concession 3. The western boundary of Dorion ends at Concession 13 and the western boundary of Shuniah ends at Concession 8. Beyond these boundaries, the project area continues west onto unorganized Crown land to Greenwich Lake, including the land around the southern half of the lake. Please refer to **Figure 6.3**.

The proposed property is comprised of primarily rural and wilderness land including a number of small fresh water lakes and a series of rivers and streams. Other than Ouimet Canyon Nature Reserve (please see section 6.16.1 for further information on the reserve) and the bordering municipalities to the east and south, the surrounding land is unorganized wilderness. There are no built land uses in the project area.

6.10.1.3 Planning Policies

With regards to land uses in the Study Area, the Official Plans of the Township of Dorion and the Township of Shuniah, and the applicable Comprehensive Zoning By-laws, were reviewed, as were the MNR policies for the area. Additional information was also obtained through interviews with pertinent staff of the two townships, the MNR and other applicable government agencies.

Provincial Policy Statement (2005)

The Provincial Policy Statement (PPS) (2005) consists of provincial level policies of the various provincial Ministries. The PPS permits wind farms on rural designated land and rural designations in unorganized townships with the provision that provincial Ministries approve the development based on compliance to applicable Ministry policies. The Greenwich Wind Farm is in conformity with the PPS and will have particular regard for ensuring the minimized impact of development on natural vegetation.

Ministry of Natural Resources, Policy Report G2625: Rural Areas & G2622: Spruce Current

The Ministry of Natural Resources oversees a majority of the study area which is Crown land. This land is subject to specific MNR Policies: Policy Report G2625: *Rural Areas* and G2622: *Spruce Current*. This policy report addresses land use in the Districts of Thunder Bay and Nipigon, an area of 327,796 hectares (MNR 2006). The Crown land designated “Rural Areas”, permits a variety of land uses. Included in the land use permissions are commercial activities. Commercial Power Generation Development is one of the commercial activities permitted. The Greenwich Wind Farm conforms to this. Guidelines for this activity do not currently exist in MNR policy. Through conversations with MNR staff it is understood that the proposed wind farm would be a permitted use in the project lands. MNR approval for the development will be required.

With respect to MNR policy conformity, consideration of impacts to potential long term natural resource use in the study area must be addressed. The intent of MNR is to avoid short term uses that would hinder long term resource use that would contribute to the local economy and help meet local resource needs in the future. The proposed Wind Farm is a long-term project that presents long term local economic benefits and would not hinder the resource economy of Thunder Bay.

The MNR Policy report does state the need to protect moose wintering areas. Although the proposed wind farm site does not include any moose wintering areas it is important to address other moose systems on the site. The study area does include one moose fawning site and various moose aquatic feeding areas. The turbines have been planned around these areas and would not be located directly on these lands.

Conformity to MNR policy can be met based on the permitted uses and resource and habitat considerations required in *Policy Report G2625: Rural Areas* and *G2622: Spruce Current*.

Township of Dorion Official Plan

The Dorion Official Plan designates the land within the study area as “rural”. Policies of relevance to the Greenwich Wind Farm include Sections 4.2.3 and 4.2.4 as presented as follows:

Industrial Development - New industrial development may be permitted in the “Rural” area through the process of rezoning. This type of development will be limited to those uses which require extensive amounts of space, serve the needs of the rural area, or are considered incompatible uses in the more developed areas of the Township. The industrial uses of land in the “Rural” designation shall be for manufacturing, processing, servicing and storing of goods and raw materials.

Utility Corridors - The development of electric power facilities shall occur in an orderly manner to facilitate the efficient and reliable provision of adequate electric power. As such, electric power facilities are permitted in this and all land-use designations without an amendment to the Plan

To permit the development of a wind farm on these lands, the municipality adopted in September 2008, **By-law 635-08** to amend **By-law 310** (the comprehensive zoning by-law to the Official Plan). This by-law permits wind resource uses on the “rural” designated lands west of Ouimet Canyon Provincial nature Reserve, consisting of all land in the proposed study area that falls in the Township of Dorion. This by-law (**635-08**) is in conformity with the existing Official Plan and places the proposed wind farm in conformity with land use designations and the Dorion Official Plan as the plan states: *The development of electric power facilities shall occur in an orderly manner to facilitate the efficient and reliable provision of adequate electric power.*

Setbacks identified in the by-law include:

- a) *Minimum Setback from Property Lines – One (1) times the total length of the rotor blade, plus 10.0 metres, from the base of the tower to the lot line and any public road right-of-way limit, but not less than 30 metres; provided however that, the minimum setback shall be 0 metres for a lot line that abuts a lot under lease with the wind energy system developer.*
- b) *Minimum Setback from Dwellings – 200 metres or the requirement established in the Ministry of Environment Certificate of Approval for noise, whichever is greater.*
- c) *Wind turbine setbacks from natural heritage features to be identified through any applicable provincially or federally legislated environmental assessment.*

Township of Shuniah Official Plan

Although a small portion of the project area is located within Shuniah Township, there are no turbines or other project components within the Township’s boundaries.

Thunder Bay

The upper tier in this area is the District of Thunder Bay, which does not have a District Official Plan.

Surrounding Uses

The proposed site for the Greenwich Wind Farm is primarily surrounded by unorganized wilderness, much of which is Crown land. Other surrounding uses in the Township of Dorion and the Township of Shuniah are consistent with the Study Areas and are also rural in nature. In addition, Ouimet Canyon Provincial Nature Reserve and Cavern Lake Provincial Nature Reserve have been carefully considered to ensure the proposal conforms to the protection and preservation of this area (Section 6.16.1). Finally, the Study Area has been reviewed to mitigate short and long-term impacts of the proposed Wind Farm on the surrounding land uses and will not impede future opportunities for these areas.

6.10.1.4 Population

The population in the District of Thunder Bay has been declining in recent years. The population had decreased by 4.3% from 1996 to 2001 and by 2006, it had reduced by another 1.2%. The population of Dorion in 2001 was 442 by 2006 the population had declined 14.3% to 379. In contrast, the population of Shuniah increased 5.8% from 6,223 to 6,585 between the years of 2001 and 2006. 26% of Dorion and 27% of Shuniah’s populations are under the age of 25 compared to 31% in the District of Thunder Bay. Approximately 48% of Dorion and 45% of Shuniah’s populations are between the ages of 35 and 59,

compared to 38% in the District of Thunder Bay. Approximately 8% of Dorion and 24% of Shuniah's populations are over the age of 65, lower than the District of Thunder Bay of 15% (Stats Canada 2008).

6.10.1.5 Services

Municipal Works

The Township of Dorion obtains its services, such as regional road maintenance, water and wastewater infrastructure, primarily from the City of Thunder Bay and Nipigon. Dorion's Public Works Department is in charge of roads, cemetery and landfill operations and maintenance.

In contrast, Shuniah is responsible for all its municipal services, as well as dealing with all matters relating to public works, landfill sites, subdivision and site plan development, planning and building, lot grading and filling and local side walks.

Transportation

Thunder Bay is located on a unique section of the Trans-Canada Highway in that, unlike western Canada and much of eastern Canada, there is only one branch of the highway serving the area. As a result, a large volume of Trans-Canadian truck traffic travels through Thunder Bay.

The Thunder Bay Expressway splits into two routes, the northern route which is designated as Highway 11 and the southern branch which is designated as Highway 17. Trans-Canada Highway 11/17 originates 1 km east of Nipigon and terminates approximately 45 km west of Thunder Bay. The Thunder Bay Expressway forms the southernmost portion of the Terry Fox Courage Highway which continues onto Nipigon, a distance of 83 kilometres.

The District has several public transportation options including Thunder Bay (bus service), Greyhound Canada and several other local motor coach services such as Laidlaw Transit and Trottier Bus Lines. Services, however, are primarily limited to the Thunder Bay City area (Township of Dorion 2008).

Health and Emergency Services

The Thunder Bay Regional Health Sciences Centre (TBRHSC) is the primary hospital serving the residents of Thunder Bay District. The hospital has more than 219 employees active and/or associate medical staff which include physicians, dentists, midwives and nurse practitioners. The Health Sciences Centre features integrated Cancer Care with a High Dose Brachytherapy Operating Room, a large inpatient oncology unit, and a developed supportive regional program. TBRHSC is also a regional trauma centre.

Nipigon District Memorial Hospital serves a number of nearby communities including the Township of Dorion. Over 6,000 people are served by the hospital catchment area. The community's Medical Clinic is also located on the same site as the hospital as well as the ambulance facility. Just recently the Norwest Community Health Centres (NCHC) started a mobile health unit offering health services to rural communities on a monthly basis. Each month a team of Nurse Practitioners travel to Dorion to provide health care for residents. The main purpose of the mobile unit is to get to those patients that may find it difficult to travel to receive health care due to distance, age and other socio-economic circumstances (Township of Dorion 2008).

The Thunder Bay Police operates eight Neighbourhood Police Offices throughout the City. The Township of Shuniah obtains police services from the City of Thunder Bay while Dorion obtains its police services from Nipigon. Shuniah has its own fire department serving the township, whereas, the fire hall in Dorion is completely volunteer-based.

6.10.1.6 Regional Economic Overview

Thunder Bay is the largest city in Northwestern Ontario, serving as a regional commercial centre. The main private sector employers are Bowater Forest Products, Bombardier Transportation, Buchanan Forest Products, and Cascades. The public sector employs a large workforce with the main employers being the City of Thunder Bay, the Government of Ontario, the Thunder Bay Regional Health Sciences Centre, Lakehead University, Lakehead District School Board, Thunder Bay Catholic District School Board, Government of Canada, and Confederation College.

Both the transportation workforce (railways, shipping, freight handling, grain elevators) and the forest products workforce (logging, lumbering, and pulp and paper) have declined over the years. High energy costs, a high Canadian dollar, and a US housing sector in decline are hampering this key component of Thunder Bay's economy. Housing demand, especially on the new construction side, is being negatively impacted by the weakness in this traditionally important sector of the local economy.

Emerging mine exploration industries, as well as development in tourism, agro-forestry and wind energy are significant key factors that will help foster the District's economic development in the future.

Ouimet Canyon Provincial Park is one of the more substantive economic drivers in the vicinity of the Project area bringing in approximately 25,000 visitors annually (personal communication Ontario Parks). Visitors contribute to both the local and regional economy through service related industries. According to Ontario Parks, three indicators of provincial economic impact for 2008 for Ouimet Canyon include: Initial Expenditure (\$684,836.00), Value Added (\$792,977.00), and Employment (11.5 person years).

Industry

The forestry sector is important to the local economy. Earned income from the forest sector equaled \$181.2 million in 2001, 6% of the District's Gross Regional Income. Reliance on employment income from the forest sector is eight times the provincial average (Northwestern Ontario Forest Council 2000).

The primary manufacturing sectors, accounting for 9.5% of the industry, are well established making Thunder Bay home to Canada's largest pulp and paper facility (Bowater) as well as Ontario's largest lumber producer (Buchanan Forest Products). The Thunder Bay district also supports a growing value-added sector that produces structural building components and millwork. Thunder Bay also contains a large cluster of forest management and logging services companies that support forestry operations throughout the region.

Business services account for approximately 16% of total employment followed by health care and social services (14%), retail trade (12%), manufacturing (9%) and educational services (8.8%) (Stats Canada 2008).

Local Economy

Township of Dorion

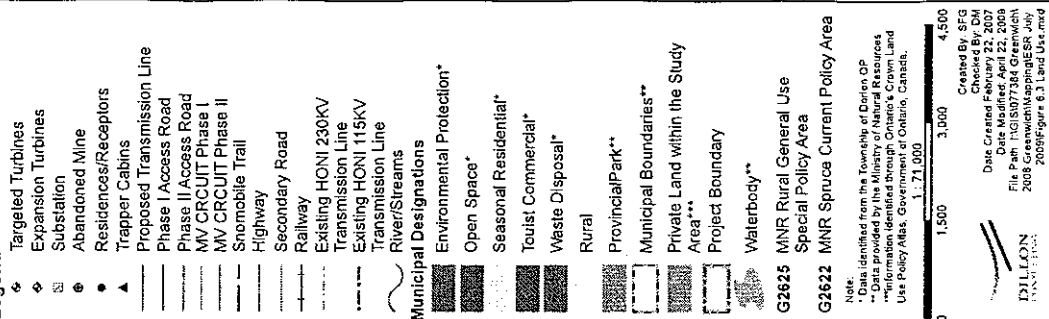
Dorion's economic base consists of employment in mining exploration, private contracting, forest harvesting, municipal government, education, agriculture and tourism-based business. Agriculture and resourced-based industries make up 24% of the total employment, followed by manufacturing (22%) and health care and social services (14%). The Township of Dorion is currently pursuing opportunities in cottage development, regional bio-economic initiatives, agricultural revitalization, tourism marketing and alternative energy development (Township of Dorion 2008).

Township of Shuniah

The Municipality of Shuniah has very little commercial development within its boundaries. Much of its economy is based on cottages and land leases.

Shuniah has a significant cottage population, with the first surveyed population for recreational purposes being laid out in 1920 at Birch Beach. In 1995, the number of households was listed as 1,971 permanent residents. By 2004, the number of households had risen to 2,887. The population (2004) of Shuniah is estimated at 2,348, however, in the summer months due to influx of cottage dwellers, those numbers are estimated to almost double. Unique to Shuniah, are Cottage Association Areas (Association Areas) stretching from just east of North Star Road to Wild Goose Park. In the Association Areas, the lands are owned by the Association in which the cottagers are the shareholders, and in some cases, lease the lands (Township of Shuniah 2008).

Figure 6.3 Land Uses



6.10.2 Potential Effects

The following areas were considered to be relevant for the assessment of socio-economic impacts associated with the proposed Greenwich Wind Farm:

- Within 200 metres of construction activity for construction-related impacts such as noise and dust, and property-related concerns. RES is aware that MOE may consider noise/dust/and property concern related issues that arise outside of this boundary as significant;
- The Township of Dorion and the Township of Shuniah for community-related concerns such as future land use plans, economic growth and community character;
- The Thunder Bay District for regional economic impacts;
- The Ministry of Natural Resources for impacts on natural resources and land use planning for Crown land; and
- Ontario Parks for potential impacts to Park access during construction and potential impacts to views from the Park.

6.10.2.1 Land Use

The following addresses the potential for land use impacts from the Greenwich Wind Farm as organized on the basis of the applicable screening criteria.

- *Be consistent with municipal land use policies, plans and zoning by-laws?*

Based on the documents reviewed above, the proposed development of a wind farm on the Greenwich Lake property conforms with the PPS and to the Official Plan and Zoning By-Laws of the Township of Dorion. Within the unorganized lands, the Greenwich Wind Farm conforms to MNR land use policies G2625: Rural Areas and G2622: Spruce Current.

6.10.2.2 Economics

The following addresses the potential for economic impacts from the Greenwich Wind Farm as organized on the basis of the applicable screening criteria.

- *Have negative effects on local businesses, institutions or public facilities?*

Business activity in the study area is largely resource-based including services to support it.

A significant economic driver in the vicinity of the project area is Ouimet Canyon Provincial Park (please refer to Section 16.6 for more information on the Park). According to Ontario Parks, the Park sustains a tourist industry that brings in approximately 25,000 visitors annually. Ontario Parks notes three indicators of provincial economic impact for 2008 for Ouimet Canyon: Initial Expenditure (\$684,836.00), Value Added (\$792,977.00), and Employment (11.5 person years).

Concerns were raised by Ontario Parks over the potential to see turbines from the Park platform and access road which, in turn, could negatively affect visitors' experience. Please refer to Section 6.21 for information on views and mitigation measures and Appendix H for detailed visual simulations from the points of interest.

There is the potential for traffic delays on the access road that might impact visitors experience during the construction phase. However, construction related activity is confined to a set period of time and is therefore not expected to have long-reaching negative economic impacts. Please refer to Section 6.16 for more information on traffic-related mitigation measures.

With the exception of the Park, no other businesses, institutions or public facilities were identified that would be adversely affected by the project. Rather, the opportunities available to local businesses will help to support the local economy as further noted below.

- *Have negative effects related to increases in demand on community services or infrastructure?*

The project will not result in increase demand on community services or infrastructure. The turbines require no municipal servicing connections. A central office for the wind farm would likely be located in an existing nearby community where servicing is readily available. Municipal roads used during the construction period would be repaired if damaged and returned to existing if not better condition. RES will provide funding to applicable emergency service providers, specifically to the Dorion volunteer fire department, for required training.

- *Have negative effects on the economic base or a municipality of community?*

The effects of the project on the municipality's economic base are generally positive as described below:

Construction Spending

The construction of the first phase (98.9MW) of the 165.6 MW wind farm will require a capital spend of approximately \$300 million on turbine components, civil construction, electrical, crane and many additional specialist contractors. Approximately 20% of the overall capital spend is on "balance of plant" (i.e. everything except the turbine) which are generally not specialist contractors and would include, for example local road, concrete, aggregate, and electrical contractors/suppliers. Opportunities to provide these services and supplies would likely be through regional contractors. In total, up to \$60 million in contracting services would be available to companies in northwestern Ontario. The expansion phase of the project (66.7) would require a proportionate further investment to the region.

A portion of the direct local capital spend will be duplicated by support and contracting services to the wind farm project. Typically this could represent orders to fabrication shops, catering, hoteliers, electrical sub-suppliers, etc.

The construction of the wind farm would generate about 250 jobs at the peak of the construction period. The income generated through these jobs is expected to be about \$6 to 7 million.

Operation Spending

The overall annual spending on wind farm operations and maintenance activities is estimated at \$6 million. The wind farm will be operated and maintained from an operations and maintenance facility to be located in the vicinity of the wind farm. The facility will have stores for spare parts, and scheduled and unscheduled maintenance will be dispatched from this facility. 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 \$400,000.

Further sub-contracts will be awarded to contractors for road maintenance, snow clearance, electrical maintenance, etc. The annual value of these sub-contracts is estimated at \$150,000.

A percentage of direct local operations spending will be duplicated by support and contracting services to the wind farm project. As with construction, this could represent orders to fabrication shops, catering, hoteliers, and electrical sub-suppliers.

Municipal Tax Payments

Within the Greenwich Wind Farm's layout of 72 turbines, 19 turbines in the initial development phase (98.9 MW) and an additional 5 turbines in the fully developed project are in the Municipality of Dorion. This will represent an annual tax payment to the Municipality of approximately \$35,000 per year for the initial phase of the project and a total of \$43,000 per year if the project is fully developed. Another \$37,000 in tax revenue is expected to go to the provincial treasury for turbines on unorganized MNR-administered land for the initial project and \$73,000 per year for the fully developed project.

Further payments to MNR for Crown land leases will be approximately \$500,000 annually for the initial phase of the project and 825,000 for the fully developed project.

Aboriginal Communities and Organizations

Local Aboriginal communities and organizations are expected to benefit economically from this Project through possible capacity funding during the environmental screening process and possibly through certain direct employment opportunities during the construction and operational phases of the Project. During the construction and decommissioning phases, opportunities for civil construction-related contracting, as well as opportunities relating to the supply of machinery and labour, will be explored with local Aboriginal communities, subject to legal constraints and other considerations.

Economic Summary

In addition to the estimated \$300 million to be spent to construct the initial phase of the project, over an assumed 20 year life span of the facility, the initial phase of the project is expected to result in approximately \$11.4 million being generated in taxes and land payments and land payments to the MNR (all 2008 dollars not including inflation). The expansion phase of the project is expected to result in \$500 million of capital spend and approximately 18.8 million, over a 20 year period, generated in taxes and land payments.

- ***Have negative effects on local employment and labour supply?***

During the construction period, workers will be required; much of this employment will be sourced through the overall project contractor, RES Canada. As RES Canada is a vertically integrated company it will be directly managing the construction phase of the project and will have greater control on regional sourcing. It is expected that the labour supply will be drawn from throughout Northwestern Ontario. No negative effects are anticipated on the local labour supply.

6.10.3 Mitigation Measures

With regards to economic effects there is the potential for tourists visiting the Park to be temporarily delayed through construction activities along the roadway leading into the Park thus potentially negatively affecting their park experience. To alleviate this impact, RES will provide appropriate traffic

measures to reduce wait times including signage, pilot vehicles as necessary, and scheduling major project component deliveries to off-peak hours.

Concerns were raised over the potential to see turbines from the Park, which in turn could negatively affect tourist business in the area. The visual simulations conducted for this Project indicate that turbine views will be extremely limited given the distance to turbines, vegetation, and topography. Therefore, it is not anticipated that Project will have a negative impact on visitors experience to the Park. Furthermore, the visual impact of wind turbines is subjective as some view them as a positive or negative influence on the viewscape.

6.10.4 Significance of Net Effects

Given the predominant rural designation of the lands in the Study Area; the wind farm is unlikely to result in adverse effects on planned land use. Due to expected low magnitude of effect on planned land use, the effects are not expected to be significant.

The project is expected to result in substantial positive economic effects during both construction and operation periods through project capital expenditures and employment opportunities that are generated.

6.11 Disposal of Waste Materials

This section refers to item 9.1 of the MOE environmental screening checklist: will the project:

- *Cause negative effects of waste materials requiring disposal?*

6.11.1 Existing Environment

The Ministry of the Environment has an interest for all development projects that are located within 500 meters of an active or closed landfill site, through Section 46 of the *Environmental protection Act* and the MOE Guideline D-4. The MOE's Guideline, D-4, Land Use On or Near Landfills and Dumps (1994) describes acceptable and unacceptable land use controls for lands within 30 meters, 500 meters and beyond 500 meters of a fill area.

The Township of Dorion Landfill, located at 195 Dorion Loop Road, is the closest landfill to the study area. This facility accepts commercial and industrial waste including construction debris. Other potential landfills include the Township of Nipigon Landfill which also accepts commercial and industrial waste including lumber and steel. Another possibility is the City of Thunder Bay Solid Waste Management Facility located at 5405 Mapleward Drive. RES will ensure that the MOE is informed of the selected site and that the site has a Certificate of Authorization that covers the project area.

With respect to hazardous waste, EnviroWest Incorporated (a local waste management company) and Miller Environmental Corporation, both of which service the Thunder Bay area, could potentially be retained to collect and dispose of hazardous waste (such as oils and other lubricants) generated as a result of project development and operations. These companies currently assist the City of Thunder Bay with waste management. However, the contractor(s) retained to construct the project will select an appropriate landfill and collection system for use by the Greenwich Wind Farm.

6.11.2 Potential Effects

The construction process will generate waste material most of which will be solid, non-hazardous materials such as packaging, excess lumber, used equipment, office wastes and other such material.

During the construction phase a temporary on-site waste storage should not create any adverse environmental effects taken that mitigation measures are implemented (see below). Although, it is possible that the disposal of some wastes will have an incremental effect on groundwater, surface water and soils, as is the case with all solid wastes. As noted above, there are a few possible options to dispose of the waste generated at the wind farm site. All wastes generated at the wind farm site will be transported to one of these landfills. The MOE is currently being consulted and a preferred landfill site will be determined shortly.

During the operation phase of the wind farm, oils and other fluids are typically used to maintain the turbines and ancillary equipment. O.Reg 347 of the *Environmental Protection Act* requires that proponents submit a generator waste registration report for each waste generated at the facility. RES Canada will submit such reports before the construction period.

6.11.3 Mitigation Measures

RES will contract licensed commercial waste collection and disposal companies and develop a disposal plan that includes the use of a landfill that has a Certificate of Authorization that covers the project area. The requirements of the licensed operator and the associated operational regulations will determine how they will handle disposal. During construction the Contractor will implement a site-specific waste collection and disposal management plan and system (please refer to Appendix L – EMP). Waste collection best practices could include:

- Systematic collection of on-site waste in weather protected bins;
- Labeling and proper storage of liquid wastes in a secure area to ensure containment of the material in the event of a spill. If any spills do occur, which could produce an environmental effect, it will be reported to MOE's Spills Action Centre;
- Appropriate spill kits will be provided on-site during construction;
- Prohibition of dumping or burying wastes within the project site;
- Should contaminated soil be encountered during the course of excavations the contaminated material will be disposed of in accordance with the current provincial legislation, such as Ontario regulation 461/05;
- Disposal of non-hazardous waste at a registered disposal facility;
- Hazardous wastes such as lubricants will be collected, contained, and then transported to an off-site facility that collects hazardous waste; and,
- Implementation of an on-going waste management program that encourages reducing, reusing and recycling materials.

With regards to a temporarily on-site waste storage station RES is aware of the following points and will be incorporated into the on-site waste plan:

- Subject waste must not be stored for a period exceeding 24 months unless an application for a C of A has been submitted. (s. 17.2 (2) of O. Reg. 347), and

- The first time that subject waste is stored on site for more than 90 days, a notice must be given to the Regional Director within five business days after the 90th day of storage (s. 17.2 (3) of O. Reg. 347).

During the operation phase, where oils and lubricants will be used to maintain turbines and ancillary equipment will be collected and where possible recycled. These spent oils and lubricants will be transported off site by a licensed transporting company and recycled or disposed of according to provincial regulations. RES Canada will submit a Generator's Registration Report for each waste generated by the wind farm and its ancillary facilities, according to O.Reg 347 of the *Environmental Protection Act*.

6.11.4 Significance of Net Effects

During construction the temporary on-site storage of waste will not create any adverse effect provided that the mitigation measures are implemented.

As a result of responsible waste management practices, no significant net effects are anticipated.

6.12 Environmental Noise

The following section was created using the Siemens 2.3MW wind turbine. Please refer to **Appendix H** for the complete Noise Report.

This section refers to item 3.4 of the MOE's environmental screening checklist: Will the project:

- *cause negative effects from the emission of noise?*

6.12.1 Existing Environment

The main sources of ambient noise that currently exist in the study area are due to:

- Natural Sounds; and
- Occasional sounds due to road traffic on rural roads.

The MOE designated points of reception into three classes. Class 1 is an environment typical of a major population centre. Class 2 is an environment similar to Class 1 in the daytime, with low ambient sound levels in the evening and nighttime, defined by natural sounds and infrequent human activity. Class 3 refers to 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 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.

Figures 6.4 shows the receptor locations considered in the noise modeling. The closest occupied building from a wind turbine is 2.2km (for the expanded project) and 5km (for the first phase positions) - Scott's campground.

There are six hunting cabins in the vicinity of the Greenwich Wind Farm. The location of these cabins is shown on the Land Use Figure 6.3. It should be noted that these hunting cabins which are on Crown land may be used on an occasional basis by hunters and/or trappers for short durations (few days a year) during the year. According to the MNR database, the above-mentioned cabins are designated as “Non-sensitive.” Furthermore, since the cabins are not considered permanent and/or seasonal residences, they are not to be considered as sensitive noise receptors (MOE publications NPC-232 and NPC-205). Therefore, for the purposes of this assessment, the cabins were not included as Points of Reception for noise.

6.12.2 Potential Effects

During construction of the wind farm noise will be generated by the operation of heavy equipment and vehicular traffic. The audible noise at receptors beyond the construction site is expected to be minor and temporary.

During the operation phase of the wind farm noise will be generated from the mechanical and aerodynamic noise emitted from the turbines and the transformer station (see **Figure 2.1** for locations). The potential noise emissions were determined by comparing the noise levels for various wind speeds as per the MOE’s Interpretation for Applying MOE NPC Technical Publications to Wind Turbine Generators, 2004.

Noise levels were modeled by a specialized noise consultant using the MOE endorsed CadnaA V3.7 3-D acoustic model. Hourly sound exposures were determined for the receptors at different wind speeds (4 to 12 m/s). The noise modeling undertaken recognized recent guidance from the MOE including:

- Acoustically “soft” ground (sound absorbing) assumed between each receptor and all turbines (an attenuation factor of 0.7 was assumed);
- All receptors are assumed to be downwind of all turbines, simultaneously.

Analysis of noise levels shows that the noise impact, at the nearest receptor locations, 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) there is no need to apply mitigation measures.

Figure 6.4 shows the hourly sound exposure levels with the noise contours for the worst case scenario. The most stringent MOE noise guidelines are predicted to be met at all non project participating receptors.

The noise report is contained in **Appendix G**.

6.12.3 Mitigation Measures

As noise levels will be higher during the construction phase due to the use of heavy equipment traveling to and from the site and working on the site all engines associated with construction equipment will be equipped with mufflers and/or silencers to comply with the most up-to-date MOE guidelines and regulations. Noise levels arising from equipment will also be compliant with sound levels established by the MOE. RES understands that MOE limits construction activities that create excessive to daylight hours in an effort to mitigate the impact of this effort.

Construction activities that create excessive noise will be restricted to daylight hours and adhere to local noise by-laws. If activities that create excessive noise levels must be performed outside of regular working hours adjacent residents will be notified in advance.

During operations the environmental noise produced by the wind farm, when modeled according to the MOE approved ISO 9613-2 standard and Siemens noise level data, was found to not exceed the levels that apply for receptor locations that have an acoustic designation of Class 3. The MOE's most stringent noise guidelines are predicted to be met at all receptors based on the current wind turbine layout. No additional noise mitigation measures are warranted for the turbines.

6.12.4 Significance of Net Effects

Noise levels at the closest receptor locations to the wind farm are below MOE criteria. No significant adverse effects are predicted.

Greenwich Wind Farm

Figure 6.4 Noise Receptor Locations and Noise Contours

Legend

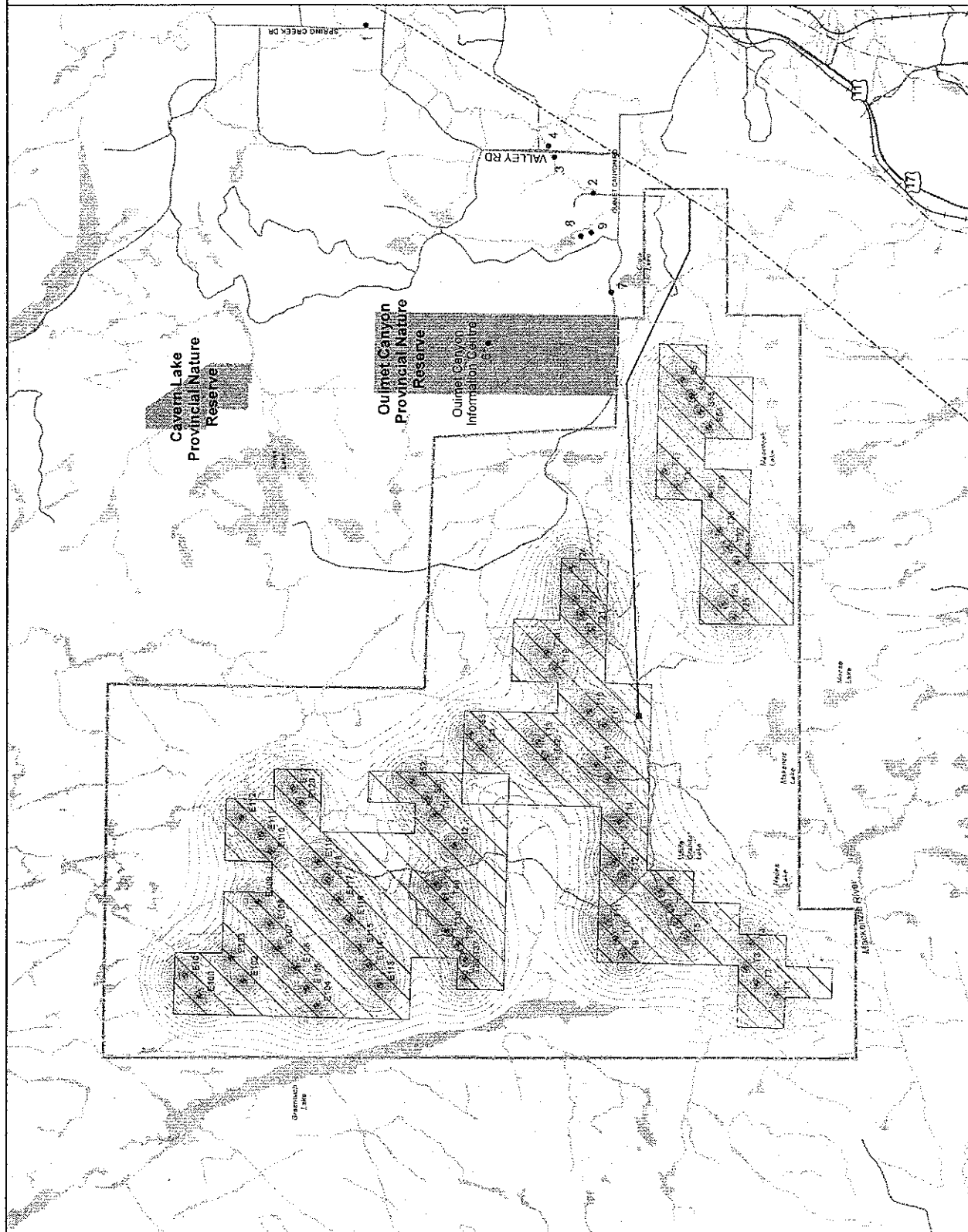
- Targeted Turbines
- Expansion Turbines
- Receptor
- Substation
- Highway
- Secondary Road
- Railway
- Existing HONI 230KV Transmission Line
- Existing HONI 115KV Transmission Line
- Proposed Transmission Line
- River/Streams
- Project Boundary
- Grid Cells Under AOR Status
- Forested Lands
- Waterbody

dBA Intervals

- > 0.0 dBA
- > 40.0 dBA
- > 45.0 dBA
- > 50.0 dBA
- > 55.0 dBA
- > 60.0 dBA



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 Figure 6.4 Noise Level Contours.mxd



6.13 Rural Resources

This section refers to item 5.2, 5.3, 5.4, 5.5 and 5.6 of the MOE environmental screening checklist. The checklist covers the following questions: will the project:

- *Have negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural land?*
- *Have negative effects on existing agricultural production?*
- *Have negative effects on the availability of mineral, aggregate or petroleum resources?*
- *Have negative effects on the availability of forest resources?*
- *Have negative effects on game and fishery resources, including negative effects caused by creating access to previously inaccessible areas?*

6.13.1 Existing Environment

The proposed wind farm property is comprised primarily of rural and wilderness land including forests, a number of small fresh water lakes and a series of rivers and streams. Other than Ouimet Canyon Provincial Nature Reserve and the bordering municipalities to the east and south, the surrounding land is unorganized wilderness. A few grazing fields are located along Ouimet Canyon Road but outside of the study area.

There are no built land uses in the project area.

The area is used by local residents and tourists alike for hunting, fishing, and outdoor recreation activities. A small campground is located just east of the study area.

A number of mining claims are located within the study area boundaries. Mining claim holders in the project area have been consulted during the environmental screening for the Greenwich Wind Farm. The project area overlies 49 unpatented mining claims and three mining leases. These claim holders were added to the project distribution list used for distributing project-related notices.

Unpatented mining claims are 16 ha units of Crown land that permit a claim holder to conduct mineral assessment work to determine the extent of mineral resources associated with that claim. The claim holder may have mining rights only or both mining and surface rights. Development of mineral resources is not permitted on unpatented claims.

The surface rights for the majority (43) of the claims in the project area were set aside for wind power by Ontario in 2006 and as a result claims staked since the lands were set aside retain only mining rights. Six claims were staked prior to the lands being set aside as a result the claim holders retain both the mining rights and the surface rights.

In order for a claim holder to extract the mineral resource on Crown land, a mining lease is required. The mining lease gives the lessee the right to develop the mineral resource and can consist of mining rights only or both mining and surface rights. The tenure rights for three leases in the project area are for mining rights only.

As required by MNR protocol, RES sent the Thunder Bay district MNR information request letters to be distributed to trappers and bait fishers who operate in the project area. MNR protocol prevents the Ministry from providing contact information for these individuals directly to the proponent. RES' intention was to engage local trappers and bait fishers on whether they had any concerns regarding the project with respect to trapping, bait fish collection, or other activities in the project area.

As a result, three (3) trappers with lines in the area responded and contacted RES directly. Additional information was provided to these individuals and commitments were made to keep them informed of project developments. None of the 3 individuals noted an objection to the project. RES made commitments to compensate the trappers for any losses versus quotas during the construction phase of the project or damage to any trap lines. RES made commitments to inform the trappers of construction activities and hold pre-construction meetings with the group to detail specific timing of construction activities in the areas of concern.

MNR advised that bear management plans exist for the area. MNR has been contacted to obtain copies of the plans and maps. Consultation with MNR is on-going.

Forests within the study area have been cut and lie within the Lakehead and Black Sturgeon Forest Management Plan (FMP) areas. Forest companies that have been active in the area include Green Mantle Forest Inc. and Abitibi-Bowater.

At the second PIC, a local forester notified RES that he holds a license to harvest Crown timber in portions of the project area. Green Mantle Forest Inc. is the forestry management company that oversees this individual's area. This individual mentioned that the proposed batch plant area is located in close proximity to sections of his harvesting area. This individual also indicated that Green Mantle Forestry Inc. is very familiar with the area and could advise RES at various stages of the project. RES is currently contacting Green Mantle Forest Inc. to further coordination efforts with regards to the Forest Management Plan.

6.13.2 Potential Effects

All turbines are located outside of agricultural land, therefore, no agricultural impacts are expected. The 230 kV transmission line is also outside of agricultural land.

The project will result in additional routes into the area which could potentially increase the number of people accessing the area for hunting, fishing, and recreational purposes which in turn could impact game and fishery resources. In addition, conditions during the construction phase, such as increased human activity and noise could impact game populations, although this would be a temporary effect.

The project has the potential to affect trapping activity in the area. RES has made efforts to contact all registered trappers to identify potential impacts. However, as with hunting and fishing, while conditions during the construction phase may have a temporary impacts on fur bearing animal populations, this would only be a temporary effect.

Since mineral exploration and development and wind power land uses can conflict, RES has contacted claim and lease holders to provide information on the project and to discuss potential issues and solutions. Relevant claim holders were identified with support from the Ministry of Northern Development and Mines (MNDM) and by using the MNDM's CLAIMaps® on-line tool. Contact information for the

leaseholder was obtained through a title search at Thunder Bay Land Registration Office. Claim and lease holders were subsequently contacted via telephone, email or by mail.

Some potentially harvestable timber may need to be cut to facilitate turbine, access roads and power line construction. The development and maintenance of the turbine base area and the road/power line RoWs will result in the permanent loss of some forest production area as it will not be permissible to regrow trees within these areas during the operational life of the wind farm and transmission line. Project development will result in a relatively small area of forest being removed which would equate to a small fraction of the total harvestable area in the affected FMP area. The above mentioned forest companies will be consulted with prior to construction initiation. Once operational, future forest harvesting activities should not be affected by the wind farm.

6.13.3 Mitigation Measures

No area within the study area is considered to be inaccessible as it is already used for outdoor recreation purposes. To ensure that access, as a result of the project is restricted and limited, consultation with local interest groups such as the Moose Lake Coalition, Loon Lake/Bass Lake Concerned Citizens, North Shore Fishing Club, and private citizens is on-going to develop strategic plans to restrict access into specific areas. To-date, RES has committed to not constructing a direct access road from the south of the project area; RES has moved the southern project boundary north to alleviate concerns that RES may propose future wind farm infrastructure in areas south of MacIntosh Lake; and RES has agreed to work with local agencies to limit access into certain areas where permitted by the MNR.

Upon further consultation with trappers and bait fishers in the area, ERS is committed to compensating trappers and bait fishers working in the project area during the construction phase. It is not anticipated that compensation will be required through the operation phase.

Initial discussions with claim holders indicates that there is potential for land use conflict with respect to potential exploration programs and mine development. RES has undertaken to address the specific concerns of claim holders and discussions with claim holders are ongoing. A summary of claim-holder contact and correspondence is provided in the Stakeholder Consultation Report in Appendix B.

As part of ongoing discussions with mining claim holders, RES has noted that new access roads built within the boundaries of the project area will be of use to mining claim holders to access previously remote areas. RES has also offered claim holders access to geotechnical information that they have obtained and will be obtaining for project design purposes.

RES commits to making all reasonable efforts required to come to business-to-business agreements with all mining claim holders who have claims staked prior to PLA notification, and this, prior to formal submission of Land Use Permit applications to the MNR. Additionally, RES commits to continue consulting with all claim-holders within the project area throughout the development, construction, and operation of the Greenwich Wind Farm, with a view towards ensuring the successful development of all claims of interest.

Regarding forestry resources and operations, the following mitigation measures will be put in place. Standard mitigation to deal with the loss of merchantable timber would include:

- 1) Compensation for forestry land owners/licensee for the fair value of any merchantable timber removed;
- 2) Salvage of merchantable timber to the same standards used in typical forestry operations;

- 3) Where possible narrowing the RoW in areas of mature forest; and
- 4) Removal and salvage of damaged trees adjacent to the RoW.

Standard measures to minimize forest fire risk will be followed. Any slash pile burning will follow the *Forest Fires Prevention Act* (FFPA) and Ontario's Prescribed Burn Operations Policy. In addition no slash burning during dry conditions will be undertaken.

RES understand that a burning permit may be required. Because slash and brush piles may require more than a burning permit a Low Complexity Burn Plan will be developed and signed off by the Fire Management Headquarters. Prior to the approval of this plan RES will develop a similar document that would outline fire hazard mitigations. Please refer to the EMP in Appendix L for further information on forest fire measures.

The wind turbines, access roads and ancillary facilities have all been sited in a way that minimizes disturbance to existing land uses. RES has made an effort to avoid or minimize land fragmentation and making use of existing roads. There are no anticipated effects to rural resources during the operations phase.

6.13.4 Significance of Net Effects

There will be minor disturbances during the construction phase to resource use such as trapping and hunting. However, this is temporary and construction areas will be rehabilitated and restored. RES will work with local stakeholders to mitigate increased access into the site. It is expected that potential conflicts with mineral claim areas can be resolved. Similarly, no significant effects with forest resources or operations are expected.

6.14 Neighbourhood and Community Characteristics

This section refers to item 6.1 of the MOE environmental screening checklist: will the project:

- *Have negative effects on neighbourhood or community characteristics?*

6.14.1 Existing Environment

As stated previously in the *Municipal Boundaries* section, the proposed site for the Greenwich Wind Farm is primarily surrounded by unorganized wilderness, Crown land. Other surrounding uses in the Township of Dorion and the Township of Shuniah are consistent with the Study Areas and are also rural in nature. The closest residence to a wind turbine is 2.2 km (Scott's Campground) away.

Ouimet Canyon Provincial Nature Reserve and Cavern Lake Provincial Nature Reserve have been carefully considered to ensure the proposal conforms to the protection and preservation of this area (please refer to Section 6.16.1). Finally, the Study Area has been reviewed to mitigate short and long-term impacts of the proposed Wind Farm on the surrounding land uses and will not impede future opportunities for these areas.

6.14.2 Potential Effects

The presence of wind turbines will alter the current rural "bush" nature of the study area. The closest resident to the wind farm may experience temporary disruption during project construction associated

with short-term effects associated with noise, dust and additional traffic volumes as has been described in other sections of this report. Although these effects are common to any large-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 as some view them as a positive or negative influence on the viewscape. The alteration of the viewscape is further discussed in **Section 6.21**.

6.14.3 Mitigation Measures

Dust from the construction areas will be controlled through environmentally friendly suppressants. Environmental noise will be reduced through standard operating practices. RES Canada will have a designated representative to maintain community relations throughout the construction and operations phase of the project who will be available to address concerns expressed by stakeholders.

6.14.4 Significance of Net Effects

During the construction phase there will be an increase in activity in the study area. Construction activities will also produce a temporary nuisance in the form of increased dust from construction activities and increased noise levels from machinery. As there are no receptors in the vicinity of the area these effects are unlikely to be of concern. Changes to the character of the area will result from the turbines being visible through portions of the area.

6.15 Traditional Land Use by Aboriginal Peoples

This section refers to item 8.1 of the MOE environmental screening checklist: will the project:

- *Cause negative effects on First Nations or other Aboriginal communities?*

6.15.1 Existing Environment

No First Nations' reserve lands exist within the Project area, but the Project area lies within the Robinson – Superior Treaty Area.

Red rock Indian Band (RRIB) is the closest First Nation to the Project area. The RRIB reserve is located approximately 100 km northeast of Thunder Bay, and 2 km east of the Town of Nipigon, at the junction of TransCanada Highways 11 and 17. The RRIB reserve, located approximately 40 km east of the Project study area, consists of two sections: Parmacheene Reserve 53 and Lake Helen Reserve 53A. The total area covered by these two reserves is approximately 950 acres.

According to INAC – Comprehensive Claims Branch, there are no comprehensive claims in the vicinity of the Project area.

In a letter received November 20, 2007 from the Specific Claims Branch, INAC advised that specific claims have been submitted by Fort William in the general area of the Project. In a subsequent email received April 23, 2009, INAC confirmed that Fort William was the only First Nation to submit such claims in the area of interest.

RES will continue with its consultation efforts to understand Aboriginal communities' interests in the Project area, if any, and to identify potential impacts on such interests, if any, relating to the Project Area.

6.15.2 Aboriginal Input to Date on Traditional Land Use and Archaeological Interest

Since the Aboriginal consultation process began, four Aboriginal communities have responded to RES' requests for information regarding their potentially affected interests relating to the Project. These are:

- Red Rock Indian Band (RRIB);
- Fort William First Nation (FWFN);
- Red Sky Métis Independent Nation (RSMIN); and,
- Métis Nation of Ontario (MNO) – Thunder Bay Métis Council and Geraldton and Area Métis Council.

RRIB has indicated its primary concerns with respect to Project impacts as environmental impact generally, and potential impact on traditional activities. No specific information has yet been provided to RES with regard to such traditional activities and interests. RRIB has informed RES that its values mapping has not yet been completed in the Project area and that such work is currently on-going.

FWFN has not yet provided RES with any traditional land use or archaeology-related information. However, FWFN did indicate that the Project area overlaps with its traditional lands.

RSMIN has expressed concern regarding possible impacts on its continued hunting, fishing, and trapping activities caused by, among other things, greater access into the Project area, and noise.

RSMIN has also expressed concern with regard to impacts on vegetation due to chemical application and potential impact on traditional harvesting activities. In response to traditional harvesting matters, RES invited a RSMIN member to accompany RES environmental specialists on vegetation field surveys and offered capacity funding for such participation. RES has also indicated to RSMIN that it may request additional sampling for areas of particular concern, if required. RES has agreed to RSMIN's proposal for capacity funding for a member to accompany Project consultants on the vegetation surveys.

MNO has expressed generalized concern with regard to possible impacts on current land use. RES and MNO have discussed the possible inclusion of MNO traditional use information, also referred to as "Traditional Knowledge" or "Way of Life Knowledge", in the ESR. To date, RES has not yet received such information from MNO. MNO has also inquired about areas of environmental interest including species, habitat, aquatics and vegetation control measures.

MNO has inquired about Project information being provided to potentially affected trap-line holders in the Project area. RES has collaborated with MNR to provide such information to registered trap-line holders, as well as an opportunity for these trappers to review and provide comment on the draft ESR. Additionally, in late June 2009, RES sent the Thunder Bay MNR letters and Study Area maps for MNR distribution to registered trappers and bait fishers working in the Project area.

No information regarding Aboriginal traditional use and archaeological interests has been received by RES beyond what is noted in this section.

6.15.3 On-going Aboriginal Consultation

As part of its ongoing consultation process, RES is committed to continuing to solicit and obtain input from Aboriginal communities regarding traditional land use and archaeological interest in the Project area. As noted in **Section 4.3.1**, RES offered capacity funding for RRIB, FWFN, RSMIN, and MNO

review of the ESR, and for participation in related meetings and processes. To date, MNO and RSMIN such capacity funding budgets have been approved by RES.

The other identified Aboriginal communities have been given notice of the study and final ESR review and, if appropriate, have been provided with the opportunity to comment on same.

6.15.4 Potential Effects

As noted, the Project area lies entirely on Crown-owned land, some of which lies in the Township of Dorion. Certain Aboriginal communities noted in **Section 4.3** have expressed a potential interest in the vicinity of the Project area, and stated some concern as to potential Project impacts on traditional activities.

Based on the consultation undertaken to-date, these interests are related to the potential for adverse effects from the Project on lands within traditional harvesting areas (hunting, fishing, trapping and other activities related to wildlife and vegetation), and possibly on areas of archaeological significance.

The Phase I Archaeological study indicated that the projected activity in the Project area had a low potential for uncovering archeologically significant evidence (please refer to **Appendix F**).

Regarding effects on the natural environment (including wildlife and vegetation), as these could affect potential interests of identified Aboriginal communities such as hunting, fishing, trapping or vegetation harvesting interests in the Project area, this ESR has included extensive natural feature surveys and studies. Mitigation measures are proposed in **Sections 6.1-6.9** for dealing with any potential effects to the natural environment.

At this time, it is not anticipated, subject to RES' continuing consultations with the relevant Aboriginal communities and appropriate mitigation measures, where needed, that there will be any significant adverse effects on Aboriginal communities' interests arising from the Project.

6.15.5 Mitigation Measures

As part of its on-going consultation activities with Aboriginal communities, and this environmental screening process, RES will continue its efforts to understand and address any potentially affected interests of Aboriginal communities. In consultation with affected Aboriginal communities, RES will formulate appropriate mitigation, approval and operation plans.

Please see **Section 6.20** relating to a protocol in the event that archaeological material of potential interest to Aboriginal communities is uncovered over course of Project construction.

Natural features mitigation measures are described in **Sections 6.1-6.9** of this ESR.

6.15.6 Significance of Net Effects

At this time, it is not anticipated, subject to RES' continuing consultations with the relevant Aboriginal communities and appropriate mitigation measures, where needed, that there will be any significant adverse net effects on Aboriginal communities' interests arising from the Project.

6.16 Recreation and Tourism Areas

This section refers to item 6.3 of the MOE environmental screening checklist: will the project:

- *Have negative effects on recreation, cottaging or tourism?*

6.16.1 Existing Environment

The District of Thunder Bay offers a variety of recreation and tourist activities and venues. Close to the project site is the Ouimet Canyon Provincial Nature Reserve and the 600 ft suspension bridge at Eagle Canyon. Just east of the Ouimet Canyon Park entrance is “Scott’s Campground”, a privately owned campground on the south side of Ouimet Canyon Rd. Further from the study area yet in the vicinity is Cavern Lake Provincial Nature Reserve.

There are also many other attractions in the area including waterfalls, conservation areas and a vast back country of the many other canyons and rock formations found in the area. In the fall, Dorion becomes alive with hunters from all over North America looking to harvest black bear, deer and moose (Township of Shuniah 2008).

Dorion is within a 30 minute drive of two Marina’s in the neighboring Townships of Nipigon & Red Rock which give boaters access to cruising grounds on Lake Superior.

Ouimet Canyon Provincial Nature Reserve

The closest turbine (T31 – Targeted Turbine) is approximately 1.8 km away or 1.3 km (S57 – Expansion Turbine) from the south boundary of Ouimet Canyon Provincial Nature Reserve. The closest turbine(s) (T31 and S57) to the viewing platform area are approximately 4.3 and 3.9 km away. Based on the visual modeling work that was completed, the wind turbines would not be visible from the viewing platform with existing vegetation (trees) in place.

The following information was extracted from the Ouimet Canyon Provincial Nature Reserve Management Plan (MNR 1985) which was provided by the Thunder Bay office of Ontario Parks.

Ouimet Canyon Provincial Nature Reserve was established in 1972, through the *Provincial Parks Act*. The reserve is 777 ha and encompasses a representative portion of the diabase-influenced landscape typical of the Thunder Bay-Nipigon area of Ontario. The steep-walled bedrock canyon is not unique to the region but it is unmatched for its size and accessibility.

A Master Plan was approved in 1975, to guide future management activities which was later updated in 1985 with the Park Management Plan. Two zoning types exist:

1. *Nature Reserve* (encompasses most of the park) – protects natural features for their intrinsic values, interpretation and scientific study
2. *Access Zone* – serves as a staging area where minimal facilities support the use of the nature reserve zone

Ouimet Canyon has been developed for public viewing of the canyon. Vehicle access is permitted to a parking area where a pedestrian trail leads to two viewing platforms and interpretive displays. According to Ontario Parks, 25,000 people visit the reserve each year, making it a significant tourist attraction in the area.

Cavern Lake Provincial Nature Reserve

Cavern Lake Nature Reserve is located approximately 6.75 km from the study area.

The following information was extracted from the Cavern Lake Provincial Nature Reserve Management Plan (MNR 1985) which was provided by the Thunder Bay office of Ontario Parks.

In 1960, the reserve was regulated as a Bat Cave Wilderness Area (71.6 ha) under the Wilderness Areas Act. In 1975, under the Provincial Parks Act an additional 117.4 ha was added totaling 189 ha, resulting in the Cavern Lake Provincial Nature Reserve.

The reserve encompasses a representative portion of the diabase-influenced landscape typical of the Thunder Bay-Nipigon area of Ontario. The establishment of the wilderness area was initially intended to stem the decline of the bat population which uses the cave as a hibernaculum. The cave is also used as a bat swarming site.

The management of the reserve is guided by the Ontario Provincial Parks Planning and Management Policies. Only one zone exists for the reserve: Nature Reserve Zone. The Nature Reserve Zone mandates that no recreation or tourism facilities are to be developed and direct public access is discouraged.

Many activities such as hunting, mineral exploration, and mineral extraction are prohibited in the reserve and visitation is discouraged. However, scientific research is to continue as an on-site activity at the reserve.

Snowmobile Trails

There are three snowmobile clubs active in the Thunder Bay area: the Ontario Federation of Snowmobile Clubs (OFSC), North Superior Snowmobile Association, and the Thunder Bay Adventure Trails Club. The Trans Ontario Provincial "A" (TOP) snowmobile passes through the project area along the Escape Lake and Greenwich Lake roads (see Figure 6.3).

6.16.2 Potential Effects

During construction, there is the potential for disruption to users of the Ouimet Canyon Road to access the Park. Construction traffic will be quite heavy at times when equipment and other supplies are being brought in. There is the potential for road blockages from construction related vehicles during higher summer/weekend periods as tourist volumes increase. Noise and dust effects are also possible to Scott's Campground which is located just off the Ouimet Canyon Rd (about 2.2 km from the closest turbine).

Ontario Parks noted that they are concerned that the experience of visitors to Ouimet Canyon Provincial Park could be impacted during project construction or operation. Furthermore, they are concerned that these potential impacts could impact the future viability of the Park's operations if the visual impact is such that it deters visitors from returning or recommending the experience to others.

During the operations period, impacts to recreation users would be minimal. Based on the visual simulations that were undertaken, the turbines are not expected to be visible from the Ouimet Canyon platform (See **Appendix H** for the visual simulations). Due to the distance of the turbine from the platform (~3475m) and vegetation, the turbine will not be an obvious feature on the landscape. The operating turbines are expected to have minimal effects on hunting and fishing in the project area. Noise levels were modeled for the shores of Macintosh Lake which is reported to be used for fishing by local

interests. The results of the modeling indicate that noise levels will be about 40 dBA for most of the lake with the exception of the north arm of the lake which will reach 45 dBA. Again, these noise modeling results are very conservative and would not likely reach these levels. In any event these noise levels are not considered to be overly excessive. As well, it is noted that portions of Greenwich Lake would experience noise levels up to 40dBA.

Through consultation with Ontario Parks, Thunder Bay, it was determined there is a concern over bat populations in the Cavern Lake Provincial Nature Reserve area. Ontario Parks is attempting to increase bat populations in the area. However, the little brown bat is the only population present in Cavern Lake cave. This species is known to be a lower risk than migratory bats. In addition, independent research carried out at the Cavern Lake cave in September 2008 found a single species population of 19 bats suggesting that this is not a significant cave for bats in Ontario. Please refer to Appendix E.

Within the project area itself, construction activity might dissuade hunters from the area as it is expected that human presence and noise could scare wildlife from the area. For safety reason, localized hunting restriction should be in place during construction (discussions to continue with MNR). However, the turbines are to be located on higher ground, away from wetter areas that would attract moose. Nevertheless, it can be expected that for one hunting season that the area would see a reduction in hunters.

Through correspondence with the Trails Director of the Thunder Bay Adventure Snowmobile Club, it was determined that there were concerns over how access to the snowmobile trail would be affected during the construction and operation phases of the wind farm. During the construction phase it is likely that activities related to the building of the wind farm such as tree clearing, pad construction, and tower erection could hinder recreation use by snowmobilers in the project area. In addition, during the operation phase, snow clearing could disturb snowmobiler's ability to use portions of the trail.

6.16.3 Mitigation Measures

RES will monitor disturbance type effects during the construction period along Ouimet Canyon Rd. To alleviate major traffic congestion due to construction-related traffic, RES will consult with MNR about using alternative access routes (Armstrong Highway to Escape Lake Road) during holiday weekends in the summer. RES will continue to correspond with Ontario Parks regarding alternative access routes for additional peak tourist times.

Concerns were raised over the potential to see turbines from the Park, which in turn could negatively affect tourist business in the area. The visual simulations conducted for this Project indicate that turbine views will be extremely limited given the distance to turbines, vegetation, and topography. Therefore, it is not anticipated that Project will have a negative impact on visitors experience to the Park. Furthermore, the visual impact of wind turbines is subjective as some view them as a positive or negative influence on the viewscape.

Speed limits will be enforced to ensure the safety of other road users. Signs can be erected to warn road users of construction traffic that may be on the road (see **Section 6.17**) and pilot vehicles could be used to ferry traffic through the construction area. In addition, RES will attempt to schedule equipment and supply traffic for times when tourist traffic is lighter.

As noted, the wind turbines will be neutrally coloured (white towers) with a minimal use of logos to ensure they blend into the area as much as possible.

During construction, a protocol will be established to advise snowmobile clubs when deforestation activities are underway west of the substation (where their trail overlaps with the main access road). Efforts will be made to construct the ditch on one side of the road large enough for the club's grooming machine to get through for this section. Potential solutions to mitigate impact to snowmobile trail use during the operational phase are on-going with the Thunder-Bay Snowmobile Association.

6.16.4 Significance of Net Effects

The visibility of the turbines in the surrounding area will be very limited. No significant changes to the landscape are expected. As such, no significant effects are expected.

6.17 Construction Related Traffic

This section refers to item 6.7 of the MOE environmental screening checklist: will the project:

- *Have negative effects related to traffic?*

6.17.1 Existing Environment

The study area is located east of Trans-Canada Highway 11/17 in a predominantly rural area. Access to the site is via Ouimet Canyon Road which is used primarily by tourists in the area. Highway 11/17 originates 1 km east of Nipigon and terminates approximately 45 km west of Thunder Bay. Many people use the highway to travel to and from the Thunder Bay area.

6.17.2 Potential Effects

During the construction phase truck traffic will increase along Highway 11/17 and Ouimet Canyon Road in order to deliver turbine parts and accessories to the study area and to remove excess materials and waste. There will also be an increase in regular vehicular traffic as construction workers drive to the construction site. The increase in truck traffic will be noticeably reduced after all turbine components are on site. This increase in vehicular and truck traffic may result in short-term localized disturbance to traffic patterns, produce abnormal wear and tear on existing roadways, and have the potential to create truck safety hazards. There may be the need to improve a bridge over a small watercourse along the roadway.

During normal operations there will be no noticeable difference in either vehicular or truck traffic as a result of the wind farm.

6.17.3 Mitigation Measures

There will be instances where excess loads will require special traffic planning. Widening turning radius and road widths may also be required. As appropriate, these permits will be obtained from municipal and provincial agencies.

The use of local roads by construction equipment has the potential to affect the road/bed condition. The roads will be returned to their pre-construction condition. The roads will be monitored after heavy rain events during the construction period and road repairs will be made if necessary.

Once in operation project related traffic will be limited to maintenance staff. No mitigation measures are required.

6.17.4 Significance of Net Effects

During the construction stage there is the possibility of having a short-term effect on traffic. With appropriate mitigation measures, especially during the transportation of the turbine parts to the study area, the net effects are expected to be minimal.

6.18 Public Health and Safety

This section refers to item 6.8 of the MOE environmental screening checklist: will the project:

- *Cause public concerns related to public health and safety?*

6.18.1 Existing Environment

Wind farms generally present no danger to public safety and health. They do not emit any atmospheric pollutants or greenhouse gases, although some perceive wind turbines to present a risk to public health and safety most commonly from shadow flicker and ice throw from turbine blades.

6.18.2 Potential Effects

The increased risk to public health and safety during wind farm construction is mostly related to an increase in truck traffic in the study area and access to the construction site (public lands) by the public.

Recognizing that there are no receptors in the project area but that the lands are publicly accessible, potential safety issues include: icefall and throw and collapse of the turbine tower.

Ice Fall and Throw

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 centrifugal inertial force of the rotating 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. Rotating turbine blades have the potential to propel ice fragments up to several hundred meters from the turbine location. However in most occasions, the turbine is equipped with sensors which shut the turbines down should ice build-up be detected or prevent start up of the turbine in icy conditions. Given that ice build-up would occur only under very poor weather conditions, it is unlikely that someone would be in the vicinity of the turbines under such conditions.

Turbine Collapse

Although it is highly unlikely there always is the probability that any tall structure could collapse. There is also a very slight probability that a blade could become detached from the nacelle under extreme conditions. Should these events occur there is the potential for damage to the area directly under the turbine and to the collapse zone surrounding the turbine.

Based on the rural nature of the Study Area and that no permanent housing is located within the area, in the remote chance that such an event were to occur, effects are highly unlikely.

6.18.3 Mitigation Measures

Implementing good transportation planning and safety measures during construction will minimize the potential for any traffic accidents and safety concerns. Safety concerns relating to construction traffic are addressed in **Section 7.17**.

Public safety is incorporated into the project design. Land access during construction will be controlled through signs and restricted to authorized personnel only. The Construction Contractor will employ site safety practices during this phase.

Ice Fall and Throw

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 remote Crown land, and that the site would remain largely inaccessible in such conditions, the threat posed from any ice throw and fall is greatly diminished. Turbines have all been sited with appropriate setbacks from roads to alleviate this risk. Furthermore, icefall and throw occur in the winter during poor weather conditions when few people would be expected to use the area. Signs on all access roads leading to the wind turbines will warn people of the winter risk of ice fall and ice throw.

Turbine Collapse

Although highly unlikely there always is the possibility of critical failure. The wind turbines will be constructed to code and every possible measure will be taken to ensure good construction and engineering practices are observed. The highest possibility of critical failure is during extreme weather conditions and thus the unlikely event of failure would happen when few people would be expected in the area.

6.18.4 Significance of Net Effects

When all mitigation measures are put into practice any effects to public health and safety are expected to be limited to levels well below those that could cause significant net negative effects. All the above health impacts were taken into consideration during the effects assessment.

6.19 Communications

Please refer to **Appendix B** for a complete correspondence between RES and Communication Agencies.

6.19.1 Telecommunications Interference

Wind turbines can cause interference to telecommunications systems. The interference can be caused as a result of the turbine being in the line-of-sight between a receiver and the signal source (RABC, 2007). Frequency modulated (FM) signals are much more immune to this phenomena and only become impaired in very close proximity to wind turbines. Amplitude modulated (AM) signals are more susceptible to interference in the following three ways:

1. Signal Blockage –the radio signal can be blocked as a result of the turbine being directly between the signal source and the receiver.
2. Static Ghosting – the broadcast signal is reflected off the tower of the wind turbine and results in the signal being delayed to the receiver.

3. Pulsing – the receiver picks up an interference signal, in addition to the direct signal, as a result of the signal reflecting off of the turbine blades. This results in periodic variations in the television picture quality.

As per the RABC, 2007 guidelines, RES consulted with the following communications agencies:

- Radio Advisory Board of Canada (RABC)
- Canadian Wind Energy Association (CanWEA)
- Transport Canada- Aerodromes and Air Navigation Unit
- Royal Canadian Mounted Police – RCMP Communication Towers
- Department of National Defence – National Defence Communication Towers
- Environment Canada – Weather Radars
- NAV Canada – Civilian ATC Radars
- Department of National Defence – Military Air Defence and ATC Radars
- Canadian Coast Guard – Vessel Traffic System Radars
- Natural Resources Canada – Seismological Monitoring Arrays

No concerns regarding the project layout have been raised by the communication facility agencies that have been advised of the project to date.

New notices to all communication tower agencies (listed above) were reissued on May 15, 2009, seeking their comments on the final turbine layout and coordinates.

6.20 Historical and Archaeological Resources

This section refers to item 7.1 of the MOE's environmental screening checklist: will the project:

- *Have negative effects on heritage buildings, structures or sites, archaeological resources, or cultural heritage landscapes?*

In the early fall of 2008, a Stage 1 Archaeological Resource Assessment was undertaken by Ross Archaeological Research Associates as part of the site evaluation process. The Stage 1 background study of the Greenwich Wind Farm study area was initiated to inventory known archaeological resources and identify areas of archaeological sensitivity. While the full results of this assessment are contained in **Appendix F**, the following summarizes the methodology and results of the archaeological assessment.

A Stage 1 Archaeological background study, as required by the Ontario Ministry of Culture (OMC), is intended to identify archaeological resource potential within a specific geographical area and form the basis for subsequent stages of archaeological assessment, testing and mitigation. In general terms, the background study consists of the following: review of the OMC archaeological site data base; consultation with researchers and others familiar with the archaeology of the study area; archaeological potential modeling based on archival research and geographical review; and, site reconnaissance.

6.20.1 Existing Environment

The Study Area is comprised of property proposed for the development of the Greenwich Wind Farm and the transmission line corridor to the east between the wind farm and the 230 kV lines near Hwy 11/17. The Study Area is located in a generally inaccessible area west of Highway 11/17 and west of Ouimet Canyon Provincial Nature Reserve. Greenwich Lake is located on the western edge of the Project boundary. There are no other major water bodies or major river systems flowing within the Project area. Few roads, dense forest cover and rough terrain have impeded access to the area.

The Study Area is underlain by early Precambrian rock consisting of felsic, igneous and metamorphic rocks with some greywakes, argillite and minor volcanics through the Greenwich Lake area (Ayers et al 1970). The surficial geology of the area is predominately bare rock with a thin glacial sediment cover (Sado and Carswell 1987).

The Study Area is located in ecoregion 3W (Hill 1961). It is covered mostly by black spruce and to a lesser extent with mature stands of white birch, jack pine, and poplar (Racey et al 2000:16-17).

Assessment

The archaeology of Northern Ontario, while not completely understood, has been classified into four specific cultures and time periods (Phillips and Ross: 1995). These cultures are based on artifact characteristics that can be found on an entire site or in layers on the same site and represent material changes through time of prehistoric and historic peoples.

The four cultural traditions that appear in the archaeological history of the area are: Palaeo-Indian, Archaic, Woodland, and Historic. Each cultural tradition has specific tools that are present in the archaeological record and can be shown to have changed over time. The Palaeo-Indian period (9500 + to 7500 years BP) is characterized by leaf-shaped spear points manufactured for the most part from local cherts. The Archaic period (7500-2500 years BP) is characterized by a change to the size and shape of the spear points and the extensive use of copper that appears as early as 7000 years ago. The Woodland period (2500 – 400 years BP) is characterized by the introduction of the bow and arrow and ceramic pots. The Historic period (400 years BP to the present) begins with the introduction of European artefacts into the archaeological record as a result of Europeans moving into northern Ontario. While the presence of Europeans was not synchronous throughout the area, Europeans and/or their artefacts would probably have appeared in the Thunder Bay area by the mid to late 17th Century.

The Provincial Site Registration Database does not contain any recorded sites for the Project area (R. Von Bitter: personal communication). A thorough search of archaeological research material did not identify any research that has been undertaken in the Study Area. There are no known unrecorded sites in the area.

The identification of glacial lake shorelines and other glacial features in the region can assist the archaeologist to assess the likelihood of human habitation up to 9,500 years ago and to evaluate the potential for buried and elevated cultural deposits. A review of geomorphological research identified that significant geomorphological research has been conducted in the general area of the Project area on the location and dating of changes in the levels of Lake Superior since the retreat of the last continental glacier (Zoltai 1961, 1963, 1965, 1967, Farrand 1960, Phillips 1977, 1982, 1988, 1994, Phillips and Ross 1995) and the effects of connections and overflows from Glacial Lake Agassiz to the Superior basin during the early Holocene (Clayton 1983, Teller 1985, 1986, Teller and Thorleifson 1983, Teller and Mahnic 1988). Unfortunately, these studies analyze an area to the south and east of the project area. Some minor geomorphological studies have been carried out on Ouimet Canyon (Kor and Teller 1987) but they too are outside of the Project area.

While it is entirely likely that people have in the past utilized portions of the Study Area, the lack of geomorphological data and lack of proximity to water sources, portage access points, archaeological sites and lithic raw material sources means that there is no basis upon which to determine where habitation sites may have been.

6.20.2 Potential Effects

The conclusion of the Stage 1 Assessment, based on an analysis using the Ministry of Culture checklist for determining archaeological potential, is that the areas that will be disturbed for the turbine locations and the transmission line corridor have a low potential for encountering Pre-contact Native, historic Native and early Euro-Canadian settlement. As such, it is quite unlikely that construction activities could impact as yet unidentified archaeological resources. As such, but subject to any information received from relevant Aboriginal communities to the contrary, no additional archeological work is necessary prior to the development of the Study Area.

6.20.3 Mitigation Measures

As required by the *Ontario Heritage Act Regulations*, all archaeological reports must state that there is always a possibility of deeply buried, undetected archaeological remains existing in the Study Area. If such materials are encountered during construction activities, the proponent must immediately stop construction and contact the Ministry of Culture.

In the event that human remains are encountered during construction, the proponent will immediately stop all work in the area and contact the local Police Department, the Ministry of Culture, and the Registrar or Deputy Registrar of the Cemeteries Regulation Unit of the Ministry of Consumer and Commercial Relations. RES will also contact Aboriginal communities that have expressed an interest in being notified in the event that such human remains are encountered.

The *Standards and Guidelines for Consultant Archaeologists Final Draft Unit 5 – the Discovery of Human Remains: Best Practices* will also be reviewed. As noted in the document, it is a “best practices” guideline describing the procedures for the treatment of human skeletal remains discovered outside a licensed cemetery. It reflects an agreement among members of the various ministries and agencies involved in the resolution of such burials.

6.20.4 Significance of Net Effects (Federal Authority)

As the potential for archaeological resources is low, no significant net effects are expected.

6.21 Viewscape

This section refers to item 7.2 of the MOE’s environmental screening checklist: will the project:

- *Have negative effects on scenic or aesthetically pleasing landscapes or views?*

The following section was created using the Siemens 2.3-101 turbine and final turbine location points.

6.21.1 Existing Environment

The study area consists of rugged terrain that is either largely forested or which has been clear-cut in recent years. The area has not developed land uses within it. The landscape within the project area is not considered to be unique.

The most significant landscape features in the larger area is the Quimet Canyon located north and east of the project area (**Figure 2.1**). Ontario Parks describes Ouimet Canyon Provincial Park as a steep-sided canyon, formed by jointing planes in the Precambrian bedrock. "The park supports an unusual group of rare, arctic-alpine plants in the valley floor. The cold-climate flora include sub-arctic thickets, fir-club moss and lichen, alpine woods, arctic pyrola, encrusted saxifrage, and fragrant shield fern. The vegetation is a remnant of colder meteorological conditions that prevailed during the last ice age - and that still prevails along the canyon floor, where snow lingers until late spring" (Ontario Parks 2008).

According to Ontario Parks, it is the view of the canyon floor and the viewscape / vista of the surrounding landscape from the viewing pods that draws visitors and tourists to the Park. Images of the canyon and the views from the pods are used to advertise Ontario as a tourist destination and to market Ontario Parks. Therefore, RES undertook considerable effort to analyze potential visual impacts to the Park and its visitors.

6.21.2 Potential Effects

There are no regulations or even policies regarding the visual impacts of wind turbines in Ontario although some municipalities have begun to stipulate the requirements for visual assessment. The Townships of Dorion and Shuniah have no such policies. Furthermore, the area has no designated or recognized viewscales.

A set of photomontages have been prepared from four (4) locations throughout the study area that simulate the to-scale appearance of the wind farm and are presented in **Appendix H**. These locations represent the locations that have the highest potential for turbine visibility or are viewpoints of interest brought to the attention of RES by project stakeholders. The number and extent of turbines visible varies by location and the distance of the viewpoint to the turbine. In most cases only a portion of the turbine may be visible (e.g. blade tip). The extent of the views depends on several variables including the distance of the turbine from the viewing locations, the amount and height of vegetation in the foreground, the type of vegetation, and weather conditions.

Concerns were raised by Ontario Parks that viewscales would vary during different seasons as the vegetation would either be more or less lush. Based on the analysis of the visual simulations from select vantage points, views of the turbines in the surrounding lands will be very limited. This is due to topography, existing vegetation and the large separation distance from potential viewing locations in the larger area (all over 2 km). Therefore, 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 don't).

Regarding the potential for visual effects to have an effect on tourism in the area, a campground is located just east of the study area. Through consultation, the owner of the campground indicated that he considers the wind farm as a positive impact as he hopes it will act as a tourist attraction. As shown on the visual simulations in **Appendix H**, views of the turbines from just east of the campground will be limited (if at all) due to vegetation.

As previously reported in *Section 6.16*, the visibility of the turbines from the Ouimet Canyon viewing platform is not expected. Although there exists the potential for one turbine to be visible looking south down the canyon, in reality, given the far distance of the turbine and vegetation, the turbine is not expected to be visible and would be not a dominant feature of the landscape from this location. Given this highly limited view, this is not expected to affect the likelihood of people visiting the Ouimet Canyon Park and from their experience at the Park. The closest turbine to the Park is approximately 1 km away from the Park entrance and 3.5 km from the viewing platform. The wind farm is not expected to affect the enjoyment of the Park by visitors or their likelihood to visit the Park.

There have been numerous studies regarding the potential effect of wind farm on tourism, particularly in the U.K. In Canada, the most comprehensive study undertaken to date regarding the opinions of residents and visitors regarding wind turbines is a study that was undertaken by the Tourism Research Centre at the University of Prince Edward Island (Wind Energy Report: View of Residents of PEI and Visitors to PEI, September 2008). The report was based on responses from 1,676 respondents including both residents and visitors to PEI. The results of the survey indicated that there was strong support for wind turbines in PEI by both residents and visitors (which is important considering the economic importance of tourism to PEI). The results also indicated that respondents strongly agreed that there should be more wind farms on PEI. As well, the results indicated that while respondents do not feel that “a wind farm adds to the attractiveness of the area”, they also think that wind farms do not “ruin the view in the areas they area based”.

As well, a study regarding the impact of wind farms on tourism was prepared for the Scottish Government (The Economic Impacts of Wind Farms on Scottish Tourism, March 2008). Scottish tourism depends heavily on the landscape, thus concerns regarding the visual impacts of wind turbines are understandable. Interviews were conducted with 380 tourists in areas where there would have been a high likelihood that the respondent would have seen a wind farm. Some findings from the study include:

- In general, 75% of people felt that wind farms had a positive or neutral impact on the landscape;
- 68% were positive about the statement “A well sited wind farm does not ruin the landscape” while 12% were neutral;
- 48% indicated that they like to see wind farms while 12% were neutral;
- Respondents who had seen a wind farm were more supportive than those that had not;
- Only a very small group of visitors changed there intentions about re-visiting Scotland because of wind farms.

6.21.3 Mitigation Measures

During construction, activities will be confined to the workspace which will limit the potential disruptions to the viewscape. All the turbines are of the same model and will all be neutrally coloured.

To soften the look of the erected wind turbines they will be painted white/light grey and made out of rolled steel (not latticed tower turbines). The nacelle and blades will also be painted similarly. White and light grey were selected based on the generally understood notion that this colouring blends with the environment in comparison to other colour schemes.

6.21.4 Significance of Net Effects

During the construction phase visual effects are expected to be minimal, temporary and limited to the lands immediately surrounding the turbine sites. Views of the turbines outside of the project area will be very limited and are not expected to alter the landscape of the area. As well, with the exception of Ouimet Canyon, the project area is not considered to be unique from a landscape/visual perspective and contains landscapes that are typical for northwestern Ontario. Overall, the effects on the landscape are expected to be very minimal and not significant.

Appropriate tower colouring and navigation lighting will combine to reduce the extent of this effect.

6.22 Accidents and Malfunctions

CEAA requires that the potential for environmental effects as a result of accidents and malfunctions be considered.

The primary protective measures for accidents and malfunctions are in the safe design, construction, operations and maintenance and decommissioning of the turbine and ancillary facilities. The appropriate training and education of all employees can also minimize accidents and malfunctions. RES will ensure that the local townships are aware of the procedures to follow in the event of an emergency. Training will be offered to local emergency response teams and all local municipal emergency agencies will be contacted to ensure they are aware of the exact locations of the wind turbines. Response to malfunctions or accidents, which could result as a result of the operation of the wind turbines, will be addressed in RES's Emergency Response Plan. Please refer to the EMP for more information on spill response. A Spill Response Plan will be submitted for review by MOE prior to construction.

6.22.1 Potential Effects

During the construction period there is potential public safety issues associated with the movement of heavy equipment and other construction activities. There also exists the potential for spills of hazardous materials such as fuel, lubricants and hydraulic fluids.

6.22.1 Mitigation Measures

The project constructor will be required to construct the project in as safe a manner as possible. All standard construction safety procedures will be followed including appropriate signage and public restrictions from work site areas. Construction equipment using public roads will obey speed limits. Construction personnel will receive safety training. A health and safety plan will be developed for the wind farm.

Regarding the operations period, the wind farm is in a rural area with no residents in the immediate vicinity. Therefore, few people are expected to be in close proximity to the turbines on a regular basis.

An Emergency Response Plan (ERP) will be prepared for the project prior to the initiation of the construction period. The ERP will be submitted for review and comments to the Municipality of Dorion. The ERP will be used in the event of an emergency and will contain contact information for regulators, landowners, and other stakeholders. Equipment required to respond to an emergency will be outlined in the ERP. All appropriate regulators will be notified should the emergency include any potential impact to

the health and safety of local residents or the environment. In addition, certain mitigation measures have been addressed in the EMP presented in Appendix L.

The Municipality of Dorion have been and will continue to be consulted on the development of the ERP. RES Canada will also work with the local fire department(s) and emergency response units to ensure that they are aware of the unique requirements of wind farms and potential associated accidents/events that they may need to respond to.

A Spills Response Plan (SRP) will also be developed which will address the requirements of the Ontario *Environmental Protection Act*. The SRP will address spill containment; spill reporting and spill clean-up procedures. Also to be included as part of this plan is the training activities for the construction work force that will be implemented to minimize the likelihood of spills. The SRP will be submitted for review by the MOE prior to construction.

RES Canada values the safety of its employees and the public, and will implement a Health and Safety plan during construction and operation phases of the project.

The wind farm will be operated in a manner that meets all applicable codes and practices. Sensors and detectors on the turbines will confirm that they are operating properly. Access doors at the base of the turbines will be kept locked. Gates may be placed at the access road entrances; the need for this will be determined in discussion with the Moose Lake Coalition, North Shore Fishing Club, other local stakeholders and, ultimately, determined by the MNR. Turbines will be equipped with obstruction marking and lighting according to Transportation Canada guidelines and determination.

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.

The likelihood of accidents/malfunctions associated with the Wind farm is considered to be low. The potential risks associated with accidents and malfunctions are also considered to be low.

6.23 Effects of the Environment on the Project

This section assesses the potential of climatic fluctuations and the potential effects of extreme weather and natural events that could have an effect on the project.

Climatic Fluctuations

Global climate models indicate an increase in global average temperatures with an increase in precipitation amounts. It is expected that the severity and frequency of extreme weather events will also increase as a result of global warming.

An increase in average wind speeds may be expected as a result of an extreme weather event. Modern wind turbines have the ability to pitch their blades, turn out of the wind and automatically shut down at wind speeds of 25 m/s or greater to preserve the structural integrity of the turbine. Similarly, during an extreme freezing rain or ice storm a sensor on the turbine registers the ice loading on the blades and the turbine automatically stops turning.

Extreme Events

Table 6.4 lists the probable extreme events that have the potential to affect the Greenwich Wind Farm. The likely effects and mitigation measures that are planned to address these events are also listed.

Table 6-4: Extreme Events

Event	Effect	Mitigation Measure
Heavy Rain/Flooding	Surficial drainage to remain intact and continue to convey water	None Required
Hail	Damage to turbine blades	Turbine blades are constructed to withstand hail impact
Heavy Snow	No effect anticipated	None Required
Ice Storms/Freezing Rain	Icing on turbine blades resulting in the potential of ice fall or throw	Turbine automatically powers down when it senses an imbalance in blades due to ice loading
High Winds/Tornado	No effect anticipated	Turbine blades designed to stop moving at wind speeds greater than 25 m/s. Turbine and foundation structures are designed to withstand a Level 2 tornado (200 km/h winds)
Lightening	Potential for fire in the nacelle	Lighting receptors installed along blades and surge protection in electrical components
Earthquake	Not located on an active fault area. No effects anticipated	Structure will be designed to meet the earthquake loads as per the Ontario Building Code.
Forest Fire	During the construction phase forest fires are a potential as a result of land clearing and burning slash piles. During the construction and operation phases there is the potential for forest fires as a result of natural causes such as lightening strikes or human causes such as camp fires.	RES will follow Ontario's Prescribed Burn Policy and will develop a Low Complexity Burn Plan as well as a Fire Prevention Plan. These plans will detail mitigation and emergency measures in the case of forest fires. Please also refer to the EMP.

6.24 Summary of Potential Effects and Mitigation Measures

Table 6.5 below provides a summary of the mitigation measures for the project specified issues identified.

Table 6-5: Summary of Mitigation Measures

Feature	Mitigation Measures
Physiography/Topography	<ul style="list-style-type: none"> Grading will be minimized as to not affect drainage patterns
Surface Water Quality and Soil Erosion	<ul style="list-style-type: none"> 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 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; The watercourse crossings are to be assessed in advance and the most appropriate mitigative measures determined. Alternative watercourse crossing locations should be considered if 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

Feature	Mitigation Measures
	<p>downstream watercourses. Areas disturbed by work must be minimized. Silt fences/curtains, sediment traps, check dams must be installed as appropriate;</p> <ul style="list-style-type: none"> • 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. • There are no anticipated effects during the operations phase of the wind farm.
Fisheries Habitat	<ul style="list-style-type: none"> • Adequate sediment and erosion control during construction along with revegetation of disturbed areas will be necessary to avoid any potential effects of construction to downstream habitat. • Sediment and erosion control systems should not be removed until the site is suitably stabilized. • Culverts should be embedded in the substrate to ensure there is no loss of habitat through the culvert section. In an open water course setting culverts will provide refuge in low flow and cover from predators for any fish population.
Groundwater Quality	<ul style="list-style-type: none"> • Given the relatively low volume of water that would be extracted during turbine base construction from dewatering and extracted for water use, no mitigation measures are required. • Fuels and oils will be managed per provincial requirements. • In the event of a spill of hazardous materials, clean-up procedures will be undertaken as per provincial protocols and legislations as governed by the <i>Environmental Protection Act</i> and the <i>Ontario Water Resources Act</i>.

Feature	Mitigation Measures
Air Quality	<ul style="list-style-type: none"> • Use new or 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. • Avoid excavation and other construction activities with potential to release airborne particulates during windy and prolonged dry periods; • Stabilize stockpiled excavated soils in areas that are upwind of sensitive receptors • Cover or otherwise contain loose construction materials that have potential to release airborne particulates during transport, installation or removal; • Spray water to minimize the release of dust from gravel, paved areas and exposed soils. Use chemical dust suppressants only where necessary on problem areas; and • Restore disturbed areas as soon as possible to minimize the duration of soil exposure.
Birds	<ul style="list-style-type: none"> • Mono-tubular towers, blade design and navigational lighting standards have all contributed too much lower bird mortalities. • Turbine placement and wind farm design are the key critical mitigating measures to minimize risk. • To avoid potential effects, turbines have been well set back from important habitat areas. • Inter-turbine spacing of more than 300-400 meters apart, and >1.0 km between turbine rows, provide plenty of room for birds to move within the study area. • Through the EA process RES has been entering into discussions with the Ontario MNR regarding the need for post construction mortality monitoring for this project. • A management plan should be developed for any construction activities within 2 km of any potential peregrine falcon nesting habitat. The management plan should include identification of nesting and feeding habitats, minimum setbacks, timing restrictions for construction, and monitoring requirements. • If construction does take place during the core breeding season (May

Feature	Mitigation Measures
	1 to August 15), it is recommended that a qualified biologist conduct nest searches in areas to be cleared (e.g. road ROWs) and identify nests, which require protection until young have fledged. Based on this nest search an appropriate buffer should be provided for each nest based on an initial determination by the biologist on site.
Bats	<ul style="list-style-type: none"> Minimize the need for lighting towers and the use of strobe lighting Dismantle turbines at the end of the project life Through the EA process RES has been entering into discussions with the Ontario MNR regarding the need for post construction mortality monitoring for this project.
Wildlife and Wildlife Habitat	<ul style="list-style-type: none"> Observe the identified setbacks from sensitive wildlife habitat in the siting of the turbines
Threatened, Rare or Endangered Species	<ul style="list-style-type: none"> A Species at Risk Interaction Plan for during the construction period will be developed to ensure that any interactions with Gray Fox den sites or Caribou individuals are appropriately mitigated. Through the EA process RES has been entering into discussion with the MNR regarding the development of this plan.
Population and Existing Land Use	<ul style="list-style-type: none"> No mitigation measures specific to effects on existing or future land use are proposed.
Disposal of Waste Materials	<ul style="list-style-type: none"> Systematic collection of waste on-site in weather protected bins Labeling and proper storage of liquid wastes in a secure area that will ensure containment of the material in the event of a spill. If any spills do occur, which could produce an environmental effect; it will be reported to MOE's Spills Action Centre. Appropriate spill kits will be provided on-site during construction. Prohibition of dumping or burying wastes within the project site. Should contaminated soil be encountered (unlikely as the area is relatively untouched with limited to no development) during the course of excavations the contaminated material will be disposed of in accordance with the current provincial legislation, such as Ontario regulation 461/05. Disposal of non-hazardous waste at a registered disposal facility Implementation of an on-going waste management program consisting of reduction, reuse and recycling of materials. RES will complete a Registration of Generators Report for each waste material.
Environmental Noise	<ul style="list-style-type: none"> As noise levels will be higher during the construction phase due to the use of heavy equipment traveling to and from the site and working on the site all engines associated with construction equipment will be equipped with mufflers and/or silencers to comply with MOE guidelines and regulations. Noise levels arising from equipment will also be compliant with sound levels established by the MOE. Construction activities that create excessive noise will be restricted to daylight hours and adhere to local noise by-laws. If activities that create excessive noise levels must be performed outside of regular

Feature	Mitigation Measures
	<p>working hours adjacent residents will be notified in advance.</p> <ul style="list-style-type: none"> During operations the wind farm, when modeled according to MOE ISO 9613-2 standard and Siemen noise level data, the environmental noise produced by the wind farm was found to not exceed the levels that apply for areas that have an acoustic designation of Class 3. The MOE's most stringent noise guidelines are predicted to be met at all receptors based on the current wind turbine layout. No additional noise mitigation measures are warranted.
Agricultural and Rural Resources	<ul style="list-style-type: none"> Construction activity will be limited to designated construction areas. Travel to and from construction areas will be made via access roads. Following the completion of construction the temporary construction areas will be restored. Consult with applicable forest companies prior to construction period regarding the salvage of merchantable timber. Consult with mineral claim holders with MNDM assistance prior to construction.
Neighbourhood and Community Characteristics	<ul style="list-style-type: none"> No specific mitigation measures required given remote nature of study area
Traditional Land Use by Aboriginal Peoples	<ul style="list-style-type: none"> At this time, it is not anticipated, subject to RES' continuing consultations with the relevant Aboriginal communities and appropriate mitigation measures, where needed, that there will be any significant adverse effects on Aboriginal communities' interests arising from the Project.
Recreation and Tourism Areas	<ul style="list-style-type: none"> Traffic mitigation measures are required for the construction phase of the project during peak tourist times for Ouimet Canyon Park. The wind turbines will be neutrally coloured (white towers) with a minimal use of logos to ensure they blend into the area as much as possible. Control access to turbine access roads in consultation with local interest groups and the MNR
Construction Related Traffic	<ul style="list-style-type: none"> There will be instances where excess loads will require special traffic planning. Widening turning radius and road widths may also be required. As appropriate these permits will be obtained from municipal and provincial agencies. Once in operation project related traffic will be limited to maintenance staff. Therefore, no mitigation measures are required.
Public Health and Safety	<ul style="list-style-type: none"> Implementing good transportation planning and safety measures during construction will minimize the potential for any traffic accidents and safety concerns. Safety concerns relating to construction traffic are addressed in Section 7.17. No additional mitigation measures will be taken. Public safety is incorporated into the project design. Land access during construction will be controlled through signs. The Construction Contractor will employ site safety practices during this

Feature	Mitigation Measures
	<p>phase.</p> <p>Shadow Flicker</p> <ul style="list-style-type: none"> Will not be a concern given absence of receptors in the area <p>Ice Fall and Throw</p> <ul style="list-style-type: none"> 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 rural Crown or municipal 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 to minimize this risk. Furthermore, icefall and throw occur in the winter when the area is expected to be less used. Therefore there should not be very much activity on or in the vicinity of turbines during the winter months. Signs on all access roads leading to the wind turbines will post signs warning people of the winter risk of ice fall and ice throw. <p>Turbine Collapse</p> <ul style="list-style-type: none"> Although highly unlikely there always is the possibility of critical failure. The wind turbines will be constructed to code and every possible measure will be taken to ensure good construction and engineering practices are observed.
Communications	<p>Impacts to Telecommunications</p> <ul style="list-style-type: none"> In order to ensure the wind farm would not negatively affect any radio communication systems, several agencies have been contacted. With the exception of NAV Canada, no concerns have been expressed to date. Discussions with NAV Canada are ongoing. The final layout has been sent to communication facility agencies to confirm that there are no concerns regarding the project.
Historical and Archaeological Resources	<ul style="list-style-type: none"> The area was noted to be low in archaeological potential and therefore, no additional studies are required. In the event that human remains are found all work will stop immediately, the Ministry of Culture will be contacted and the Registrar of the Cemeteries Regulation Unit of the Ontario Ministry of Consumer and Commercial Relations notified, as well as the appropriate police and local medical officer of health. No mitigation measures are required for the Operation phase of the wind farm due to the conclusion that no additional effects are expected.
Viewscape	<ul style="list-style-type: none"> The turbines will all be of the same make and neutrally coloured. No other mitigation is proposed.

6.25 Cumulative Effects

CEAA requires that the potential for cumulative effects to be considered as part of a CEAA screening assessment. Cumulative effects are defined as effects from the project that could combine with the effects of other possible future projects and activities. Only those future projects and activities that are considered as “certain” or “reasonably foreseeable” are to be considered in the cumulative effects assessment. In assessing the potential for cumulative effects from this project, the CEA Agency’s guidance materials, such as the *Practitioner’s Guide: Cumulative Effects Assessment Guide* was considered. Ultimately what a CEA considers is the potential for multiple similar effects occurring over the same geographic area and possibly time period, that individually may have insignificant effects but when combined could potentially amount to a significant adverse effect. For an effect to be considered cumulative, the following was deemed necessary:

- There must be a measurable environmental effect of the project being proposed;
- Any environmental effect must be demonstrates to interact cumulatively with the environmental effects from other projects or activities; and
- It must be known that the other projects or activities have been, or will be, carried out and are not hypothetical.

In undertaking the assessment of project effects as previously described in this section, it was understood that the existing conditions of the various environmental components considered reflect past and ongoing activities that are occurring within or outside of the study area. As such, the CEA was focused on the potential for cumulative effects from planned future projects or activities.

The CEA addressed the following questions:

- What residual effects of the project are likely?
- What other planned activities or projects are expected to occur in the study area?
- Is there a potential for cumulative effects to result and if yes, what is the significance of these potential cumulative effects?
- What measures should be put in place to address the potential for these cumulative effects?

6.25.1 Potential Adverse Environmental Effects from the Project

Based on the assessment of direct effects of the project on the various environmental components that were considered in this EA, the following adverse potential effects are likely.

Construction

- Disturbance to wildlife during the construction phase;
- Short-term erosion/sedimentation from water crossings and potential for loss of fish habitat;
- Traffic delays from the transport of project components to the study area and the movement of equipment within the study area.

Operation

- Change in the visual landscape of the area;
- Increase in noise levels although noise levels will be within MOE criteria; and
- Potential for birds and bats to collide with the wind turbines.

6.25.2 Other Future Projects/Activities

The study area is rural in nature and as such, the area is sparsely developed. In contacting the local municipality and provincial planning departments, no other planned developments within the study area were identified.

We understand that another wind project is being proposed within Shuniah Township although no details regarding this project are available. It is assumed that this project is far enough away so as to not result in any cumulative effects.

6.25.3 Potential Cumulative Effects

As no other projects are proposed in the study area, no cumulative effects are expected to result.

6.25.4 Mitigation Measures to Address Cumulative Effects

None required.

6.26 Summary of Potential Effects and Mitigation

Potential effects of the project are summarized as follows:

6.26.1 Construction Effects

- Some minimal disturbance effects to residents travelling between Dorion and Thunder Bay along Highway 11/17 in the form of dust and noise from equipment operation;
- Traffic delays from the transport of project components to the study area and the movement of equipment within the study area;
- Disturbance to wildlife during the construction period;
- Short term erosion/sedimentation effects from water crossings and potential for loss of fish habitat; and
- The loss of some natural vegetation/wildlife habitat.

6.26.2 Operation Effects

- Change in visual landscape of the area through visibility of the turbines; this effect is highly dependent on one's perception of wind turbines;

- Increase in noise levels in the area which will be within MOE criteria;
- Loss of some wildlife habitat and forestry lands;
- Potential for increased access due to the turbine access roads and collector line RoWs; and
- Potential for a small number of birds and bats to collide with the turbines.

The assessment has concluded that with the implemented mitigation measures, none of the adverse environmental effects are to be considered as significant. Project monitoring (See **Section 7**) will be undertaken to confirm the effects assessment and respond appropriately if necessary.

The previous **Table 6.5** provides a summary of key mitigation recommendations to be implemented. RES will also prepare an Environmental Management Plan in advance of construction initiation that will provide guidance to the Contractor in constructing the project.

7. Project Follow-Up Measures and Monitoring

7.1 Construction Monitoring

7.1.1 Terrestrial Habitat/Wildlife

A Species at Risk Interaction Plan for during the construction period will be developed to ensure that any interactions with Gray Fox den sites or Caribou individuals are appropriately mitigated. It is unlikely that either species will be encountered. The MNR will be consulted with in the development of this plan.

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

7.1.2 Aquatic Habitat/Surface Water

It is expected that monitoring activities relating to aquatic habitat will be confirmed through the ongoing permitting process with the Lakehead CA and DFO. The monitoring of aquatic habitat will occur at different levels and input from MOE will be sought regarding this activity. During construction, RES 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 possible.

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.

RES will construct and maintain all stormwater/erosion protection features appropriately in order to ensure the removal of total suspended solids effectively and efficiently. 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).

Accidental spills could also affect habitat. RES 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, please refer to the EMP.

7.1.3 Noise and Dust Disturbance Effects

During the construction period, there is the potential for disturbance effects such as noise and dust, particularly along the local roads to access the project site. It is expected that standard construction practices will minimize these effects as much as possible. RES Canada 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. RES Canada will respond to these calls and address the problem.

7.1.4 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.

7.2 Operations Monitoring

A draft avian monitoring program has been developed and is contained in **Appendix K** (*to be included as is currently being developed*). The MNR and Environment Canada will be consulted in the finalization of this program. Turbines will be sampled as soon as is reasonable after a target weather condition has passed through the area. This sampling of target weather conditions will be conducted on a seasonal basis in an attempt to model any difference in mortality rate during a particular weather event.

7.3 Aboriginal Community and Organization Liaison and Follow-up

As discussed more fully in **Section 4.3.2.**, RES will continue consulting with Aboriginal communities regarding traditional land use in the Project area.

7.4 Community Liaison and Follow-up

RES 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;
- RES 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.

8. Conclusion

The federal and provincial governments support the development of wind power in Ontario. It is a necessary contributor towards the Province's plan to close existing coal-powered electricity generation, thus reducing some of the province's largest emission sources of greenhouse gases. Wind energy is recognized at the federal level a source of carbon dioxide offsets which will eventually be used in federal carbon 'cap and trade' program. Finally, wind energy is a contributor towards Canadian energy security and an independence from imported fuel sources.

The natural and social environment has been thoroughly studied and has involved the following key activities:

- Review of maps and air photos;
- Review of natural heritage data and studies for the area;
- Review of land use planning related documents and policies;
- 1 year, 4-season bird survey program;
- Survey of potential peregrine falcon habitat areas;
- Bat summer and fall migration surveys;
- Field visits to examine water crossing locations/fish habitat;
- Archaeological investigations;
- Consultation with district MNR office; and
- Discussions with local stakeholders regarding the project.

The turbines and associated infrastructure has been sited and routed to avoid sensitive natural features in the project area. Mitigation measures, as outlined in this ESR, will be undertaken to minimize effects to the environment. It is expected that no significant effects to the natural environment will result from the project. Further, RES is committed to the following:

- the preparation and implementation of an Avian Monitoring Program (Appendix K);
- detailed vegetation surveys prior to construction;
- additional aquatic survey work to confirm the location and form of access road water crossings and the need for mitigation/habitat compensation;
- the preparation of an Environmental Management Plan to guide construction activities (Appendix L); and
- the development of a Stormwater Management Plan.

Regarding effects on the social environment, the project is well removed from any residences or businesses. Some short term disruption to recreation users of the site (e.g., hunters, snowmobilers) is possible depending on the timing of construction. RES will continue discussions with local interest groups to ensure that effects on trout lakes in the larger area are avoided. RES has discussed the project with Ontario Parks regarding its proximity to Ouimet Canyon Park. Visual effects of the project from the park have been shown to be minimal to none.

Extensive consultation has been held with local stakeholders, government agencies, and Aboriginal communities. The Red Rock Band, the closest First Nation to the project, has indicated their support for the project. Consultation with Aboriginal communities continues. The project enjoys excellent local support, and has already achieved municipal zoning approvals from the Township of Dorion. The project will contribute to the local and regional economy and create employment opportunities during both the construction and operational phases.

Every reasonable step has been taken to ensure this project adheres to all federal, provincial and municipal regulatory requirements. **Based on the environmental screening that was undertaken, the Greenwich Wind Farm, including the mitigation commitments, will not likely cause significant effects on the environment, including the natural and social environment.**

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1 **PUBLIC CONSULTATION - AGENCY CONSULTATION**

2 RES Canada has consulted with 13 federal government agencies, 16 provincial
3 government agencies and the Townships of Dorion and Shuniah. Details of its agency
4 consultation effort are included in the Final ESR (appended at Exhibit H, Tab 1,
5 Schedule 2) in section 4, pages 31-62. RES Canada has also consulted several
6 agencies with respect to possible interference with communications towers, as required
7 by the Radio Advisory Board of Canada. Details of these consultation efforts are set out
8 in the Final ESR at section 4.6, pages 51-55.

9 On June 9, 2009, RES Canada voluntarily made the Draft ESR available for public and
10 agency consultation. A number of agencies provided comments on the Draft ESR prior
11 to the release of the Final ESR in mid-July, 2009. These comments were taken into
12 account, where appropriate, in the final project design and layout that is presented in
13 the Final ESR.

14 The proposed route of the Greenwich Windfarm Transmission Line that is described in
15 the Final ESR differs from the preliminary route that was presented in the Draft ESR.
16 Routing changes were made to reflect construction constraints identified during site
17 investigations by RES Canada. (See Exhibit I, Tab 2, Schedule 1 for a more detailed
18 explanation of this change.)

19 **Ministry of the Environment**

20 Through personal communication and in a letter dated July, 10, 2009, the MOE
21 requested additional information with respect to and/or commented on the cement batch
22 plant, the species at risk interaction plan, the erosion and stormwater management
23 plan, public information centre #2, on-site and off-site waste disposal, mineral claims
24 holders in the project area and consultation efforts with the Ministry of Northern
25 Development and Mines ("MNDM"), consultation with the MNR regarding post-
26 construction bat and bird monitoring, environmental noise, including the requirement for
27 a Noise Certificate of Approval, traplines in the project area, consultation with
28 NAVCanada and the resolution of potential radio communication interference; and the
29 development of a "Spill Response Plan" to be submitted for review by the MOE, prior to
30 construction.

31 RES has addressed these comments in the Final ESR and to date has not received any
32 further comments from the MOE with respect to the Final ESR. The 30-day review
33 period expires on August 11, 2009. RES will remain in consultation with the MOE
34 throughout the remainder of the development phase as well as through the construction
35 period of the Greenwich Windfarm.

Ministry of Natural Resources

The MNR, in a letter dated July 7, 2009, requested additional information with respect to land ownership, the raptor study; access to the windfarm site during construction, forest fires risk and mitigation, peregrine falcon habitat surveys; the notification of resource harvesters, including those operating in traplines and bear management areas, the impact on trapping cabins as noise receptors, the impacts of increased road access on the area and significance of cumulative effects, and the studies on fish habitat, breeding birds, and bats.

RES has addressed these comments in the Final ESR and to date has not received any further comments from the MNR with respect to the Final ESR. The 30-day review period expires on August 11, 2009. RES will remain in consultation with the MNR throughout remainder of the development phase as well as through the construction period of the Greenwich Windfarm.

Ontario Parks

Ontario Parks, in a letter dated July 6, 2009, requested additional information with respect to:

- the Cavern Lake Provincial Park bat hibernaculum;
- conflicts with existing land uses, businesses and activities in Ouimet Canyon Provincial Park; and
- visual simulations vis á vis Ouimet Canyon Provincial Park.

The above-noted matters were addressed by RES Canada in the Final ESR.

1 **PUBLIC CONSULTATION - INDIVIDUAL STAKEHOLDER CONSULTATION**

2 RES Canada has consulted extensively with affected individuals in connection with the
3 proposed construction of the Greenwich Windfarm and related facilities, including the
4 Greenwich Windfarm Transmission Line. In this regard, RES Canada held two Public
5 Information Centres ("PIC") on September 23, 2008 and June 17, 2009, at the Dorion
6 Community Centre in the Township of Dorion. Stakeholders were advised of these
7 sessions by mail and in notices published in the Thunder Bay Chronicle Journal and the
8 Nipigon Gazette. Representatives from RES Canada, Dillon and Northern Bioscience
9 (who conducted bird, bat, and other biological studies) were present at each session to
10 answer questions about the project and to provide additional information. At the first
11 PIC, information panels were set up to provide information about the project, including
12 the proposed corridor for the Greenwich Windfarm Transmission Line. At the second
13 session, information panels were again used to provide project information, including
14 the preliminary proposed route for Greenwich Windfarm Transmission Line.

15 Attendees at each PIC were invited to fill out a questionnaire about the project. The
16 most common issues raised in completed questionnaires were in respect of the
17 potential impacts on birds and bats, the location of turbines (including the visual impacts
18 to Ouimet Canyon Park), impacts on recreational activities and increased access to
19 previously remote sites. Respondents identified employment and related spin-offs,
20 increased tax-base for the community, increased tourism in the area and the benefits of
21 renewable energy as benefits associated with the project.

22 Subsequent to the second PIC session, changes were made to the preliminary route of
23 the Greenwich Windfarm Transmission Line to reflect construction constraints which
24 were identified during detailed site investigations by RES Canada. The revised route still
25 falls within the transmission line corridor that was presented at the first PIC in
26 September 2008 and reflects the mitigation of environmental impacts, such as
27 avoidance of wetlands and sensitive habitat and the reduction of visual impacts. The
28 revised route also reduces the impact on current land uses that were identified within
29 the project study area.

30 RES Canada is continuing its consultation with affected individuals and interest groups
31 who have raised specific issues regarding mining claims, trapping, logging, recreational
32 uses and site access. The continued consultation is focused on ongoing mitigation
33 matters related to Greenwich Windfarm; the routing of the transmission line has been
34 finalized and is not expected to change.

35 Further details regarding the individual stakeholder consultation, as well as future
36 consultation commitments by RES Canada, are set out at section 4 of the Final ESR,
37 included at Exhibit H, Tab 1, Schedule 2.

PUBLIC CONSULTATION - ABORIGINAL CONSULTATION

In February 2007, as part of screening guidance provided to RES Canada, the MNR office in Thunder Bay indicated which Aboriginal communities should be consulted by RES Canada in connection with the project. As a further step in determining which Aboriginal communities and organizations to consult, RES contacted the Chiefs of Ontario and the federal Department of Indian and Northern Affairs Canada ("INAC") and Ontario Ministry of Aboriginal Affairs ("MAA"). Finally, in early 2009, RES Canada submitted an "Aboriginal Consultation Information Request" letter to the Ontario Ministry of Energy and Infrastructure ("MEI") as required by the OPA's RES-III RFP process. In a letter, dated February 12, 2009, MEI identified the Aboriginal communities that it considers should be consulted.

The Applicant is in continuing consultation with the following four groups who were contacted by RES Canada and who expressed an interest in participating in the consultation process: Red Rock Indian Band ("RRIB"), Fort William First Nation ("FWFN"), the Red Sky Métis Independent Nation ("RSMIN"), and the Métis Nation of Ontario (Thunder Bay Métis Council and Geraldton Area Métis Council) ("MNO").

Red Rock Indian Band – RES Canada is continuing its consultation with the RRIB in order to determine the nature of its interest in the project area, including traditional land use and archaeological interest. RES and the RRIB continue to discuss the following matters: capacity funding for review of the ESR and participation in related meetings and processes; development funding for future collaboration on new developments; employment and contracting opportunities relating to project construction and decommissioning activities; and a proposal for a wind technician bursary.

Fort William First Nation – RES Canada is continuing its consultation with the FWFN to determine the nature of its interest in the project area, if any, including traditional land use and archaeological interest. RES Canada and FWFN continue to discuss the following matters: capacity funding for review of ESR and participation in related meetings and processes; development funding for potential future collaboration on new developments; employment and contracting opportunities relating to project construction and decommissioning activities; and a proposal for a wind technician bursary proposal.

Red Sky Métis Independent Nation – RES Canada is continuing consultation with the RSMIN to determine the nature of its interest in the project area, if any, including traditional land use and archaeological interest. RSMIN and RES have agreed on a capacity funding budget for RSMIN's review of the ESR and participation in related meetings and processes, including a vegetation field survey (a member of the RSMIN accompanied field staff out to site for these surveys in July 2009).

1 Métis Nation of Ontario – RES is continuing consultation with the MNO to determine the
2 nature of its interest in the project area, if any, including traditional land use and
3 archaeological interest. The MNO and RES Canada have agreed on a capacity funding
4 budget for review of the ESR and participation in related meetings and processes.

5 A detailed description of RES Canada's Aboriginal consultation, up to the date of the
6 release of the ESR, is provided at Section 4.3, pages 33-40, appended at Exhibit H, Tab
7 1, Schedule 2.

APPENDIX I

RES CANADA GREENWICH WIND FARM PROJECT

SUMMARY OF ABORIGINAL CONSULTATION ACTIVITY BY RES AS OF 07 JULY 2009

This document summarizes certain representative Aboriginal consultation activity carried out by RES to date. It is not intended to be a comprehensive record of all Aboriginal consultation activities carried out by RES to date. The detailed record of all such consultation activities will be made available, as appropriate, during the course of the relevant regulatory proceedings relating to Project approval. RES intends to pursue consultation activities with the relevant Aboriginal communities in accordance with the Aboriginal Consultation Agreement and Consultation Plan ("ACA") and to follow-up as appropriate on the consultation activities set out below. The activities to date are presented by First Nation ("FN"), other Aboriginal community ("AC") or representative organization, as applicable, in alphabetical and then chronological order.

1. CHIEFS OF ONTARIO

DATE:	COMMUNICATION:
Sept. 2007	RES calls to determine FNs that could have potential interests in project. RES sends email with Notice of Study Commencement (NoC). RES is advised that NoC would be circulated to Chiefs and Council, and that additional information or meeting would be requested if required. RES is advised that Anishinabek First Nations would be most interested and that Red Rock Band and Fort William FNs are closest geographically to the Project study area.
June 8, 2009	RES sends letter advising of up-coming Public Information Centre (PIC), and voluntary release of draft Environmental Screening Report (ESR).
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

2. ANIMBIIGOO ZAAGHIGAN ANISHINAABEK (LAKE NIPIGON OJIBWAY FIRST NATION)

DATE:	COMMUNICATION:
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
Jan. 9, 2009	RES sends follow-up email proposing meeting with Lake Nipigon FN communities.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

3. BEGETIKONG ANISHNABE FIRST NATION - AKA OJIBWAYS OF PIC RIVER (HERON BAY)

DATE:	COMMUNICATION:
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
May 25, 2009	Follow-up letter and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
June 12, 2009	FN representative sends email indicating that Project area is situated outside of FN's traditional territory, and declining RES' offer to meet with FN representatives.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

4. BIINJITIWABIK ZAAGING ANISHNABEK (ROCKY BAY) FIRST NATION

DATE:	COMMUNICATION:
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.

Jan. 9, 2009	RES sends follow-up email proposing meeting with Lake Nipigon FN communities.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

5. BINIGWI NEYAASHI ANISHINAABEK (SAND POINT) FIRST NATION

DATE:	COMMUNICATION:
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
Jan. 9, 2009	RES sends follow-up email proposing meeting with Lake Nipigon FN communities.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

6. FLYING POST FIRST NATION

DATE:	COMMUNICATION:
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

7. FORT WILLIAM FIRST NATION (FWFN)

DATE :	COMMUNICATION:
Sept. 2007	RES calls prior to sending Notice of Study Commencement (NoC) letter and to propose meeting.
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Oct. 30, 2007	Introductory meeting with FWFN at Band Office with Chief. RES provides presentation on Project and Company. RES to make presentation in future to full Council in Thunder Bay.
July, 2008	RES proposes second meeting with FWFN Chief and Council; advised that Council was not available for meeting.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FWFN.
Sept. 2008 – Feb. 2009	RES makes several attempts to contact Chief and Band Administrator to schedule meeting with FWFN, but does not receive a response.
April 16-20, 2009	Having been made aware of recent election at FWFN, RES re-sends all letters and notices to new FWFN coordinator with request for meeting with new Chief and Council. RES requests that new FWFN leadership recognize engagement efforts made to date with previous leadership.
May 6, 2009	RES emails newly elected Chief, providing previously sent letters and notices, and confirms availability for meeting between FWFN and RES on May 23 rd , 2009. RES offers capacity funding to FWFN to review Project documents. RES provides information regarding proposed installations of two meteorological towers (met masts), requesting FWFN to contact local Ministry of Natural Resources (MNR) office to provide comments on same.
May 23, 2009	Meeting with FWFN Chief and other members. RES provides presentation on Project and its company, information on environmental screening process and Project timelines. RES outlines its consultation efforts with previous FWFN Chief and Council, its engagement efforts with other FNs to date, including the established nature of its relationship with the Red Rock Indian Band (RRIB).

FWFN asserts that the Project area overlaps with its traditional lands.

RES repeats its requests that FWFN provide the MNR with feedback on RES' planned met masts. FWFN requests additional information regarding the met masts.

RES offers capacity funding for FWFN review of ESR, and participation in related meetings and processes, including vegetation field survey. RES requests that FWFN provide a budget for such work. FWFN to consider.

RES notes its bursary proposal for interested FWFN members enrolled in a wind turbine technician program. FWFN requests additional information.

RES requests future joint meeting with FWFN and RRIB to discuss their support of current Project, potential capacity funding measures, and potential collaboration of FWFN, RRIB and RES on future wind energy projects. FWFN to discuss in Council and respond.

RES indicates that draft ESR is close to completion. RES to send FWFN a copy upon completion.

May 29, 2009

Joint meeting between FWFN, Red Rock Indian Band (RRIB), and RES.

RRIB updates RES on its efforts with regulatory authorities regarding First Nation participation in a potential expansion to the current Project.

FWFN and RRIB indicate interest in developing other future renewable energy projects in their traditional territories. RES indicates willingness to consider possibilities of future collaboration with FWFN and RRIB.

RES indicates its desire to obtain formal acceptance, or non-objection, from FWFN and RRIB regarding the current Project.

RES reiterates its offer of capacity funding to RRIB and FWFN for their review of ESR, and participation in related meetings and processes, including up-coming vegetation field survey.

RES reiterates its openness to explore possible priority for FWFN and RRIB regarding certain contracting opportunities during the construction phase of the Project, subject to legal constraints and other considerations.

RES mentions potential development funding to FWFN and RRIB, after initial phase of Project enters service, to facilitate FWFN and RRIB participation in development of potential future renewable energy projects.

RRIB indicates that a 10 MW expansion to the current Project site is a priority. RES notes that it would be open to explore potential collaboration on such a 10 MW expansion for a future phase of the Project.

FWFN, RRIB and RES discuss possible means of formalizing understanding regarding the above.

June 2, 2009	RES sends an electronic copy of 23 May 2009 RES presentation to FWFN, along with met mast work plan documentation, to FWFN representative.
June 8, 2009	RES sends letter advising of up-coming PIC and voluntary release of draft ESR, along with a hard copy of draft ESR, to FWFN representative.
June 12, 2009	RES emails notice of up-coming release of draft ESR and related PIC, for inclusion in FWFN newsletter.
June 23, 2009	RES emails electronic version of RES presentation to FWFN of 23 May 2009, met mast work documentation and framework for possible understanding between FWFN and RES regarding the Project.
June 24, 2009	RES emails FWFN representative the meeting minutes for 23 May 2009 and 29 May 2009 meetings, for review.
June 30, 2009	RES emails FWFN regarding possible understanding between FWFN and RES regarding the Project.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

8. GRAND COUNCIL TREATY #3

DATE :	COMMUNICATION :
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to Aboriginal entity.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

9. KIASHKE ZAAGING ANISHINAABEK FIRST NATION (GULL BAY)

DATE:	COMMUNICATION:
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Jan. 9, 2009	RES sends follow-up email proposing meeting with Lake Nipigon FN communities.
May 25, 2009	Follow-up letter and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

10. LAC DES MILLES LAC FIRST NATION

DATE :	COMMUNICATION :
Sept. 2007	RES calls prior to sending Notice of Study Commencement (NoC) letter and to propose meeting, left message with Band Council. No response.
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

11. MÉTIS NATION OF ONTARIO (MNO)

DATE :	COMMUNICATION :
Oct. 24, 2008	RES sends Notice of Study Commencement (NoC) to MNO.
Oct. 31, 2008	MNO advises that it forwards NoC to appropriate regional Councils.
Nov. 11, 2008	RES emails copy of Project study area to MNO.

Feb. 2, 2009 MNO representative calls to ask for general Project update.

March 25, 2009 Telephone conversation between RES and MNO Project Coordinator regarding:

- MNO structure and roles of local and provincial members. MNO primary contact to be with Thunder Bay Métis Council President Wendy Landry.
- RES Canada - company profile and experience.
- Wind energy industry - project site selection process, EA process, stakeholder consultation process.
- Greenwich project - Infrastructure description, construction timelines, interconnection.
- Impacts and benefits - Employment opportunities, possible impacts on current land use, capacity building for EA assessment.

Mar. 31, 2009 MNO emails RES inquiring about possible meeting in Thunder Bay b/w RES and Lakehead/Nipigon/Michipicoten (region 2) protocol committee.

Métis Consultation and Accommodation brochure is also included

April 17, 2009 Meeting between RES and MNO in Thunder Bay. RES gives presentation on Project, including RES, wind energy, EA process, turbine layout, setbacks and constraint mapping, Project development and Project schedule.

RES agrees to MNO's request to hold meeting with local Aboriginal Communities, if they request it.

RES explains its Aboriginal consultation efforts to date per guidance from MOE and Aboriginal Communities themselves. RES offers meetings to all and will meet with anyone who responds.

Discussion of ACA and possible MNO input into development of consultation plan. MNO explains that consultation with Métis will be different than with other Aboriginal Communities.

RES to provide a copy of draft ESR. In addition, RES will provide capacity funding to MNO to assist with review. MNO to provide RES with budget for this review.

Discussion of transmission capacity and rights of way to develop Project site.

Discussion of process for collecting "Traditional Knowledge", areas of environmental interest (species, habitat, aquatics, vegetation control measures), information for trapline holders, possible health impacts of turbines.

Discussion of taxes for local municipality and Province.

Discussion of bursaries for training in wind energy employment.

MNO advise that elected leadership to review and discuss material presented. It will respond to RES about consultation and next steps.

June 3, 2009 RES sends meeting minutes of 17 April 2009 meeting, for MNO review.

RES also sends electronic version of 17 April 2009 RES presentation to MNO.

June 8, 2009 RES sends letter advising of up-coming PIC and voluntary release of draft ESR, along with hard copy of draft ESR, to MNO representative.

June 12, 2009 RES emails MNO representative regarding MNO comments on 17 April 2009 meeting minutes provided by RES, prior to finalization of same.

June 22-23, 2009 MNO representative emails RES to indicate MNO agreement with 17 April 2009 meeting minutes. RES sends MNO representative final version of these meeting minutes.

Telephone discussion regarding budget for MNO review of ESR and participation in related meetings and processes. MNO to provide budget proposal for RES consideration.

June 26, 2009 MNO sends above-mentioned budget to RES.

July 3, 2009 Telephone discussion with MNO representative regarding MNO participation in vegetation survey. MNO to notify RES if an MNO representative is to participate in the field survey.

July 7, 2009 MNO informs RES that it will not participate in the vegetation survey. RES confirms budget for MNO review of ESR, and participation in related meetings and processes.

July 7, 2009 RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

12. NISHNAWBE ASKI NATION

DATE : **COMMUNICATION :**

Oct. 17, 2007 RES sends Notice of Study Commencement (NoC) and introductory letter.

Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

13. PAYS PLAT FIRST NATION

DATE :	COMMUNICATION :
Sept. 2007	RES calls prior to sending Notice of Study Commencement letter and to propose meeting. Left message with Band Council; no response.
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

14. PIC MOBERT FIRST NATION

DATE :	COMMUNICATION :
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
May 25, 2009	Follow-up letter and meeting request sent to FN.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

15. RED SKY METIS INDEPENDENT NATION (RSMIN)

DATE :	COMMUNICATION :
Oct. 24, 2008	RES sends Project information to RSMIN.
Nov. 4-6, 2008	RSMIN requests copy of the ESR and states need for members' support as condition of endorsement.
Nov. 10, 2008	RES emails copy of PIC # 1 Boards to RSMIN.
April 10, 2009	RSMIN agrees to meet RES on April 17, 2009 regarding Project presentation.
April 17, 2009	Meeting between RES and RSMIN in Thunder Bay. RES to provide RSMIN with copy of draft ESR for comment and input and will provide capacity funding for this purpose. RSMIN informs RES of its land claim regarding Robinson-Superior Treaty. RSMIN states that it is dealing with Dept. of Justice regarding same. RES to provide RSMIN with copies of: PIC Boards, Constraints Map, Presentation. Concerns expressed by RSMIN: continued hunting, fishing, trapping and vegetation harvesting; potential impacts on archaeological and historic resources; greater access into area could impact hunting and fishing; noise; chemical application. RES to address concerns of RSMIN in ESR. RES to provide opportunity to RSMIN to travel to site area for additional field studies, if required. RES willing to adhere to RSMIN's consultation plan. RSMIN requests revenue sharing. RES agrees to meet again at the request of RSMIN.
June 3, 2009	RES sends meeting minutes of 17 April 2009 meeting, for RSMIN review. RES also sends electronic version of 17 April 2009 RES presentation to RSMIN, PIC #1 materials and Project constraints map, to RSMIN representative.
June 8, 2009	RES sends letter advising of up-coming PIC and voluntary release of draft ESR, along with hard copy of draft ESR, to RSMIN representative.

June 10-12, 2009	RES and RSMIN representative verbally review meeting minutes of 17 April 2009 meeting. RES advises on scope of work, duration and schedule of vegetation field survey work. RSMIN representative provides proposed budget to RES for RSMIN review of ESR, and participation in related meetings and processes, including vegetation field survey.
June 23, 2009	RES approves revised RSMIN budget proposal for review of ESR, and participation in related meetings and processes, including vegetation field survey. RES sends RSMIN the final version of meeting minutes of 17 April 2009 meeting.
June 25, 2009	RES emails RSMIN representative tentative dates for vegetation field surveys.
June 26, 2009	RSMIN and RES agree on budget for review of ESR and participation in related meetings and processes, including vegetation field survey.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

16. RED ROCK INDIAN BAND (RRIB)

DATE :	COMMUNICATION :
Sept. 2007	RES calls prior to sending Notice of Study Commencement letter and to propose meeting. Meeting with Chief and Council planned.
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Oct. 30, 2007	Introductory meeting with FN held at Red Rock Indian Band Lake Helen Reserve. RES provides presentation on Project and Company. RRIB to provide map with reserve land identified. RRIB confirms that no Project infrastructure falls on reserve land or areas within existing land claims.

	<p>RRIB identifies primary concerns with Project as: environmental impact, community employment opportunities, and impact on traditional activities.</p> <p>RRIB suggests potential collaboration on development of alternate wind energy project on Lake Helen Reserve land. RES to evaluate.</p> <p>RES commits to presenting in future to full Council.</p>
Feb./June, 2008	<p>RES provides RRIB with maps and information on analysis of potential for separate wind farm development on Reserve.</p>
June 23, 2008	<p>RES sends OPA draft RES III tender to RRIB.</p>
July 22, 2008	<p>Meeting with RRIB held at Lake Helen Reserve.</p> <p>RRIB reports positive community response to Project to date. RRIB asks about economic benefits from Project.</p> <p>RRIB to place a description of the Project area in the Community Bulletin and request comments including use in the Project area for traditional activities. RES to provide NoC and requests for input for inclusion in bulletin.</p>
August, 2008	<p>RES General Contractor retains RRIB sub-contractors for civil work for two meteorological tower installations.</p>
August 7, 2008	<p>RES sends RRIB list of college training programs related to wind resource sector jobs.</p>
August 13, 2008	<p>RES emails Project information to RRIB for inclusion in its community newsletter.</p>
Sept. 9, 2008	<p>Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to RRIB.</p>
Sept. 22, 2008	<p>RES provides Project updates to RRIB, which expresses continued support for Project.</p> <p>RRIB advises RES that traditional values mapping has not been completed in Study Area and work is currently on-going. RES to provide RRIB with a GIS file of the study area in order to assist RRIB with traditional values work.</p> <p>Discussion of involvement of other Lake Nipigon FNs in EA process.</p>

RRIB requests RES to prepare letter of support from FN for review by Chief and Council.

Oct. 20, 2008 RRIB Councillor attends first Open-House meeting in Dorion.
RRIB sends letter of support in principle for RES project.

Nov. 10, 2008 RES provided RRIB with CD of all public information on the Project and on Aboriginal consultations. RES asks RRIB to review and comment if it has concerns.

Jan. 9, 2009 RES sends follow-up email proposing meeting with Lake Nipigon FN communities.

March 3, 2009 Meeting with RRIB at which RES provides update on Project, environmental assessment process and OPA tender award.

RES and RRIB agree to meet with other First Nations (Lake Nipigon and Fort William). RRIB to coordinate meeting date.

April 4, 2009 RES sends information to RRIB Economic Development Officer regarding wind technician training and certification.

April 17, 2009 RES gives Project update.

Discussion of economic aspects of Project, including employment, capacity development, contracting, possible collaboration on future projects, notification of employment and contracting opportunities, possible preference for local labour and contractors.

Discussion of involvement of six Lake Nipigon FNs and FWFN.

Discussion of draft MOU b/w RRIB and RES in support of Project.

May 29, 2009 Joint meeting between RRIB, Fort William First Nation (FWFN) and RES.

RRIB updates RES on its efforts with regulatory authorities regarding First Nation participation in a potential expansion to the current Project.

FWFN and RRIB indicate interest in developing other future renewable energy projects in their traditional territories. RES indicates willingness to consider possibilities of future collaboration with FWFN and RRIB.

RES indicates its desire to obtain formal acceptance, or non-objection, from FWFN and RRIB regarding the current Project.

RES reiterates its offer of capacity funding to RRIB and FWFN for their review of ESR, and participation in related meetings and processes, including up-coming vegetation field survey.

RES reiterates its openness to explore possible priority for FWFN and RRIB regarding certain contracting opportunities during the construction phase of the Project, subject to legal constraints and other considerations.

RES mentions potential development funding to FWFN and RRIB, after initial phase of Project enters service, to facilitate FWFN and RRIB participation in development of potential future renewable energy projects.

RRIB indicates that a 10 MW expansion to the current Project site is a priority. RES notes that it would be open to explore potential collaboration on such a 10 MW expansion for a future phase of the Project.

FWFN, RRIB and RES discuss possible means of formalizing understanding regarding the above.

June 3, 2009 RES sends meeting minutes of 17 April 2009 meeting to FN representative, for RRIB review and comment.

RES also sends FN representative meeting minutes for the following meetings: 30 October 2007; 22 July 2008; 22 September 2008; and, 03 March 2009.

June 5, 2009 RES emails notice of up-coming release of draft ESR and related PIC, for inclusion in RRIB newsletter.

June 8, 2009 RES sends letter advising of up-coming PIC and voluntary release of draft ESR, along with a hard copy of draft ESR, to RRIB representative.

June 12, 2009 RES emails RRIB representative regarding comments on meeting minutes provided by RES to RRIB to date, prior to finalization of same.

FN representative subsequently confirms RRIB agreement with these meeting minutes.

RES provides Geographic Information System (GIS) data relating to Project area, as previously requested by RRIB representative.

- June 18, 2009 RES meeting with RRIB representatives.
- RES and RRIB discuss possible capacity funding for environmental screening participation and development funding for potential future collaboration on new developments, potential employment and contracting opportunities relating to Project construction and decommissioning activities, wind technician bursary program, in context of possible formalization of understanding regarding these points.
- RES provides an update on consultation efforts with other Aboriginal groups, including Métis groups. RES indicates that capacity funding has been offered to certain Métis groups in relation to the environmental screening process.
- RRIB requests a letter of support in principle from RES in relation to RRIB's request to regulatory authorities for a 10 MW transmission capacity expansion for a potential future phase of the Project. RES agrees to provide such a letter.
- RRIB notes that its principal interests in relation to the Project are with regard to employment, provision of equipment, construction activities and labour, rather than more technical jobs or contracting opportunities for its members and businesses.
- June 22, 2009 RES sends copies of final versions of meeting minutes up to, and including, meeting of 17 April 2009.
- June 24, 2009 RES emails RRIB representative the meeting minutes for 29 May 2009 meeting, for review
- June 30, 2009 RES emails RRIB regarding possible understanding between RRIB and RES regarding the Project.
- July 7, 2009 RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

17. THUNDER BAY MÉTIS COUNCIL (TBMC) AND GERALDTON AND AREA MÉTIS COUNCIL (GAMC) (MNO)

DATE :	COMMUNICATION :
Nov. 21, 2008	RES sends Project information (letter and Notice of Study Commencement (NoC)).
April 17, 2009	TBMC and GAMC attend RES meeting with MNO in Thunder Bay. Please see summary above under MNO.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
Various	Please refer to summary above under MNO for other relevant entries.

18. UNION OF ONTARIO INDIANS

DATE :	COMMUNICATION :
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Nov. 02, 2007	Union of Ontario Indians (UOI) sends letter to RES recommending that it contact local Anishinabek FNs whose traditional territory might be affected by the Project. Suggests contacting Regional Chief through UOI Intergovernmental Affairs Director (Director).
Nov.-Dec. 2007	RES makes several attempts to contact UOI Director by email and telephone but receives no response.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to Aboriginal entity.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

19. WHITEWATER LAKE FIRST NATION

DATE :	COMMUNICATION :
Oct. 17, 2007	RES sends Notice of Study Commencement (NoC) and introductory letter.
Sept. 9, 2008	Follow-up letter, Public Information Centre (PIC) invitation, and meeting request sent to FN.
Jan. 9, 2009	RES sends follow-up email proposing meeting with Lake Nipigon FN communities.
June 8, 2009	RES sends letter advising of up-coming PIC, and voluntary release of draft ESR.
July 7, 2009	RES sends letter advising of planned posting of Notice of Study Completion and release of final ESR on July 13, 2009.

Other Matters – Table of Required Approvals and Permits

Federal Government Permits and Approvals	Approving Authority	Status
Issuance of a decision by the Responsible Authority under the <i>Canadian Environmental Assessment Act</i> with respect to the environmental screening	EC	Pending
Permit to collect migratory bird carcasses under the <i>Migratory Bird Conservation Act</i>	EC	Pending
Authorization for watercourse crossings or acceptance, by DFO, of a Letter of Intent to Compensate Fish Habitat Loss under subsection 35(2) of the <i>Fisheries Act</i>	DFO	Pending
Authorization for blasting in or near water under section 32 of the <i>Fisheries Act</i>	DFO	Pending
Aeronautical Obstruction Clearance Permit under the <i>Aeronautics Act</i>	TC	Complete
Acceptance of the Aviation Safety Land Use Proposal by NavCanada	NavCan	Complete
Ontario Ministry of Natural Resources		
Filing of a Plan of Development	MNR	Complete
Applicant of Record Status Grant	MNR	Complete
Crown Lease Grant	MNR	Pending
Transmission Corridor Easement Grant	MNR	Pending
Roads and Trails Work Permit under O. Reg. 453/96 of the <i>Public Lands Act</i>	MNR	Pending
Water Crossings Work Permit under O. Reg. 454/96 of the <i>Lakes and Rivers Improvement Act</i>	MNR	Pending

Burning Permit under section 5 of O. Reg. 207/96 of the <i>Forest Fire Prevention Act</i>	MNR	Pending
Aggregate Permit under section 34(1) of the <i>Aggregate Resources Act</i>	MNR	Pending
Permit to collect bat and bird carcasses under the <i>Fish and Wildlife Conservation Act</i>	MNR	Pending
Forest Resource License under section 27 of the <i>Crown Forest Sustainability Act</i> and potential overlapping agreements with holder(s) of a Sustainable Forest Licence	MNR	Pending
Approval to commence cutting operations under section 44 of the <i>Crown Forest Sustainability Act</i>	MNR	Pending
Authorization for temporary holding yard for harvested wood	MNR	Pending
Authority to Haul Unscaled Crown Timber Resources	MNR	Pending
Execution of a Surface Rights Agreement	MNR and MDMN	Pending
Hunting Closure on Crown Land	MNR	Pending
Filing and Acceptance of an Environmental Management Plan	MNR	Pending
Ontario Ministry of Environment		
Notice of Completion of Environmental Screening Report	MOE	Complete
30 day public comment period	MOE	In Progress
Statement of Completion	MOE	Pending
Certificate of Approval (Air) under section 9 of the <i>Environmental Protection Act</i>	MOE	Pending

Certificate of Approval (Sewage Works) under section 53 of the <i>Ontario Water Resources Act</i>	MOE	Pending
Permit to Take Water under section 34 of the <i>Ontario Water Resources Act</i>	MOE	Pending
Ontario Ministry of Transportation		
Transportation Permit (e.g. Oversize/Overweight Permit) or Special Vehicle Configuration Permit under the Highway Traffic Act	MTO	Pending
Municipal and Conservation Authority		
Zoning By-law Amendment	Twp of Dorion	Complete
Building Permit	Twp of Dorion	Pending
Lakehead Conservation Authority Permit for Water Crossings	Lakehead CA	Pending
<i>Planning Act</i> Consent to the Long-Term Leases	Twp of Dorion	Pending
Road User Agreement	Twp of Dorion	Pending
Ontario Energy Board		
Leave to Construct transmission facilities under section 92 of the <i>Ontario Energy Board Act</i>	OEB	Pending
Generation Licence under section 57 of the <i>Ontario Energy Board Act</i>	OEB	Pending
Acceptance of Notice of Proposal under Section 81 of <i>Ontario Energy Board Act, 1998</i>	OEB	Pending

IESO		
Authorization as Market Participant (i.e., issuance of New Facility Notification Form)	IESO	Pending
Facilities Registration (i.e., issuance of New Facility Notification Form)	IESO	Pending
Meter Registration	IESO	Pending
Connection Assessment (i.e., issuance of Notification of Conditional Approval)	IESO	Pending
Connection Authorization (i.e., issuance of Final SIA Report)	IESO	Pending