CONESTOGO WIND, LP

Conestogo Wind Energy Centre

Revised Design and Operations Report

September 19, 2011

GENIVAR

Project No. MA-09-213-00-MA

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1. Site Plans and Facility Design Plan

1.1 Overview

The major components of the projects are as follows:

- → Nine Siemens SWT 2.3-101 wind turbines
- → One Siemens SWT 2.22-101 wind turbine
- → Pad mount 690 V/ 34.5 kV step up transformers located at or near the base of each turbine
- → Buried 34.5 kV electrical collector system, and ancillaries
- → Buried and overhead 44 kV electrical lines
- → A transformer substation to connect to the Hydro One distribution system
- → Turbine access roads
- → Temporary staging areas for erection of wind turbines
- → 2 meteorological towers

Details of the construction and operation of the project components as well as their potential environmental effects are discussed in the Revised Construction Plan Report and Revised Design and Operations Report, respectively.

Site plans showing the location of the project components, adjacent buildings, roads, noise Points of Reception (PORs), elevation contours, surface water drainage and the location of the proposed turbines in relation to the Natural Heritage Features, Heritage or Archaeological resources and water bodies are detailed in Figures 3 and 4 (Appendix A).

1.2 Design Changes Completed in Response to Consultation Activities

After consultations with the public, landowners and the municipality, several changes to the project proposal were made. The public input and the resulting changes are detailed in Table 1.

Table 1: Alterations to the Proposal to Engage in the Project

Comment / Concern	Alteration to the Project
People would prefer if the overhead collection lines were buried or not routed along 16th line	The overhead collection system has been re-routed along 14th line and 17th Sideroad where there are fewer houses and the houses are located further from the road.
The transformer is located too close to 16th line. Could it be located further back?	The transformer substation has been relocated further back from 16th line.
Concern from a landowner that turbine 6 was too close to his neighbour's property Noise and visual impact concerns. Heritage Landscapes Concerns for bats and wildlife	Turbine 6 was moved further west and turbines 4 and 5 were relocated to make the move feasible. This has moved turbine 6 further from non-participating lands and will reduce sound levels and visual impacts to some residents and will lessen the impact on the Cultural Heritage Landscape #3 as identified in the *Initial Heritage Assessment Report: Built Heritage Resources and Cultural Heritage Landscapes Conestogo Wind Energy Centre Wellington County, Ontario*. Re-locating

Comment / Concern	Alteration to the Project
	turbine 6 has also moved it further from woodlots where there are suspected to be bat maternity roosts.
Why is the line going on Sideroad 18 instead of Wellington Road 12	Although no alteration has been made to address this concern, NextEra Energy Canada is open to altering the route of the transmission line. Unfortunately the Natural Heritage Field studies necessary to complete this cannot be completed until May, 2011. NextEra Energy Canada is open to the possibility re-routing this line, should appropriate approvals be given.
Public preference that the collection cable not be overhead.	Change of overhead electrical collector system previously running along 14th Line and Sideroad 17 to an underground electrical line on private property
Landowner preference to minimize impacts to cultivation practices.	Redesign of access roads for turbines 9 and 10
Preferred location for meterological monitoring.	Relocation of met tower near turbine 10
Landowner preference to minimize impacts to cultivation practices.	Redesign of access roads for turbines 7 and 8
A structural assessment determined that the bridge was sufficient for a crane crossing so the crane path was eliminated.	Removal of proposed crane path and water crossing between turbines 3 and 8
To avoid impacts to mature trees in the road right of way.	Burying of segments of the 44 kV transmission line along 16th Line and Sideroad 18

1.3 Project Components

1.3.1 Wind Turbines

The turbines will be located on leased farmlands (currently under option). The proposed turbines for the project are state-of-the-art 2.3 MW and 2.22 MW turbines supplied by Siemens AG. The turbines are 3-bladed, upwind, horizontal-axis wind turbines with a hub height of 80 meters, with a 101 meter rotor diameter. The overall height of the turbine, including the blade length will be approximately 131 meters.

The nacelle at the top of the tower houses the generator, gearbox, bearings, couplings, rotor, and auxiliary equipment. The nacelle consists of a bedplate on which all of the electro-mechanical components are mounted surrounded by an enclosure. The nacelle is constructed of fibreglass, lined with sound-insulating foam, and is ventilated and the interior is illuminated with electric lights. The blades are constructed of fibreglass and epoxy resin. The tower is tubular steel, with a diameter of approximately 4.3 m at the base. An internal ladder is provided for maintenance access. Some of the wind turbines will have external aviation lighting in accordance with the requirements of Transport Canada and NAV CANADA.

For technical details please refer to the Wind Turbine Specifications Report.

Turbine Locations:

Turbine ID	Eastings (m) NAD83 UTM17	Northings (m) NAD83 UTM17
1	532473	4849525
2	532805	4849467

3	533042	4849278
4	533192	4848833
5	533541	4849083
6	533584	4848820
7	532370	4848809
8	532759	4848778
9	533684	4847742
10	533723	4847213

1.3.2 Electrical System

The turbines will connect to the Hydro One distribution system. The power is generated at approximately 690 V voltage level at the turbine and will step up to a local 34.5 kV collection system through a pad-mounted transformer with anti-vandalism protection. The approximate dimensions of these transformers are 2.5 meters in length and width, and 2 meters high. The transformers are totally self-contained with no need for exterior fencing.

Buried cables will connect the wind turbines to the transformer substation. The buried cables will be three single conductor cables, with cross-linked polyethylene insulation, suitable for direct burial.

The electrical substation for the Project will be located west of Sideroad 17 south of Sixteenth Line. The substation will consist of a 34.5 kV/44 kV transformer and associated ancillary equipment. A 44 kV electrical line will be utilized to connect the transformer to the Hydro One distribution system. The 44 kV electrical line will be a combination of above ground (using standard poles within municipal road right-of-ways) and buried cable, see Figure 2. There are some existing Hydro-One and other utilities present in these road right-of-ways. In some cases, where the line is overhead, there will be some joint use poles with wind project electrical lines and Hydro One electrical lines. Typically, each pole is between 13 m and 17 m in height. The buried cables will be three single conductor cables, with cross-linked polyethylene insulation, suitable for direct burial.

1.3.3 Access Roads

On-site access roads to each turbine will be constructed to provide an access point to the properties for equipment during the construction phase. Following completion of the construction phase, the access roads will be used for maintenance access for the duration of the facility. Details on the construction and potential environmental effects of the access roads can be found in the Revised Construction Plan Report.

1.3.4 Construction Laydown Area

A 10 acre site will be constructed for the temporary storage of construction material (no turbine components). The location of this facility is shown in Figure 3. Details on the construction and potential environmental effects of these temporary features can be found in the Revised Construction Plan Report

1.3.5 Temporary Crane Pads, Staging Areas and Turn-Arounds

To facilitate the assembly of the wind turbines as well as the movement of the crane, temporary crane pads, staging areas and turn-arounds will be constructed. Details on the construction and potential environmental effects of these temporary features can be found in the Revised Construction Plan Report.

1.3.6 Permanent Meteorological Towers

Two permanent meteorological towers are proposed for the Conestogo Wind Energy Centre, with the locations shown in Figures 3 and 4. These will be a monopole structure 50 m in height. The tower will be erected using winches and secured with 4 guy wires tied off to anchors or a small monopole foundation. No significant soil or vegetation disturbance is anticipated.

1.3.7 Communications and SCADA

It is proposed to provide SCADA functions for remote supervisory monitoring and control. This will include telephone communications lines leased from the local telephone provider for transfer trip (communication with Hydro One) and supervisory functions.

1.4 Consideration of Natural Features and Watercourses

The layout of the wind power project took many factors into consideration. Some of the factors include: environmental features in the project area, water courses and noise. To better understand these factors, background studies were undertaken and the results of these studies were used in the design of the layout to minimize any potential environmental impacts. These background studies are presented in the appendices and summarized in the following sections.

1.4.1 Natural Heritage and Water Features

This study includes a desktop review of available records of significant natural areas including woodlots, wetlands and valleylands, water features and reports of species at risk within the study area. This desktop study was followed by a field screening study to confirm:

- The presence of the identified natural and water features;
- The presence of natural and water features not identified in the desktop study; and
- Natural and water features that were identified in the desktop study but no longer exist.

The results of the desktop and field screening study are presented in the *Records Review and Natural Heritage Evaluation Ontario Regulation 359/09* (Appendix B).

The desktop study identified water features, woodlots and wetlands within the study area which are shown in Figure 2. The desktop study did not identify any historic reports of species at risk in the project area; however, there was a single report of a Loggerhead Shrike in the larger study area. Avian surveys conducted did not observe this species and concluded that there was no habitat suitable for this species within the project area. Field surveys identified a two Species at Risk, a Butternut Tree located in a residual woodlot and observations of Bobolinks were noted. As construction will maintain an approximate 99 m setback from this woodlot (greater than the 20 m recommended by the MNR), no negative impacts are anticipated ion the butternut tree.

Avifaunal surveys conducted in 2007 and 2010 shows that very few Bobolinks were found near the turbine site locations (8 birds in 2007 and 4 birds in 2010). The closest Bobolink habitat to a turbine was about 300 metres and other suitable habitat was greater than 1500 metres from any of the turbines. Interviews with the landowners indicate that the crop types that attract Bobolinks will not be planted in the fields where the turbines will be placed. Hence, the Conestogo Wind Farm will not have an impact on local Bobolinks

No other reported sightings of species at risk were found near the proposed location of the turbines. Details of these reports are presented in Appendix B.

The Renewable Energy Approvals Regulation places restrictions on the siting of turbines within 120 m of a significant natural feature (woodlot, wetland or valley land) or within 120 m of a water feature. Figures 3 and 4 show the distance between the proposed turbine locations and the natural and water features. To locate a turbine within 120 m of a significant natural feature or between 30 and 120 m of a water feature, an environmental impact study (EIS) must be completed. Tables 1 and 2 of the Revised Environmental Impact Assessment Report contain a summary of the study. Details of the EIS studies can be found in *Records Review and Natural Heritage Evaluation Ontario Regulation 359/09* (Appendix B) and the *Water Report* (Appendix G).

1.4.2 Avian and Bat Studies

Bird and bat mortality by wind turbines is often cited as a concern. Studies at existing wind farms have shown that bird mortality is very low and bat mortality can vary depending on bat populations and geographical features present. Prior to constructing a wind farm, surveys of bird and bat populations are conducted to determine if any species at risk are present and to determine population levels. Once these are determined, then risks to these populations can be assessed and turbine locations can be adjusted. The completed bird and bat studies are presented in Appendix C and D, respectively.

Field surveys were done in accordance with Environment Canada's document "Wind Turbines and Birds: A Guidance Document for Environmental Assessment". Both Environment Canada and Ministry of Natural Resources (MNR) were consulted prior to the surveys. The studies revealed bird populations typical of an area that is primarily devoted to agriculture. Populations of breeding birds and over-wintering raptors were typical of those found across southern Ontario. The three species at risk that were observed during the field surveys included 2 chimney swifts, 12 Bobolinks and a yellow chat. Neither the chimney swifts nor the yellow chat were observed within 300 m of the project location. The historical presence of a short-eared owl was reported by a local resident however, the bird has not been observed for the past 2 years. The results have been provided to Environment Canada and MNR for their review.

An assessment of bat habitat and acoustic monitoring of bat populations was conducted in 2007 in consultation with the Ontario Ministry of Natural Resources (see Appendix D). Follow up monitoring was completed in June 2010. The surveys were done in accordance with the published guidelines of the Ministry of Natural Resources. The purpose of these surveys was to determine the potential for large populations to roost and feed in the study area and to observe the level of bat activity. The results of these studies have shown that there are no known significant roosts for bats in the study area; however, there are indications that there may be 1-2 maternity roosts on a woodlot(s) on the eastern edge of the site. No turbines are planned within 120 m of these woodlots. The result of the impact assessment is that the impact of the proposed project on local bat populations is not expected to be significant.

1.4.3 Noise Study

Sound caused by turbines is often cited as a potential concern. In order to determine the potential impacts of these effects on the study area and to optimize the turbine layout to minimize this effect, a noise modeling study was completed. Prior to commencement of the study a field visit was conducted to map all potential receptors including: residences, campgrounds, schools, hospitals and long-term care facilities.

The noise study was conducted in accordance with the Ministry of Environment (MOE) "Noise Guidelines for Wind Farms", October 2008. The results of this study show that noise levels are below the 40 dBA standard specified by the Renewable Energy Approvals regulation for all non-participating receptors. Details of the study are presented in Appendix F.

1.5 Consideration of Archaeological Resources, Heritage Resources and Protected Properties

Consideration must be given to the potential impact which the project may have on Archaeological and Heritage resources as well as Protected Properties. The following sub-sections detail the examination of the potential for impacts on these resources.

1.5.1 Consideration of Protected Properties and Heritage Resources

A study was undertaken to determine if there were any built heritage resources at the project location which may be impacted by the proposed project with the results of the study found in Appendix E. The study noted that there are no protected properties within 125 m of the project area. The report identifies four nineteenth century farmscapes and two historic roadscapes which have the potential to have their setting and character altered by the proposed project however; this was determined to be temporary and is not expected to have permanent impacts after the project is decommissioned.

1.5.2 Consideration of Archaeological Resources

A desktop study (Stage 1 Assessment) was completed to determine the location of existing recorded archaeological resources and to determine the archaeological potential for the areas around the proposed turbines and access roads. The study, found in Appendix E, revealed no registered sites near the proposed turbine locations. Due to the presence of numerous watercourses, the report recommended field surveys of the proposed turbine locations and access roads are completed. The Stage 1 report along with its findings and recommendations were accepted by the Ministry of Tourism and Culture (see Appendices E and I). Field surveys are currently underway. As indicated by the Ministry of Energy and Infrastructure letter dated June 14, 2010,(see Appendices E and I) a Stage 2 archaeological assessment will not be required as part of the REA submission for this project, however, a field (Stage 2) archaeological survey was partially completed with the results presented in Appendix E. Two find sites, a pre-contact aboriginal find site and one historic period archaeological site were identified during the survey and the facility design was altered to avoid these sites. Further Stage 2 work on all un-assessed project lands which may be disturbed during construction as well as Stage 3 and Stage 4 as required, will be completed prior to project construction.

1.6 Design Constraints and Setbacks

The results of the background studies were used to aid in the layout of the turbines, roads and electrical collector systems. The Renewable Energy Approvals Regulation (O.Reg. 359/09) provided setback distances for turbines which are summarized in the table below.

Setback	Distance (m)	Notes
Noise Setback	550 m	From base of turbine to non-participating receptors
Setback from property lines, roads and railways	80 m (turbine hub height)	From base of turbine to property line. Not applicable if abutting property is also project participant and consent is given
Natural Heritage Setbacks (Significant woodlots, wetlands, valleylands and ANSIs)	120 m	From the nearest edge of the turbine laydown area to the nearest point of the natural feature. May locate closer when an Revised Environmental Impact Assessment Report is completed
Water Features	120 m	From the nearest edge of the turbine laydown area to the nearest point of the water feature. May locate between 30 -120 m from the feature when an Revised Environmental Impact Assessment Report is completed

The setback distances to the nearest feature are illustrated in Figures 3 & 4. All turbine locations meet the setbacks for noise and from non-participating property lines, roads and railways. Some turbines do not meet the specified setbacks for Natural Heritage and Water Features. An environmental impact study has been completed for these turbines and is incorporated in the can be found in *Records Review and Natural Heritage Evaluation Ontario Regulation 359/09* (Appendix B) and the *Water Report* (Appendix G) and is summarized in the Environmental Impact Assessment Report.

1.6.1 Provincial Policy Plans

The Conestogo Wind Energy Centre project is not located in any one of the Provincial Land Use Plan areas (Niagara Escarpment, Lake Simcoe, Oak Ridges Moraine or the Greenbelt).

1.6.2 Adherence to Setbacks

The design of the Conestogo Wind Energy Centre adheres to the requirements of Ontario Regulation 359/09. The setback distances are detailed in section 1.4.2 and summarized below.

Noise Setbacks: All turbines are farther than 550 m from the nearest non-participating Point of Reception. The predicted maximum noise values for all non-participating noise receptors are also below 40 dBA, as noted in the Noise Study Report (Appendix F).

Setbacks from Oil and Gas Resources: A review of the Ontario Oil, Gas & Salt Resources Library found at http://www.ogsrlibrary.com/ shows that there are no active, dry or decommissioned oil or gas wells within the study area.

Setbacks from Significant Woodlots: The majority of the turbines are located outside of the 120 m setback from significant woodlots. Where project components are partially located within this setback and Environmental Impact Study has been completed as detailed within the Revised Environmental Impact Assessment Report and the *Natural Heritage Evaluation Ontario Regulation 359/09* (Appendix B).

Setbacks from Water Features: The majority of the turbines are located outside of the 120 m setback from water features. Where turbines are partially located within this setback and Environmental Impact Study has been completed as detailed within the Revised Environmental Impact Assessment Report and the Water Report (Appendix G).

Setbacks from Significant Wetlands: The majority of the turbines are located outside of the 120 m setback from wetland features. Where turbines are located within this setback and Environmental Impact Study has been completed as detailed within the Revised Environmental Impact Assessment Report and the *Records Review and Natural Heritage Evaluation Ontario Regulation 359/09* (Appendix B).

Setbacks from Valleylands, ANSIs and Provincial Parks: There are no Significant Valleylands, ANSIs or Provincial Parks within 300 m of the project boundary.

Setbacks from Property Lines, Roads and Railways: All turbines exceed the minimum setback (blade length + 10 m or 60 m) from roads. Two turbines are less than hub height (80 m) from the adjacent property lines. Turbine 6 is located 78 m from the adjacent property and both parcels are owned by the same person. Turbine 10 is located 67 m from the adjacent property; however, the neighbouring land owner is also a project participant. The relevant turbines and the distance from the property lines are detailed below.

Turbine Number	Distance to Property Line	Is abutting land owned by a person who is a project participant and has consent been given?
6	78	Yes
10	67	Yes

1.6.3 Setback Distances

The actual distances between the turbines and key features are detailed in Table 1 below.

Turbine #	Distance (m) From:			
	POR (from turbine base)	Property line or road (from turbine base)	Woodlot (from edge of laydown area)	Water Feature (from edge of laydown area)
1	810	130	290	50*
2	881	148	378	200*
3	1060	163	387	429
4	1160	83	100	39
5	956	242	125	125 (wetland)
6	1027	78	223	278
7	772	92	80	165
8	925	167	85	88
9	724	234	120	120
10	617	67	77	77

* - Water Feature is a buried drain

2. Operations

2.1 General

The wind farm will require full time technical and administrative staff to maintain and operate the facility. It is expected that 2-3 full time workers will be required to keep the facility operating properly. The primary workers will be wind technicians who carry out maintenance on the turbines, along with a site supervisor.

The wind turbines should be operating when the wind speed is within the operating range for the turbine and there are no component malfunctions, the turbine will be in "Run" mode and generating electricity. Typically turbines generate electricity 65-75% of the time.

Each turbine has a comprehensive control system that monitors the subsystems within the turbine and the local wind conditions to determine whether the conditions are suitable for operation. If an event occurs which is considered to be outside the normal operating range of the turbine (such as low hydraulic pressures, unusual vibrations or high generator temperatures), the wind turbine will immediately take itself out of service and report the condition to the SCADA system. A communication line connects each turbine to the operations centre, which closely monitors and, as required, controls the operation of each turbine.

2.2 Use of Meteorological Data

The use of meteorological data is key to the safe and efficient operating of a wind farm. The Conestogo Wind Energy Centre is proposing to have 2 permanent meteorological towers providing real time data. This will be used to operate the turbines efficiently. Some operational decisions made using meteorological data include:

- → Cut-in wind speed at 3.5 m/s
- → Cut-out wind speed at 25 m/s
- → Turbine shut down during icing conditions
- → Turbine shut down during extreme weather events

2.3 Routine Turbine Maintenance

Routine preventative maintenance activities are scheduled at six-month intervals with specific maintenance tasks scheduled for each interval. Maintenance is done by removing the turbine from service and having 2-3 technicians climb the tower to carry out maintenance activities.

Consumables such as the various lubricants used to keep the mechanical components operating and oil filters for gearboxes and hydraulic systems are used for routine maintenance tasks. Following all maintenance work on the turbine, the area is cleaned up. To ensure a safe operating environment, safe footing for all personnel and to minimize the risk of fire, turbines are kept very clean. All items left in the turbine are packed and secured. All surplus lubricants are removed and disposed of in a prescribed manner. All maintenance activities will adhere to the same spill prevention industry best practices undertaken during the construction phase.

2.4 Unplanned Turbine Maintenance

Modern wind turbines are very reliable and the major components are designed to operate for approximately twenty-five years. However, wind turbines are large and complex electromechanical devices with rotating equipment and many components. Component failures occasionally occur despite the high reliability of turbines in general. Technicians always service machines in pairs according to safety protocols and repairs can usually be carried out in a few hours.

Events involving the replacement of a major component such as a gearbox or rotor are not typical. If they do occur, the use of large equipment, sometimes as large as that used to install the turbines, is required.

It is possible that an access road, built for construction and returned to farmland when the construction phase is completed, would need to be rebuilt to carry out repairs to a damaged turbine. Typically only a small percentage of turbines would need to be accessed with large equipment during their operating life.

2.5 Electrical System

The collector lines and substation will require periodic preventative maintenance activities. Routine maintenance will include condition assessment and protective relay maintenance of the substation as well as vegetation control.

2.5.1 Stray (or Tingle) Voltage

The Conestogo Wind Energy Centre project will be connecting to the local distribution system, owned and operated by Hydro One Networks Inc. Stray voltage occurs when there is a voltage potential difference between grounded equipment and the customer neutral from the electrical distribution supply at a customer connection. When this Neutral to Earth Voltage (NEV) exists then there can be a voltage difference between ground at various locations on the customer's facilities due the currents flowing from the distribution system neutral to the ground. At a voltage difference above about 10 volts people may detect a tingle. Hydro One has a standard for how they will deal with stray or tingle voltage complaints. Rarely are these a health hazard and many things can be done by the supply utility (Hydro One) and the customer to address the complaints. Livestock such as dairy cattle are sensitive to these small tingle voltages that are not a health hazard to humans. The local distribution company is responsible for addressing stray voltage concerns.

2.6 Operational Activities – Environmental Effects

The following discussion on the potential environmental effects has been provided for the operational activities associated with the wind farm. This discussion will help to put into perspective the environmental effects monitoring plan provided in the next section.

2.6.1 Wind Turbine Operation

2.6.1.1 Land Use

Activities	Wind turbine operation
Environmental Component Affected	Agricultural Use
Potential Impacts	The turbine will remove the land from agricultural activities.
Mitigation Measures	Land occupied by each turbine (which includes the access road) accounts for approximately 1,000 square meters or 0.25 acres of the total agricultural land base used during the operation of the wind farm. This figure is consistent with the land use per turbine experienced across the globe.
Residual Impacts	None anticipated since farmers will be able to continue agricultural activities during wind farm operation.

2.6.1.2 Visual Impacts

Activities	Wind turbine operation
Environmental Component Affected	Visual Landscape

Potential Impacts	Residents will be able to see the wind turbines and some residents may perceive this to be a reduction in the aesthetic quality of the landscape.
Mitigation Measures	Siting of the turbines away from residents (at least 550 m) reduces the visual impact. Photographic documentation of heritage landscapes as recommended in the *Initial Heritage Assessment Report: Built Heritage Resources and Cultural Heritage Landscapes* (Appendix E).
Residual Impacts	A change to the landscape will occur for the duration of the project and will be visible to the public. Many residents indicated that they liked the look of wind turbines.

2.6.1.3 Noise Impacts

Activities	Wind turbine operation
Environmental Component Affected	Noise Levels – Local Residents
Potential Impacts	Noise modeling (Appendix F) has shown that some noise will occur from the turbines. Most of this is aerodynamic noise from the blades rather than from the mechanical equipment. During high winds, when the turbines will generate the greatest noise, the background noise is high due to the sound of the wind in the area. The high winds are anticipated during winter months and summer storms when residents are indoors with the windows and doors closed due to the weather. In Ontario, noise impacts of wind turbines are considered by the Ontario Ministry of Environment in the course of assessing an application for a Renewable Energy Approval. The Ministry issued a document titled "Interpretation for Applying MOE NPC Technical Publications to Wind Turbine Generators" which gives the applicable sound level limits at different wind speeds; which is included in Appendix F.
Mitigation Measures	The area of the Conestogo Wind Energy Centre is considered to be Class 3 (rural) according to the Ontario noise documents. Under conditions of average wind speed up to 6 m/s the sound level limit at receptors is 40 dBA or the minimum hourly background sound level, whichever is higher. At wind speeds above 6 m/s, the sound level limit at receptors is the wind induced background sound level plus a specified adder. For example, at 8 m/s the limit is 45 dBA and at 10 m/s it is 51 dBA. The wind farm has been designed to meet the Ontario limits as detailed in the above-noted publication. A computer model, taking into account the location of each of the turbines and each residence, was used to calculate the sound levels at the receptors. The sound power levels generated by the turbines used in the computer model were the guaranteed maximum values provided by Siemens, the turbine manufacturer. A summary of the results of the calculations is provided in Appendix F. The noise modelling has shown that some noise will be emitted from the turbine but the levels will not exceed the limits established in accordance with the MOE requirements in Publication NPC-232.
Residual Impacts	No residual impacts are anticipated.

2.6.1.4 Wildlife Disturbances

Activities	Wind turbine operation (including lighting)
Environmental Component Affected	Wildlife and Birds
Potential Impacts	Since the Project has largely been sited outside of vegetated areas (on cultivated agricultural lands), potential effects to bird and bat species, wildlife, and their habitats will be temporary until the turbines become part of the environmental "background". Given that the wind turbines are not located in forested areas but in open and agricultural habitats, the potential for collisions with breeding birds is considered low. For most breeding species, habitat loss or disruption during construction was more of a potential concern than disturbance or direct mortality as a result of operation. Potential impacts to migrant species, particularly shorebirds in spring, raptors in fall, and bats, are primarily related to direct mortality.
Mitigation Measures	To the extent feasible, turbine and other required lighting will be in a manner that is least likely to attract birds while maintaining compliance with all regulatory requirements. The turbines to be used for the project are well spaced. The locations of fields and woodlots within the project location will mean inevitable gaps of varying sizes among turbines. Such gaps are expected to contribute to bird movements and reduce the possibility of collision. On-going noise monitoring of existing wind farm projects has demonstrated that there are no disturbances to birds or other wildlife. In addition, the proposed turbine locations of this project are not located adjacent to woodlots, but rather, within existing agricultural fields currently in use, which have minimal wildlife usage. These statements are based on results of post-construction monitoring programs of various wind farms currently operating in North America. For example: 1. Curry and Kerlinger LLC 2007. Maple Ridge Post-construction bird and bat fatality study 2006, Final Report June 25, 2007. 2. Dooling, R June 2002. Avian Hearing and the Avoidance of Wind Turbines (Technical Report). 3. James, Ross January 2008. Erie Shores Wind Farm, Fieldwork Report for 2006 and 2007, During First Two Years of Operation. 4. James, Ross February 2008. Results of two years of monitoring and observation at Erie Shores Wind Farm, Port Burwell, ON – Summary Report to the Municipality of Chatham-Kent. 5. Pace Law School Energy Project, New York Public Interest Research Group 2006. Wind Turbines and Wildlife Implications. Routine maintenance visits (maximum of 3 days per month) to turbines will be less of a disturbance than the regularly occurring farming activities now taking place on farmlands where the turbines will be placed. The turbines used at the project will have no steady lighting to disorient birds.
Residual Impacts	The small amount of noise associated with turbines is limited to a small area around each, and will not cause any disturbance to birds or other wildlife.

(This was based on the review of material and post-construction monitoring programs for existing wind farms in North America. It has been found that birds and other wildlife have not generally been negatively impacted by noise from the turbines. This does not preclude the potential impact from the presence and movement of the turbine blades. These statements were based on the issue of noise.) They quickly learn to live near such noises.

2.6.1.5 Safety Issues

Activities	Wind turbine operation
Environmental Component Affected	Public Safety
Potential Impacts	Electromagnetic field (EMF) from wind turbine operation. Ice formation on the blades affecting operation and potentially resulting in ice throws. Navigational issues related to aircraft seeing the turbines to avoid potential collisions.
Mitigation Measures	The set-back distances from the turbines to residences will minimize exposure to residents. The steel tower acts as a shield for the electromagnetic field. Electromagnetic fields will not be an issue considering that the low voltage cable system that will convey electricity to the Hydro One grid will be completely buried underground. Each turbine has a comprehensive control system that monitors the subsystems within the turbine and the local wind conditions to determine whether the conditions are suitable for operation. For example, ice detection strategies are utilized to shut the wind turbine down during ice events when normal operation is impacted. As well, siting of the turbines in agricultural fields on private land means that there will be little or no pedestrian traffic under the turbines which minimizes interaction between the turbines and the public. Public access is not permitted on private lands and thus the only people that could remotely be impacted by ice throws are the landowners. The highest winds are during the winter season when there are likely very few people in the agricultural fields that could be impacted. Transport Canada's specific guidelines on the lighting requirements for the turbines will be utilized to ensure aircraft safety in the area.
Residual Impacts	No residual impacts are anticipated.

2.6.1.6 Turbine Maintenance Activities

Activities	Turbines will be visited by maintenance staff for routine inspections about twice per year after commissioning.
Environmental Component Affected	Agricultural Use, Wildlife and Birds
Potential Impacts	The gravel access roads to each turbine for maintenance will remove the land from agricultural activities. Routine maintenance visits to turbines will be less of a disturbance than the regularly occurring farming activities now taking place on farmlands where

	the turbines will be placed. Human activity levels near the turbines will be low and create little potential for sensory disturbance of wildlife. Maintenance activities include regular lubrication of the turbines which generates some waste material.
Mitigation Measures	The location of the access road was determined by minimizing the road length, which minimizes agricultural land loss, but it also incorporated any site specific concerns which the farmers expressed. Wherever possible, existing on-site roads will be used for the project. Land will remain privately held, limiting access to the sites. Maintenance personnel will be instructed not to disturb wildlife if encountered during activities at turbines. All authorized staff will provide notice to land owners prior to a site visit or activity. Any waste material from the maintenance activities will be properly disposed of by authorized and approved offsite vendors.
Residual Impacts	Infrequent visits by maintenance staff will have little residual impacts.

2.6.1.7 Bird/Bat Survey Activities

Activities	Surveys may be undertaken at various times through a full year after commissioning at a select number of turbines to search for bird and bat carcasses. This will be determined through consultation with Environment Canada (birds) and the Ministry of Natural Resources (birds and bats).
Environmental Component Affected	Wildlife and Birds
Potential Impacts	Human activity levels near the turbines will be low and create little potential for sensory disturbance of wildlife.
Mitigation Measures	Land will remain privately held, limiting access to the sites. Ornithologists will not disturb wildlife if encountered during activities at turbines.
Residual Impacts	Ornithologist's visits during the first year of operation will have little residual impacts.

3. Environmental Effects Monitoring Plan

Monitoring is fundamental to confirming key net effects from the project. The intent of monitoring will be to verify compliance with federal and/or provincial requirements and to assess the actual impacts of the operation. Detailed post-construction monitoring plans will be developed, following discussions with the applicable agencies (e.g., Environment Canada, Ministry of Natural Resources, and Ministry of Environment) and in accordance with any conditions attached to the Renewable Energy Approval.

3.1 Construction Staging

The timing and execution of construction activities will be scheduled to minimize the potential impacts on the natural environment. The staging aspects which will be incorporated will include:

- Schedule construction and reclamation activities to be conducted as close to each other as feasible so as to minimize the time any area is disturbed; and
- Schedule any required in-water construction to avoid spawning and incubation periods as specified by the Grand River Conservation Authority.

3.2 Erosion and Sedimentation Control

Erosion and Sediment Control is used to prevent the release of sediment from construction works within or adjacent to sensitive environmental features, and/or to contain sediments within the work area. In order for these mitigations to be effective, it is imperative they are installed correctly in the proper location, inspected, and repaired when necessary. This outcome is achieved through proper coordination by individuals involved in the planning and implementation of these mitigations.

The following is a list of measures for controlling the release of sediments during construction:

- Light Duty Sediment Fence – a sediment fence will be placed at the edge of the work area to prevent sediments from reaching the water feature. Filter fabric is the only acceptable fencing material to be used (i.e. no plastic-braided fencing). Fencing shall be secured along the base by digging in the filter fabric and backfilling with earth to grade, to prevent runoff from flowing underneath the bottom edge. In the area where the work area drains overland flow towards the watercourse, the fencing will be doubled with a row of hay bales installed between the fencing and on the upstream side. The hay bales will be installed in a shallow (~5 cm) trench packed tightly together and staked into position.
- Sediment fencing shall be placed along the base of all spoil piles to prevent sediment-laden runoff from entering ditches or watercourses.
- Rock check dams and/or hay bales should be installed in project-affected drainage ditches to entrap sediments and reduce water velocities to facilitate sediment deposition. Rock check dams will be installed via a standard sediment fence installed perpendicular to the flow and then filled with fine gravel or filter sand on either side. Alternatively, double sediment fencing and the associated hay bales may be installed to achieve the same result; however additional staking may be required to prevent hay bales from floating in the associated deeper waters.
- Installation locations and specifications will depend on the nature of the crossing and it's the respective site specific conditions, and may not be warranted at certain locations.

3.2.1 Water Crossing Procedures

There is one proposed watercrossing associated with the Conestogo Wind Power Centre Project which will be a 33.5 kV underground electrical line. This will be installed using directional drilling in accordance with the Department of Fisheries and Oceans Canada *Operational Statement: High-Pressure Directional Drilling,Version 3.*0. Details of the procedures for this can been found in the Revised Environmental Impact Assessment Report.. A permit from the GRCA has been received to complete this work within their regulation limit.

3.3 Vegetation and Wildlife During Construction

The facility has been designed so that the disturbance of native vegetation and wildlife habitat will be minimized. Additional procedures to be employed include:

- Clearly marked work areas with vehicle traffic being restricted to the work areas;
- It is not anticipated that any tree clearing will be required and every effort will be made to avoid the removal of trees. Should a tree be in direct conflict with a proposed access road or work area the tree will be removed and, if practical, replanted after construction has been completed;
- Wildlife will not be harassed or fed;
- Nuisance wildlife will be reported to the environmental inspector. If the situation poses a danger to the crew or animals, the Ministry of Natural Resources will be contacted;

- Wherever possible, electrical lines will share poles with Hydro One lines and be located within municipal road right-of-ways; and
- Vehicle traffic will be limited to 30 km/h or less on access roads to reduce the potential for collisions with wildlife.

3.4 Soil Quality and Agricultural Capacity

The project will attempt to minimize any impacts to the agricultural capacity of the land. Procedures to ensure this include:

- Spill clean-up equipment will be on-site at all times and any spills will be reported to the environmental inspector and, if the spill is of sufficient size, to the MOE spill response centre;
- All work areas will be clearly marked;
- Stripped topsoil will be stockpiled during construction;
- Upon completion of the construction work, the work areas and access roads will be reduced to the minimum size needed, de-compacted and the topsoil will be used to restore all non-used work areas to productive capacity;

3.5 Archaeological Resources

Construction activities have the potential to disturb undiscovered archaeological resources. The following measures will be employed to minimize potential impacts:

- A Stage 2 archaeological survey will be conducted on all areas to be disturbed by the project prior to the commencement of construction. Should any resources be found the site will be avoided or a Stage 3 will be initiated to remove and catalogue the resources. All activities will be completed in consultation with the MTC; and
- Should any artifacts be discovered during construction, the NextEra Energy Canada representative will be contacted and all work within the vicinity of the find site will be halted. A licensed archaeologist will be contacted and no further work near the find site will be completed until the site has been cleared by the MTC. In addition, aboriginal communities that have been identified as having an interest in the project will be notified of the find.

3.6 Waste Management

All wastes will be handled and disposed of in accordance with applicable regulatory requirements and in a manner which is protective of the environment. Proposed procedures to ensure this include:

- Compliance with all applicable regulations including the Environmental Protection Act's Regulation 347 (as amended);
- The contractor will implement a re-use and recycling program in accordance with available municipal programs;
- The Contractor will provide sufficient and appropriate waste containers around all active work sites;
- No waste will be buried or otherwise disposed of onsite;
- Good housekeeping practices including daily work site clean-up will be implemented;
- All oil, grease, hydraulic fluids and any hazardous wastes will be stored in a designated and secure area with secondary containments. These materials will be periodically removed by a licensed contractor;

- All sewage will be collected in holding tanks (portable toilets) and removed from the site by a licensed contractor for disposal at a licensed facility.

3.7 Noise, Air and Dust During Construction

Construction activities have the potential to impact local air quality and increase local noise levels. The following measures will be implemented in order to avoid or minimize these effects.

- Construction traffic will be limited to 30 km/h or less on access roads to minimize dust generation;
- Dust will be controlled using water when necessary;
- Construction equipment idling will be minimized;
- All engines (vehicles and generators) will meet all emission requirements specified by the MOE and MTO;
- Stockpiled soil will be covered or wetted during dry and/or windy conditions as needed to minimize dust; and
- NextEra Energy Canada representatives will respond to any concerns or complaints in an expeditious and courteous manner.

3.8 Inspections

An environmental inspector will be hired to make frequent site inspections and to ensure compliance with all environmental policies and plans. Duties of the inspector(s) will include:

- Daily log and weekly reports completed by the contractor's inspector;
- Prior to construction NextEra Energy Canada and the inspector will jointly determine that all required permits, licenses and approvals are in place prior to the commencement of construction. The inspector will also review the permits on a weekly basis and report to NextEra Energy Canada any which may be approaching the expiry date;
- The inspector will make daily inspections of all activities which may cause adverse effects and of any implemented mitigation measures (sediment traps and fencing); and
- Should any activities which may cause and adverse effect be observed, the inspector will make a verbal report to the project manager and the NextEra Energy Canada representative. This will be followed up with a written report.

3.9 Post-Construction Noise Emission Monitoring

The Provincial *Environmental Protection Act* (EPA) requires that noise emissions for any new project must not have any adverse effects on the natural environment. The Renewable Energy Approvals process is the means by which this is controlled under the Ministry of the Environment's EPA. Prior to construction, a Renewable Energy Approval (REA) will be obtained. Any conditions of approval and follow-up measures that may be identified in the REA will be strictly adhered to.

The noise emissions will not likely change unless there is damage to the equipment. A damaged blade, for example, would be the most likely source of increased noise emission. In the unlikely event that a blade develops a crack the aerodynamic profile of the blade would change and result in an increased noise emission. Due to the continual real-time monitoring of turbine performance, any change in the aerodynamic profile of a blade would result in decreased energy production or vibration and be immediately recognized by the computer monitoring system and addressed by the operations team.

Prior to construction, a monitoring process to address all complaints, including those dealing with noise levels, will be established. A Response Plan (including a toll-free phone number) is presented in Section 4.

3.10 Post-Construction Avian and Bat Monitoring

A detailed post-construction bird and bat monitoring plan, *CONESTOGO WIND FARM Post Construction Follow-up Plan*, has been developed and sent to the Ministry of Natural Resources for review. This plan was developed, in part using the 2010 working draft *Bats and Bat Habitats: Guidelines for Wind Power Projects* (MNR 2010) and guidelines developed by both the MNR and Environment Canada (EC). Should these draft guidelines change, the post-construction monitoring plan may be modified in accordance with the most up-to-date guidelines. The detailed plan is included in Appendix H and includes the following key items:

- A proposed post-construction mortality monitoring period of three years for both birds and bats;
- Bi-weekly mortality surveys for birds and bats of all 10 turbines from May 1st to October 31st;
- Weekly mortality surveys for birds and bats of all 10 turbines from November 1st to 30th;
- Scavenger removal trials;
- Searcher efficiency trials;
- Mortality (single event and high annual) thresholds which will result in immediate notifications to MNR and EC; and
- Reporting of the monitoring program to, and consultation with, the MNR.

3.11 Potential Environmental Effects, Mitigation Measures and Monitoring

The potential environmental effects, mitigative measures, monitoring objectives and monitoring plan are presented in Table 1.

Table 1: Environmental Effects and Monitoring Requirements

Project Activity	Potential Impacts	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures
1. Construction Activities				
1.1 Construction Activities	Disturbances to wildlife & birds due to construction activities	○ No wildlife mortality	○ Adherence to woodlot and watercourse setbacks ○ Minimal time required to complete activities	○ Construction inspection and surveying to maintain setbacks <u>Contingency Measures</u> ○ Alter location of project components ○ Suspend construction during breeding periods
	Clearing and grubbing and soil excavation for on-site access roads, crane pads and turbine	○ No loss of soil or soil fertility	○ Site clearing and grubbing will be kept to a minimum area on-site by staking and marking off the areas that define limits of the work to be done ○ Excavated soil will be re-used on-site where feasible, or disposed of in a proper facility off-site ○ Cropland sites will be covered with stockpiled topsoil for reseeding during the following planting season with similar crops to previous year ○ Vegetation restoration at water crossings	○ Inspection of top soil separating ○ Construction inspection and surveying <u>Contingency Measures</u> ○ Importation of new topsoil
	Impacts to surface water features from construction of on-site access roads to the turbines.	○ No increase in sedimentation in watercourses ○ No loss of fish or fish habitat ○ No changes in drainage / hydrological function	○ Adherence to setbacks ○ Project designed to eliminate any new surface water crossings ○ Work completed during the dry season ○ Completed permitting process with the GRCA ○ Proper sizing and installation of culverts ○ Have roads match land contours where possible ○ Stabilization of disturbed surfaces to prevent erosion ○ Installation of light duty sedimentation fencing installed around work area during construction ○ Horizontal Directional Drilling for the installation of electric cables under watercourses	○ Routine inspection of erosion control devices to ensure no sedimentation impacts on water bodies ○ Inspection of final restored surfaces to ensure vegetation re-growth to minimize erosion ○ Pre- and post-construction inspections of all water bodies, where construction will take place within 120 m, by a fisheries biologist to identify fish habitat and to ensure habitat function is restored after construction <u>Contingency Measures</u> ○ Repair, replace or installation of additional erosion control measures if sedimentation is observed

Project Activity	Potential Impacts	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures
	Impacts to surface water features from construction of underground transmission line.	○ No increase in sedimentation in watercourses ○ No loss of fish or fish habitat ○ No changes in drainage / hydrological function	○ Implement an erosion and sediment control plan as noted in Section 1.2.1 of the Revised Environmental Impact Assessment Report. ○ Schedule grading to avoid times of high runoff volumes (spring and fall). ○ Store any stockpiled materials and refuelling materials away from the feature to prevent substances from inadvertently entering the feature. ○ Keep sediment and erosion control measures in place until disturbed areas have been stabilized.	○ Routine inspection of erosion control devices to ensure no sedimentation impacts on water bodies ○ Inspection of final restored surfaces to ensure vegetation re-growth to minimize erosion ○ Pre- and post-construction inspections of all water bodies, where construction will take place within 120 m, by a fisheries biologist to identify fish habitat and to ensure habitat function is restored after construction <u>Contingency Measures</u> ○ Repair, replace or installation of additional erosion control measures if sedimentation is observed
	Potential short term lane and/or road closures on local roads to provide room for trucks to deliver project components. Short term increase in truck traffic during construction period.	○ Minimal delays	○ Delivery of equipment will be coordinated with local traffic patterns ○ Traffic control plan will be developed	○ Complaint tracking <u>Contingency Measures</u> ○ Establish alternate delivery routes
	No known archaeological resources are present at proposed turbine or access road sites. However, during excavation archaeological resources may be discovered.	○ No loss of archaeological resources	○ If archaeological resources are noted, the roads or turbine locations will be moved to avoid these ○ If practical, the resources will be removed and catalogued in accordance with Ontario Ministry of Tourism and Culture guidelines	<u>Contingency Measures</u> ○ During excavation activities if any archaeological resources are found to be in conflict with the proposed facilities, excavation activities will be halted within the vicinity of the find site and the issues assessed with consideration given to modifying the siting of the turbine

Project Activity	Potential Impacts	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures
	Fuel or transformer oil spill	○ No spills	○ Small quantities of lubricants present in the turbine ○ Any leak or spills from trucks or machinery would be contained and site would be properly cleaned up and disposed of at registered disposal facilities ○ Transformers used in the project are silicone based and do not contain hydrocarbons ○ Refuelling of all vehicles and equipment will be done away from watercourses during construction and no re-fuelling on-site during operation phase	<u>Contingency Measures</u> ○ Notification of Spills Action Centre, if required ○ Assess and remediate impact soils
	May experience annoyance with dust and/or noise	○ No complaints	○ Dust suppression measures will be employed, as necessary ○ On site supervisor to address any noise complaints	○ Recording and communication of complaints to local authorities <u>Contingency Measures</u> ○ Suspension of construction during high winds ○ Suspension of construction during evening hours
2. Operational Activities				
2.1 Wind Turbine Operation	Less than 1,000 square metres or 0.25 acres of farmland used for each turbine & on-site access road	None Required	○ Minimal amount of land used & minimized length of on-site access roads, most agricultural use interrupted only during construction	○ None
	Reduction in aesthetic quality of landscape	None Required	○ Complaints Tracking ○ Adherence to noise setbacks will site turbines away from residents	○ Recording and communication of complaints to MOE
	Noise impacts on receptors (residents located on non-lease properties)	<40 dBA at non-participating receptors	○ Adherence to noise setbacks ○ Noise modelling to predict sound levels ○ Repair equipment in a timely manner	○ Complaints Tracking ○ Follow up monitoring in response to complaints <u>Contingency Measures</u> ○ Repair damaged turbine components ○ Noise reduced operating mode for turbines out of compliance

Project Activity	Potential Impacts	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures
	Disturbances (including death) to wildlife & birds due to operation of turbines	Minimal impact on bird populations	○ Adherence to setbacks from woodlots and watercourses ○ Lighting in manner least likely to attract birds while maintaining regulatory compliance	○ Formal Bird and Bat monitoring program during first 3 years of operation ○ On-going reporting of bird/bat deaths by site staff <u>Contingency Measures</u> ○ Extend formal monitoring program ○ Study bird flight patterns around turbines ○ Modify turbine operation during key periods of the year
	Public health & safety (including electro-magnetic field issues and ice throw)	No impacts to human health	○ Suspend operations during icing conditions ○ Navigational lights as required by Transport Canada to prevent aircraft collisions ○ Adherence to turbine setbacks	○ Routine inspection of lights and turbines ○ 24/7 monitoring of turbines and meteorological data <u>Contingency Measures</u> ○ Repair damaged turbine components and lights ○ Suspension of operations during extreme weather events
2.2 Turbine Maintenance Activities	Disturbance to wildlife & birds	None	○ Adherence to setbacks	○ None Needed
2.3 Avian and Bat Survey Activities	Disturbance to wildlife & birds	None	○ None Required	○ None Required
2.4 Electrical Substation	Spill of transformer oil	None	○ Secondary containment systems ○ Proper disposal of waste materials	<u>Contingency Measures</u> ○ Notification of Spills Action Centre, if required ○ Assess and remediate impact soils
3. Decommissioning				
3.1 Removal of Equipment	Creation of local jobs	Use of local services and workers for construction related jobs	None	
3.2 Removal of Turbines & Ancillary electrical	Sensory disturbance (sound and visual presence)	None	○ Complaints Tracking ○ Short duration of construction	○ Recording and communication of complaints to MOE
	Dust	No offsite impacts	○ Watering of exposed soils ○ Maximum speeds for construction vehicles	○ Recording and communication of complaints to local authorities

Project Activity	Potential Impacts	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures
Equipment	Surficial disturbance	No increase in sedimentation in water bodies	○ Re-grading of site & agricultural land use restored after equipment disturbances complete ○ Install erosion control measures	○ Frequent inspection of erosion control devices ○ Inspection of final restored surfaces ○ On-going consultation with landowners <u>Contingency Measures</u> ○ Repair, replace or installation of additional erosion control measures
3.3 Removal of Transformer	Sensory disturbance (sound and visual presence)	None	○ Complaints Tracking ○ Impacts from cranes & equipment usage & personnel present will be short term	○ Recording and communication of complaints to MOE
	Dust	No offsite impacts	○ Watering of exposed soils ○ Maximum speeds	○ Recording and communication of complaints to local authorities
	Surficial disturbance	No increase in sedimentation in water bodies	○ Re-grading of site & agricultural land use restored after equipment disturbances complete ○ Install erosion control measures	○ Frequent inspection of erosion control devices ○ Inspection of final restored surfaces ○ On-going consultation with landowners <u>Contingency Measures</u> ○ Repair, replace or installation of additional erosion control measures
3.4 Site Remediation	Spill of transformer oil	No spills	○ An oil containment system will be maintained during decommissioning to prevent soil contamination in the event of a leak ○ Proper disposal of waste materials	<u>Contingency Measures</u> ○ Notification of Spills Action Centre, if required ○ Assess and remediate impact soils

Project Activity	Potential Impacts	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures
4. Accidents and Malfunctions				
4.1 Accidents & Malfunctions	Land contamination from lubricant/transformer fluid leak or spill and lightning strikes on turbines	No spills	o Small quantities of lubricants present in the turbine o Any leak or spills from trucks or machinery would be contained and site would be properly cleaned up and disposed of at registered disposal facilities o Transformers used in the project are silicone based and do not contain hydrocarbons o Refuelling of all vehicles and equipment will be done away from watercourses during construction and no re-fuelling on-site during operation phase o Use of lightning protection equipment	Contingency Measures o Notification of Spills Action Centre, if required o Assess and remediate impact soils
	Public safety	No Accidents	o Set-back between turbines and residences, roads and property line o Siting on private property which restricts public access to turbines o Turbines conform to global wind energy standards o Fencing of the substation for security based on standard utility practices	Contingency Measures o Activation of emergency response plan

4. Response Plan

4.1 Public Complaints

Information requests and complaints about the local operations and maintenance can be addressed to:

NextEra Energy Canada, ULC
5500 North Service Road, Suite 205
Burlington, Ontario L7L 6W6
Phone: 1-877-257-7330
Fax: 905-335-5731
Email: conestogo.wind@nexteraenergy.com

Any complaints received will be addressed promptly. The complainant will be asked to provide the following information:

- Name / Address / Phone number / Cell phone number
- E-mail address
- Location of problem
- Problem or complaint
- Time
- Frequency
- Other details

In addition, the District Manager of the Ministry of the Environment will be notified, in writing, of each environmental complaint. The notification will include:

- Description of the nature of the complaint
- Wind direction at the time of the incident related to the complaint
- Time and date of the incident related to the complaint
- A description of the measures taken to address the cause of the incident and to prevent a similar occurrence in the future

Specifically for noise related issues, on-site noise analysis may be conducted. If the tests confirm an exceedance of the critical noise value, appropriate mitigation measures will be implemented.

4.2 External Communications

The results of the project monitoring will be shared with the appropriate regulatory agencies and may be shared with the public. In the rare instance that the wind power facility exceeds operational parameters or there is an emergency, the appropriate agency will be notified using the following approach.

Exceedance of Operational Parameters

If, through the Environmental Effects Monitoring Program, exceedances of the operational parameters are discovered, the appropriate regulatory agencies will be notified via e-mail followed by a hard copy report noting:

1. The parameter exceeded;
2. Magnitude of the exceedance; and
3. Mitigative measures to be implemented.

4.3 Emergency Response

Copies of a detailed emergency response plan, developed in conjunction with the local emergency services, will be distributed to the local municipalities prior to the commencement of operations. NextEra Energy Resources, the parent company, has standard Emergency Action Plans for all of its operating facilities. A plan specific to the Conestogo Wind Energy Centre will be developed during the construction phase of this project. This plan will include information on the following:

- Designation of Facility Emergency Coordinators
- Process Description
- Objectives
- Local emergency response contact phone numbers
- Administration
- Regulatory References
- Training
- Facility Location Information
- Facility Emergency Procedure
- Immediate Site Evacuation Procedures and Routes
- Delayed Site Evacuation Procedure
- Personnel Injuries/Serious Health Conditions
- Fire Response Plan
- Chemical/Oil Spills and Releases
- MSDS sheets for all chemicals used in construction and maintenance
- Weather-Related Emergencies