# Final Decommissioning Plan Report – Belle River Wind Project

Report

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# Acronyms and Abbreviations

| | |
|---|---|
| Belle River Wind | SP Belle River Wind LP |
| BMP | Best management practice |
| ERCA | Essex Region Conservation Authority |
| Hydro One | Hydro One Networks Inc. |
| km | Kilometres |
| kV | Kilovolts |
| m | Metres |
| m/s | Metres per second |
| $m^2$ | Metres squared |
| MOECC | Ontario Ministry of the Environment and Climate Change |
| MNRF | Ontario Ministry of Natural Resources and Forestry |
| MW | Megawatts |
| O. Reg. | Ontario Regulation |
| Pattern Development | Pattern Renewable Holdings Canada ULC |
| Project | Belle River Wind Project |
| PSA | Project Study Area |
| REA | Renewable Energy Approval |
| Samsung Renewable Energy | Samsung Renewable Energy Inc. |

# 1. Introduction

The Belle River Wind Project ("Project") is being proposed by SP Belle River Wind LP, by its general partner, SP Belle River Wind GP Inc. ("Belle River Wind"). Belle River Wind is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada ULC ("Pattern Development") and Samsung Renewable Energy Inc. ("Samsung Renewable Energy").

This Decommissioning Plan Report was prepared in accordance with the requirements of the Renewable Energy Approval ("REA") process outlined in Ontario Regulation ("O. Reg.") 359/09, as amended, and the *Technical Guide to Renewable Energy Approvals* (Ontario Ministry of the Environment and Climate Change ("MOECC"), 2013). At the time of decommissioning, the Decommissioning Plan will be reviewed in accordance with applicable regulations.

The following sections outline the process of the Project's decommissioning phase.

## 1.1 Summary of Decommissioning Report Requirements

The requirements for the Decommissioning Plan Report as defined under O. Reg. 359/09, as amended, and where those requirements are addressed in this report are provided in the following table (**Table 1-1**).

**Table 1-1: Adherence to Decommissioning Plan Report Requirements under O. Reg. 359/09, as Amended**

| Requirement | Completed | Corresponding Section |
|---|---|---|
| Description of Decommissioning Activities | Yes | Section 2.1 and 2.2 |
| Site Restoration | Yes | Section 2.3 |
| Managing Excess Materials and Waste | Yes | Section 2.4 |
| Other Approvals | Yes | Section 2.7 |

## 1.2 The Proponent

**Applicant:**

As noted above, Belle River Wind is a joint venture limited partnership owned by affiliates of Pattern Development and Samsung Renewable Energy. The contacts for the Project are as follows:

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**Project:**

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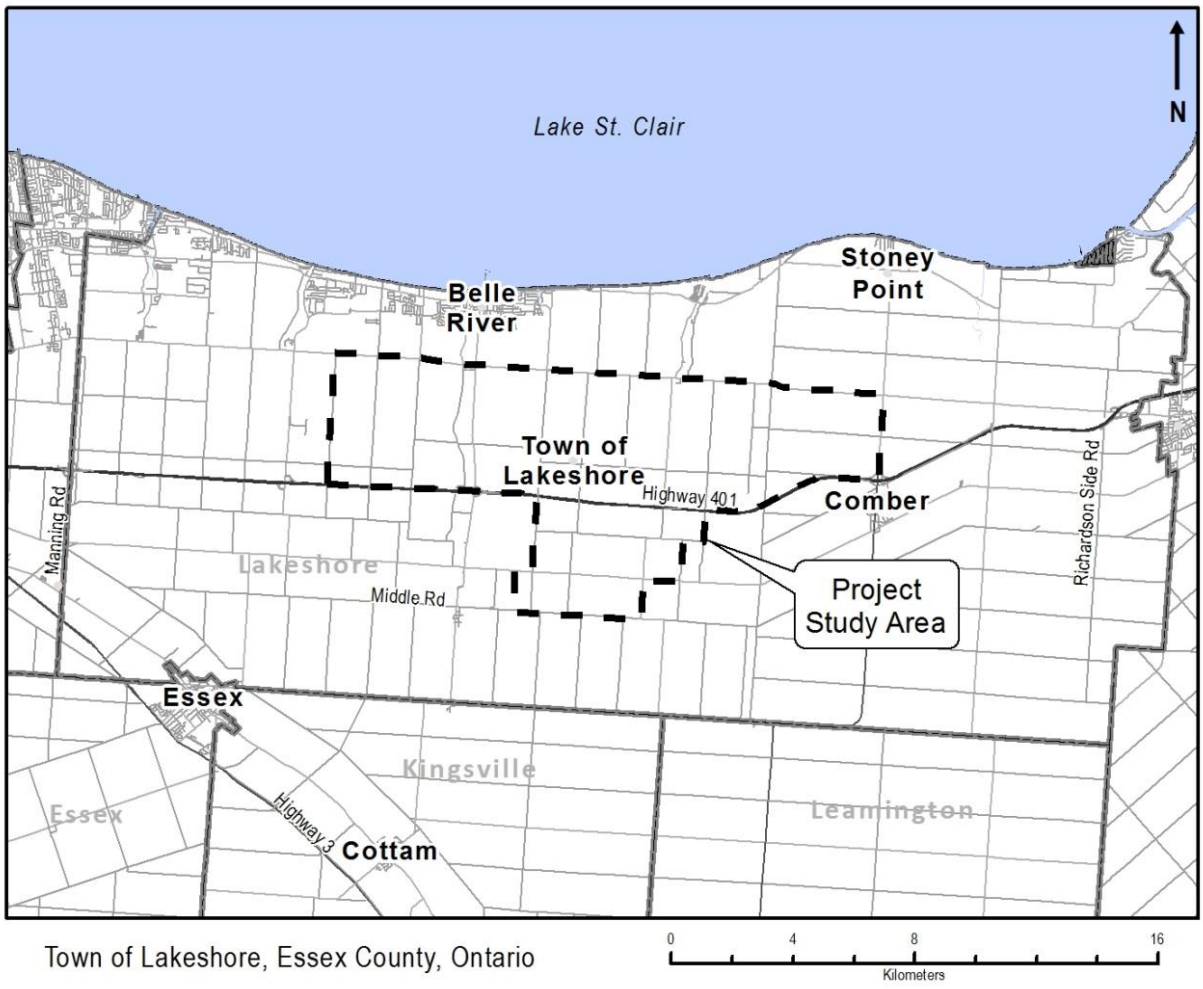
## 1.3 Project Location

Belle River Wind is proposing to develop a wind project in the Town of Lakeshore in the County of Essex, Ontario. The Project will be located on public and private lands south of the community of Belle River. The location of the Project was established based on interest expressed by local landowners, the availability of wind resources, and availability of existing infrastructure for connection to the electrical grid.

According to O. Reg. 359/09, as amended, the Project Location is "a part of land and all or part of any building or structure in, on, or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project". As described therein, the Project Location boundary is the outer limit of where site preparation and construction activities will occur (i.e., disturbance areas described below) and where permanent infrastructure will be located, including the air space occupied by turbine blades.

The Project is generally bounded by County Road 42 to the north, Lakeshore Road 111 to the west, Highway 401 and South Middle Road to the south, and Comber Sideroad to the east. The area encompassed by these boundaries is referred to as the Project Study Area ("PSA"). **Figure 1-1**, below, shows a map of the PSA. To see the location of the Project within Ontario, please see **Figure 1-2**.

**Figure 1-1: Project Study Area**




The PSA covers approximately 22,200 acres[1] of land that the Town of Lakeshore's Official Plan (2010) and the Town of Lakeshore Zoning By-law (2014) identify as predominantly agricultural in use. The PSA also consists of fragmented areas of forest and riparian habitat associated with small creeks or farm drains. The Project is not situated on Crown land or within areas protected under provincial land use plans. The PSA represents the area being assessed as part of the REA process. The following co-ordinates define corners of the external boundaries of the PSA:

| Longitude | Latitude |
|---|---|
| -82.769 | 42.277 |
| -82.687 | 42.236 |
| -82.645 | 42.2 |
| -82.55 | 42.268 |

1. *Metric units are used throughout REA documentation when describing the size of Project infrastructure, except in instances describing areas of land. When describing land size, acres (imperial) will be used rather than hectares (metric) because it is the measuring unit most commonly used by the local community. It is assumed that 1 hectare of land is equal to 2.47 acres of land.*

**Figure 1-2: Study Area in Ontario**

## 1.4 Summary of Key Project Information

A summary of key Project information is presented in the table below.

**Table 1-2: Summary of Key Project Information[2]**

| | | |
|---|---|---|
| **General** | *Project Name:* | Belle River Wind Project |
| | *Project Ownership and Operation:* | SP Belle River Wind LP |
| | *Project Lifespan (commercial operation):* | 20 Years |
| | *Project Nameplate Capacity:* | Up to 100 MW |
| **Project Area** *(as shown in **Figure 1-1**)* | *Location of Project:* | Privately-owned land and public road allowances in the Town of Lakeshore, County of Essex |
| | *Total Project Study Area:* | 22,200 acres |
| | *Total Area of Project Location (total disturbance area):* | 1,760 acres |
| **Wind Turbine Generators** | *Make and Model:* | Siemens SWT-3.2-113 |
| | *Total Number Permitted:* | 49 turbines |
| | *Approximate Number Constructed:* | 44 turbines |
| | *Nominal Turbine Power:* | 2.257 to 3.2 MW |
| | *Number of Blades:* | 3 |
| | *Blade Length:* | 55 metres (“m”) |
| | *Hub Height:* | 99.5 m |
| | *Rotor Diameter:* | 113 m |
| | *Cut-in Wind Speed:* | 3 to 5 metres per second (“m/s”) |
| | *Cut-out Wind Speed:* | 32 m/s |
| | *Rated Wind Speed:* | 12 to 13 m/s |
| | *Swept Area:* | 10,000 metres squared (“$m^2$”) |
| | *Foundation Dimensions:* | 25 m diameter |
| **Access Roads** | *Access Roads – Operations: (includes shoulder, travel width and ditch)* | 49 kilometres (“km”) x 8 to 12 m |
| | *Access Roads – Construction (with shoulder):* | 49 km x 8 to 15 m |
| **Collector Lines** | *34.5 kilovolts (“kV”) Collector Lines in Public Right-of-way: (total combined length of proposed underground and/or overhead)* | 80 km x 2 to 6 m |
| | *34.5 kV Collector Lines on Private Lands (underground):* | 49 km x 2 to 6 m |
| **Transmission Line** | *230 kV Transmission Line in Public Right-of-way or Private Lands:* | 5 to 10 km x 2 to 6 m |
| **Other Project Structures and Facilities** | *Collector Substation:* | 10 acres |
| | *Operations and Maintenance Building:* | 7 acres |
| | *Interconnection Station:* | 10 acres |
| | *Meteorological Towers:* | Up to 2 |
| | *Microwave Tower:* | Up to 2 |
| **Temporary Land Use** *(Construction Phase)* | *Construction Staging Areas:* | 10 to 15 acres |
| | *Wind Turbine Laydown Area (each turbine):* | 1.5 acres |
| | *Crane Pads:* | 0.2 acres |

*2. Dimensions are near approximations.*

# 2. Decommissioning Plan Overview

Following the anticipated 20 year operational phase of the Project, all components are expected to be decommissioned as described in the following sections. In the unlikely event that Project development is stopped during construction, the Project would be decommissioned as described in **Section 2.1**.

In determining the probable future use for the Project there are two primary factors to consider, namely: economics and technological improvements. If an economic evaluation determines that repowering the Project by replacing and/or upgrading Project components is possible, extending the lifespan of the Project may be considered. Any evaluation of repowering the Project will also consider any technological improvements that have been developed during the proposed 20 year operational phase of the Project. If Belle River Wind makes the decision to decommission the Project in lieu of replacing and/or upgrading Project components then the most probable future land use is agricultural. As previously noted the proposed Project is located primarily on agricultural lands and, therefore, following the decommissioning of the Project, lands will be restored so that pre-existing land use can continue.

The decommissioning process will involve removing the wind turbine, including the tower, generator, auxiliary equipment, above ground cables / poles, fixtures, all other personal property and otherwise restoring the premises to a condition similar to what existed prior to the project. If it is agreed upon with the landowner, access roads and underground cables may be left in place. Foundations shall be removed to approximately 1 m below grade and replaced with topsoil. Within 12 months of initiating the decommissioning process, the Project owner will have removed the relevant components from the leased land.

The decommissioning of the Belle River Wind Project will be undertaken in compliance with this Decommissioning Plan and the Ontario *Occupational Health and Safety Act* along with any other applicable regulatory requirements and standards of the day, including those from the Ontario Ministry of Natural Resources and Forestry (“MNRF”), Essex Region Conservation Authority (“ERCA”) and/or Ontario Ministry of Tourism, Culture and Sport (“MTCS”). As with construction, a manager responsible for safety will be present on site for the duration of the work.

## 2.1 Decommissioning During Construction

Although it is unlikely that the Project would be decommissioned before the operations phase, should this occur, the procedures for dismantling the Project would depend upon the state of construction. Dismantling would follow the steps outlined in **Section 2.2.1** of this report and any exposed soils would be re-seeded, at the discretion of the landowner. Mitigation measures as described in the Environmental Effects Management Plan (part of the Design and Operations Report) would also be implemented.

Following construction best management practices (“BMPs”), stockpiles of soil will be covered with tarps, plastic sheeting or other BMPs deemed necessary during work stoppages to prevent erosion, runoff and fugitive dust emissions. Vegetation removal adjacent to water bodies will be minimized to the extent agreed to by the MNRF or ERCA, and will be avoided wherever possible to reduce potential sedimentation of watercourses. Silt fencing, through consultation with the ERCA, will be constructed on the closest edge of the construction area from watercourses and wetlands where works are performed within or adjacent to ERCA’s Regulated Area. Land will be re-graded to the original or otherwise effective grade to allow for natural surface drainage.

Once construction and installation activities cease, excavated soil will be replaced to restore the original soil horizons and land uses. If subsoil has become compacted, it will be ripped. Moderately compacted soils will be ploughed. Areas with disturbed soils or areas that are re-graded with topsoil will be re-seeded with an annual seed

mix to help temporarily stabilize the soil and prevent erosion. Any disturbed field drains or tiling that was present at the commencement of construction will be repaired or replaced to restore field drainage and return the area to the previous land use (typically agriculture). The condition of the disturbed areas will be discussed with the landowner to address any potential concerns.

The mitigation strategy will not differ from the mitigation strategies used during construction and installation activities. Restoration of the Project area would follow the procedures outlined in the Construction Plan Report for post-construction activities of the Project (see Construction Plan Report).

## 2.2 Decommissioning After Ceasing Operations

Many of the activities completed during decommissioning are similar to those completed during construction and installation activities, but would likely occur in the reverse sequence. Preliminary decommissioning activities will include equipment delivery, topsoil removal, and the creation of temporary staging and laydown areas (including field offices). For a detailed description of these activities, refer to the Construction Plan Report.

A summary of the general timing of Project decommissioning is provided in **Table 2-1**. Decommissioning is expected to span approximately 12 months. The decommissioning duration accounts for minor delays that could result from an extended regulatory process, delayed equipment arrival and potentially adverse weather conditions.

**Table 2-1: Timing of Project Decommissioning Activities**

| | Project Phase and Activity | Duration* |
|---|---|---|
| *Decommissioning Planning and Permitting* | Planning and permitting | 12 months |
| *Aboveground Structure Decommissioning* | Turbines including dismantling and removal | 5 months |
| | Overhead collector system and transmission lines including dismantling and removal | 2 months |
| | Collector substation including dismantling and removal | 2 months |
| | Operations and maintenance building, including dismantling and removal | 2 months |
| | Access roads including road bed removal and land reclamation | 3 months |
| | Meteorological and microwave towers including dismantling and removal | 1 month |
| | Watercourse crossings including removal and aquatic and riparian habitat reclamation | 1 month |
| | Pad-mounted transformer including dismantling and removal | 2 months |
| *Belowground Structure Decommissioning* | Turbine foundation removal (including concrete removal to operable depth for agriculture), transport and disposal of materials to suitable facility | 4 months |
| | Underground collector lines, which will be terminated at connection points and removed to 1 m below surface | 2 months |

**Note: Some decommissioning activities will be completed concurrently and the outlined durations are approximate*

### *2.2.1 Project Component Dismantling and Removal*

At the end of the Project's operational life, all components will be shut down and disconnected. Temporary staging and laydown areas will then be constructed and all decommissioning activities will be carried out within these designated areas. During decommissioning activities, erosion and sedimentation control measures will be implemented, as required.

Delivery of decommissioning equipment and transportation of dismantled Project components from the Project area will use County of Essex, Town of Lakeshore and provincial roads. Belle River Wind will prepare a traffic management plan, if required. The decommissioning contractor will oversee the implementation of the traffic

management plan, as required, during the Project decommissioning phase, which may include measures such as signage, road closures, speed restrictions, truck lighting, dust control, load restrictions and equipment inspections. The decommissioning contractor will ensure that road damage and traffic congestion are avoided, where possible, and suitable repair and mitigation measures are in place.

#### *2.2.1.1 Aboveground and Underground Structure Decommissioning*

**Table 2-2** summarizes the activities that will be completed during decommissioning of aboveground and underground structures. A more detailed description of these activities is included in the following sections.

**Table 2-2: Project Decommissioning Activities for Aboveground and Underground Structures**

| Structure | Description |
|---|---|
| **Wind Turbines** | • A crane pad and wind turbine laydown area will be constructed at each turbine location to accommodate the dismantling of the wind turbine generators.<br>• Wind turbines will be dismantled into their component parts, including the hub, nacelle, blades, tower and pad-mounted transformers.<br>• Before directing components to disposal or recycling facilities, efforts will be made to re-use equipment and salvage parts for existing wind farms with similar turbine technology.<br>• Turbine components will be delivered to the appropriate landfill, scrap metal yard or industrial recycling areas by large truck and trailer combinations, requiring approximately ten loads per turbine. The total number of loads may decrease substantially if the materials are considered to be scrap and can be reduced to a smaller than original size (e.g., cutting turbine blades into pieces). |
| **Wind Turbine Foundations** | • Foundations, including any rebar or steel anchor bolts, will be removed to a depth of approximately 1 m below grade, so that pre-existing land uses can continue following soil restoration.<br>• Excavated foundation areas will be backfilled with subsoil and topsoil to match the original soil horizons and elevation, and the area will be graded and contoured. |
| **Pad-mounted Transformers** | • Pad-mounted transformers will be detached from the base of each wind turbine generator and foundation by a small crane.<br>• If possible, the pad-mounted transformers from the Project will be recycled for future use. |
| **Wind Turbine Access Roads** | • Access roads will be widened up to 15 m to accommodate cranes and transportation equipment to remove wind turbine components.<br>• Following decommissioning of select Project components, the granular base material and crushed gravel used to construct access roads will be removed from the site, by dump truck and delivered to a final destination, unless otherwise agreed upon with the landowner.<br>• Culverts installed during construction and installation activities will also be removed unless requested by landowners. Any removal of culverts will be completed in consultation with, and will receive approval from the applicable regulatory agencies, if required. |
| **Overhead and Underground Collector Lines** | • Overhead cables and transmission poles that are not shared with Hydro One Network Ins. (“Hydro One”) or other utilities will be removed.<br>• At the connection points, where the underground collector lines come to the surface, the collector lines will be cut and excavated to a depth of approximately 1 m below grade. |
| **Collector Substation** | • The substation will be dismantled and removed in accordance with provincial regulatory requirements at the time of decommissioning. |
| **Operations and Maintenance Building** | • Appropriate use or disposal of the building will be determined at time of decommissioning through consultation with the landowner. |
| **Meteorological Towers and Microwave Tower** | • The towers will be removed unless otherwise requested by County of Essex, the Town of Lakeshore or local aviation groups (and agreed to by Belle River Wind) to have the meteorological towers remain in place.<br>• Once removed, the meteorological and microwave towers will be dismantled and components will be re-used, recycled or disposed of in the appropriate facilities. The concrete foundations will be removed completely or to a depth of approximately 1 m to allow for the reinstatement of previous land use. |

#### *2.2.1.2 Wind Turbines*

Consistent with the approach detailed in the Construction Plan Report, a crane pad and laydown area will be constructed at each turbine location to accommodate the dismantling of the wind turbines. Crane pads will be removed following the dismantling of each wind turbine and the area will be restored so that existing land uses can continue.

Wind turbines will be dismantled into their component parts, including the hub, nacelle, blades, tower and pad-mounted transformers. Dismantling procedures for the wind turbines will be carried out in reverse order of those described during the construction and installation process (see the Construction Plan Report). Equipment required for decommissioning of wind turbines will include cranes, machinery required to construct roads and crane pads, light-duty trucks, flatbed trucks and trailers.

Wind turbine components will be stored in the temporary staging area prior to removal unless a recycling company can transport these materials directly from the site, or if there are delays attributed to bad weather or other unforeseen circumstances. Prior to disposal or recycling, efforts will be made to re-use equipment and salvage parts. Wind turbine components will be transported to the appropriate landfill, scrap metal yard or recycling facilities by large truck and trailer combinations.

#### *2.2.1.3 Wind Turbine Foundations*

Wind turbine foundations, including any rebar or steel anchor bolts, will be removed to a depth of approximately 1 m below grade, so that existing land uses can continue. Excavators mounted with hydraulic hammers and/or hydraulic shears will be used to break up and remove sections of the foundation, and removed concrete may be crushed using a mobile crushing unit before being loaded in dump trucks for removal from the Project area.

#### *2.2.1.4 Pad-Mounted Transformers*

Pad-mounted transformers will be detached from the base of each wind turbine generator and foundation. A small crane will be used to lift the transformer onto a flatbed truck for removal from the Project area. If possible, the pad-mounted transformers from the Project will be recycled for future use.

#### *2.2.1.5 Wind Turbine Access Roads*

Following the decommissioning of select Project components (including wind turbine generators, collector substation, operations and maintenance building, and collector lines), access roads will be removed and lands will be restored so that pre-existing land uses can continue. Any removed / stored topsoil will be replaced and additional clean topsoil will be used to fill remaining areas.

Granular base material and crushed gravel used to construct access roads will be removed from the site by dump truck. At the request of landowners, all or portions of wind turbine access roads may be left in place for future use.

Culverts installed during construction and installation activities will also be removed unless otherwise requested by landowners. Any removal of culverts will be completed in consultation with necessary regulatory agencies, as required.

#### *2.2.1.6 Collector Lines*

Following current industry practices, underground collector lines on private lands and municipal right-of-ways will be left in place. It is anticipated that the underground cables will have no adverse effects on the soil, environment or

cultivation practices since the remaining cables will be inert, contain no materials known to be harmful to the environment and will be well below depths required for cultivation. This will avoid disturbing large areas of agricultural land, in comparison to the areas that would be disturbed and the associated potential environmental effects from removing the cables.

At the connection points where the underground collector lines come to the surface, the collector lines will be cut and excavated to a depth of approximately 1 m below grade. Any removal of underground collector lines will be carried out in accordance with landowner agreements. Any collector lines located at directionally drilled watercourse crossings will remain in place; however, the connection point will be severed at a point located outside of the ERCA's Regulated Area, where possible.

Where applicable, overhead collector lines that are not shared with a utility company will be removed. Holes remaining following the removal of any poles will be filled with clean fill and disturbed areas will be restored, as required. In areas where overhead collector lines are mounted on shared-use poles, only the collector lines associated with the Project will be removed, as appropriate. Overhead collector lines will be removed from the Project area and recycled, re-used or disposed of in accordance with regulatory requirements at the time of decommissioning.

#### *2.2.1.7 Collector Substation*

The collector substation, control building, electrical components and associated infrastructure will be dismantled and decommissioned in accordance with provincial regulatory standards at the time of decommissioning.

The entire area will have the subsoil ripped to alleviate compaction, and topsoil will be replaced with clean fill. Soil management will include soil testing for contaminants in accordance with regulatory requirements at the time of decommissioning. If a concrete foundation is used for the substation, it will be removed to approximately 1 m below grade by excavators mounted with hydraulic hammers and/or hydraulic shears. The concrete may be broken up and crushed using a mobile crushing unit before being loaded in dump trucks and removed from the site. Concrete material will be recycled, where possible, or disposed off-site at an approved and appropriate facility.

#### *2.2.1.8 Operations and Maintenance Building*

An appropriate reuse or dismantling of the building will be determined at the time of decommissioning through consultation with the landowner. If dismantling is required, all materials will be removed from the Project area for re-use, recycling or disposal. Gravel will be removed from the site. The entire area will have the subsoil ripped to alleviate compaction, and topsoil will be replaced with clean fill. Soil testing for contaminants will be conducted in accordance with regulatory requirements at the time of decommissioning, as required. The area will be re-graded and restored to pre-facility conditions.

#### *2.2.1.9 Meteorological Towers and Microwave Tower*

The proposed meteorological towers may be left in place for use by the Town of Lakeshore, County of Essex or local aviation groups, if agreed upon by Belle River Wind. If it is determined that the meteorological towers and/or the microwave tower need to be removed, they will be dismantled using a crane, and the metal components will be recycled. All components that cannot be recycled will be delivered to an appropriate waste facility. The concrete foundations will be removed to approximately 1 m below grade.

## 2.3 Site Restoration Activities

### *2.3.1 Land Restoration*

Once all of the turbines and ancillary facilities are removed, the remaining decommissioning work will consist of shaping and grading the areas to pre-existing land uses. All areas, including the access roads, transformer pads and crane pads will be restored to a state similar to the original condition with native soils, seeding and fertilization, where feasible. If there is insufficient material on-site, topsoil and/or subsoil will be imported from an acceptable source.

Although spill prevention procedures will be in place, there is the potential through the decommissioning process for small spills of solvents or fuels. The soil surrounding turbine areas will be visually surveyed to determine if any spills have occurred. As a mitigation measure, contaminated soils will be excavated and removed in accordance with applicable standards. Any removed / stored topsoil will be replaced and additional clean topsoil will be used to fill remaining areas.

Decommissioning may temporarily affect existing land uses around the access roads, substation and turbine locations, but only during their removal. Similar to the construction phase, proper steps will be followed to mitigate erosion and silt / sediment runoff during decommissioning.

As with the Project's construction, noise levels around the decommissioning work may be higher than average. Proper steps will be followed to minimize this disturbance, such as avoiding work outside of daylight hours. All decommissioning Project activities will conform to applicable local municipal noise by-laws, unless a noise by-law exemption is provided by the local municipality.

Road traffic in the area will increase temporarily due to crews and heavy equipment movements, similar to the Project's construction phase. If required, a traffic management plan will be prepared to mitigate the effects of increased road traffic.

### *2.3.2 Water Resources*

Decommissioning activities occurring in the vicinity of watercourses or aquatic habitat will be completed in consultation with appropriate regulatory agencies. Mitigation and environmental monitoring procedures in these areas are anticipated to be similar to those described in the Construction Plan Report.

Following the removal of any culverts, the banks and channel bed will be contoured to match the upstream and downstream grade. Native riparian vegetation will be planted to replace any such vegetation disturbed during decommissioning activities to prevent erosion and promote proper riparian function. Any underground watercourse crossings required for collector lines will remain in place after decommissioning activities in order to avoid disturbance to watercourses that would likely occur if collector lines were removed. An Erosion and Sediment Control Plan will be implemented to minimize the potential effects of erosion and sedimentation on water resources, similar to the Project's construction phase.

### *2.3.3 Cultural Heritage Resources*

Prior to decommissioning, previous archaeological assessment reports produced for the Project will be reviewed to confirm whether any archaeological or heritage assessment recommendations apply to decommissioning activities. By following the appropriate mitigation measures, no significant adverse effects on protected properties or archaeological and heritage resources are anticipated.

### *2.3.4 Accidental Spills*

Accidental spills or releases of contaminants (i.e., fuel, lubricating oils and other fluids) may occur during the refuelling, operation or maintenance of decommissioning equipment. In the event that any soils are contaminated, the impacted soils will be removed and disposed of at a MOECC approved facility. Removed soils will be replaced with appropriate fill. For more information regarding spill mitigation, please refer to the Natural Heritage Assessment ("NHA") Report and the Water Assessment and Water Body Report.

## 2.4 Management of Waste and Excess Materials

### *2.4.1 Hazardous Materials*

Machinery used to dismantle and remove Project components will require the use of oils, fuels and lubricants. In addition, waste lubricants will be recovered during the dismantling of Project components, including the collector substation, wind turbine generators and operations and maintenance building. These materials will be disposed of through conventional waste-oil and hazardous waste disposal streams in a manner outlined by regulatory agencies, if required at the time of decommissioning.

Any overhead collector lines that are required for the Project will be constructed on a wooden monopole structure. Typically, these wooden pole structures utilize a chemical-treated exterior. Belle River Wind will discuss the recycling of wooden poles with a licensed facility, which would likely involve stripping the chemically-treated exterior, disposing of this chemically-infused wood in a landfill, and re-milling the remaining wood core for alternative end uses.

### *2.4.2 Non-hazardous Materials*

The major components of the wind turbines (tower, nacelle and blades) are modular items that allow for ease of construction and disassembly of the wind turbines during replacement or decommissioning. Dismantled wind turbines have a high salvage value due to the steel and copper components. These components are easily recyclable and there is a ready market for scrap metals. Transformers and transmission lines are typically designed for a 50 year lifespan so these items could be refurbished and sold for re-use.

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

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

## 2.5 Emergency Response and Communications Plan

A detailed description of the emergency response plan to address concerns during the operations of the Project is provided in the Design and Operations Report. Where applicable, the emergency response plan will also be implemented during the decommissioning of the Project.

The communications plan outlined in the Design and Operations Report includes details on providing notifications to local residents, the Town of Lakeshore, County of Essex, First Nation and Aboriginal Communities as well as regulatory agencies. In addition, the communications plan includes details on receiving communications from the public and stakeholders, including a complaint response protocol. During the decommissioning of the Project the communications plan will be used to inform stakeholders on activities being undertaken in the Project area. In addition, the communications plan will outline how stakeholders are able to contact the Belle River Wind and any firm(s) contracted to complete decommissioning activities, as well as the means by which communications will be logged, tracked, and addressed.

## 2.6 Decommissioning Notification

The process for notifying local residents, the Town of Lakeshore, County of Essex, First Nation and Aboriginal Communities and regulatory agencies of decommissioning activities occurring in the Project area will follow procedures outlined in the Design and Operations Report. Decommissioning notifications may be distributed in the form of published notices, letters, direct communication, updates on the Belle River Wind website, or equivalent.

## 2.7 Other Decommissioning Related Approvals

Approvals other than the REA may be required specifically for decommissioning activities. Additional permits may also be required from regulatory agencies. **Table 2-3** indicates some of the authorizations and approvals that may be required at the time of decommissioning based on current regulatory expectation for disposal or recycling of Project components and associated waste materials. The summary provided in **Table 2-3** may not include all possible regulatory requirements for Project decommissioning; however, all authorizations and permitting will be obtained in accordance with regulatory requirements at the time of decommissioning.

**Table 2-3: Summary of Potential Decommissioning Permits and Approvals**

| Permit / Authorization | Administering Agency | Rationale |
|---|---|---|
| Entrance Permit | Municipality and County | Ingress / egress from municipal roads |
| Road Occupancy Permit | Municipality and County | Required for work in municipal road allowances |
| Road Cut Permit | Municipality | May be required for access roads off of county roads or works to county roads |
| Traffic Management Plan | Municipality and County | Adherence to road safety and suitability |
| Record of Site Condition | Ministry of the Environment and Climate Change | Predicted change in land use from industrial / commercial to agricultural |
| Land-Use Permit | Ministry of Transportation | Project works undertaken within 180 m of an Ministry of Transportation controlled intersection |
| Change of Access & Heavy / Oversize Load Transportation Permit | Ministry of Transportation | Compliance with provincial highway traffic and road safety regulations |
| Special Vehicle Configuration Permit | Ministry of Transportation | Use of non-standard vehicles to transport large components |
| Notice of Project | Ministry of Labour | Notification to the Ministry of Labour before construction begins |
| Development, Interference with Wetlands and Alterations to Shorelines and Watercourses, Ontario Regulations 169/06 | Essex Region Conservation Authority | Work within floodplains, water crossings, river or stream valleys, hazardous lands and within or adjacent to wetlands (work within Essex Region Conservation Authority's Regulated Area) |
| *Fisheries Act* Letter of Advice or Authorization | Fisheries and Oceans Canada | Potential direct or indirect effects to fish habitat as defined under the *Fisheries Act* |
| *Endangered Species Act* | Ministry of Natural Resources and Forestry | Potential disturbance to regulated species or habitats within Project Location |

## 2.8 Conditions of Approval

The Project owner will ensure that the decommissioning stage of the proposed Project is carried out in accordance with REA requirements and the measures / practices as described in this report.

# 3. Summary and Conclusions

This Decommissioning Plan Report has been completed to assist the Project owner in fulfilling regulatory requirements for the decommissioning of the Belle River Wind Project. This report is consistent with the provisions of O. Reg. 359/09, as amended, for a Class 4 Wind Farm facility.

# 4. References

Ontario Ministry of the Environment and Climate Change (MOECC), 2012:
Ontario Regulation 359/09. Renewable Energy Approvals under Part V.0.1 of the Environmental Protection Act. Consolidated May 2, 2014.

Ontario Ministry of the Environment and Climate Change (MOECC), 2013:
Technical Guide to Renewable Energy Approvals. Accessed December 2014. Available: https://www.ontario.ca/environment-and-energy/technical-guide-renewable-energy-approvals.

Town of Lakeshore, 2010:
Town of Lakeshore Official Plan. Approved by the Ontario Municipal Board November 2010.

Town of Lakeshore, 2014:
Town of Lakeshore Zoning By-law. Council adopted January 2010, Modified September 2014.