SOUTH BRANCH WIND FARM

CONSTRUCTION PLAN REPORT

Report 5 of 9

May 31, 2012

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1. PURPOSE

The South Branch Wind Farm *Construction Plan Report* is prepared for the purpose of compliance with section 13 of the Ontario Regulation 359/09, which amends the Environmental Protection Act for the Renewable Energy Approvals under Part V.0.1 of the Act (O. Reg 359/09).

Section 13 requires supporting documentation as outlined in Table 1 of O. Reg 359/09. Item 1 in Table 1 lists a Construction Plan Report as a requirement for the South Branch Wind Farm Renewable Energy Approval (REA).

A draft version of this report is made available to Aboriginal stakeholders, public stakeholders and agency stakeholders for review prior to the REA submission. This report is available online for download at `www.prowind.ca` and available in hard copy at select locations identified on the website and in newspaper advertisements.

A final version of this report is included in the REA submission to the Ontario Ministry of the Environment (MOE). Consultation on the content of this report is ongoing, updates to this report may be made before report finalization and submission to the MOE.

The following sections describe the project, the activities associated with the project's construction phase, potential negative environmental impacts associated to the construction phase, and identifies mitigation measures that will be implemented.

2. PROJECT OVERVIEW

Prowind Inc. (Prowind) is a Canadian wind energy developer based in Hamilton, Ontario. It is affiliated with its parent company, Prowind GmbH, based in Osnabrück, Germany. Prowind's mandate is to create small-scale, renewable and zero-emission power generation. Prowind believes in distributed generation that has a minimum impact on the surrounding environment and landscape.

The South Branch Wind Farm is "Class 4 wind facility" as defined in O. Reg 359/09. It is a 30 MW project that will employ the use of up to 14 wind turbines[1]. These wind turbines will have a hub height of up to 140 m and a rotor diameter of up to 118 m. More information on the turbine is included in the *Turbine Specification Report*.

The wind farm will also consist of access roads, a substation, an operations and maintenance building (constructed or renovated), a storage shed, a combination of underground and above ground cabling to connect the turbines to the substation, and above ground cabling to connect the substation to the electrical utility line.

[1] Earlier versions of REA reports indicated the South Branch Wind Farm would host as many as 15 turbines. One of these proposed turbine locations, that of Turbine 14, was deemed unsuitable during environmental field studies and was subsequently removed from the wind farm design. Original turbine identifiers have been preserved for clarity.

The project is proposed on privately owned, agricultural land as well as municipal easements near the hamlet of Brinston, Ontario. The project turbines are located in two main areas. The western area is defined by properties directly on each side of Byker Road, between Dobbie Road and Branch Road to the north and Pitt Road and Sandy Creek Road to the south. Turbines in the eastern area lie on either side of Brinston Road/County Road 16 between Oak Valley Road to the north and Cook Road to the south. Of the 14 proposed turbines, 13 are located in the Township of South Dundas,United Counties of Stormont, Dundas, and Glengarry. One turbine is proposed within the Township of Edwardsburgh-Cardinal, United Counties of Leeds and Grenville.

Figure 1 presents the project location within eastern Ontario. Figure 2 provides a simplified layout of the wind farm for ease of reference.

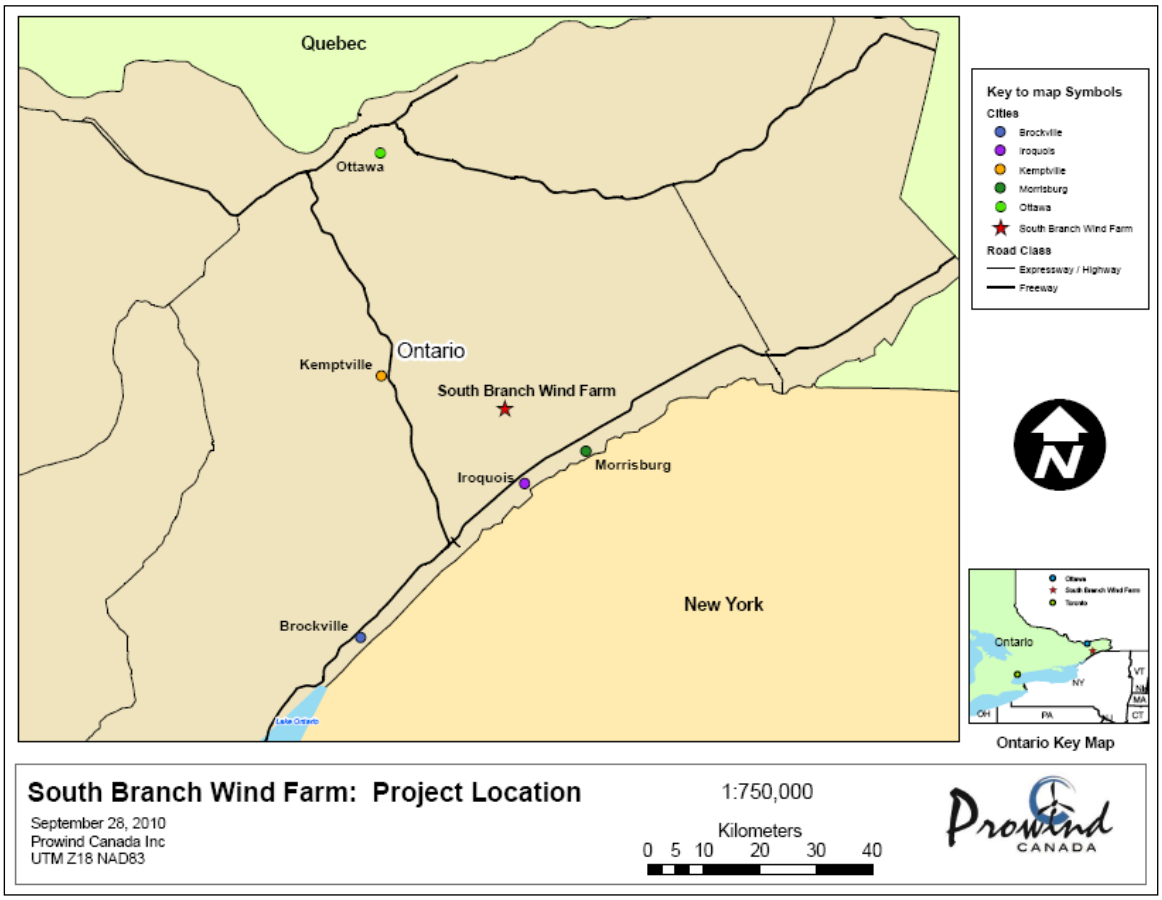
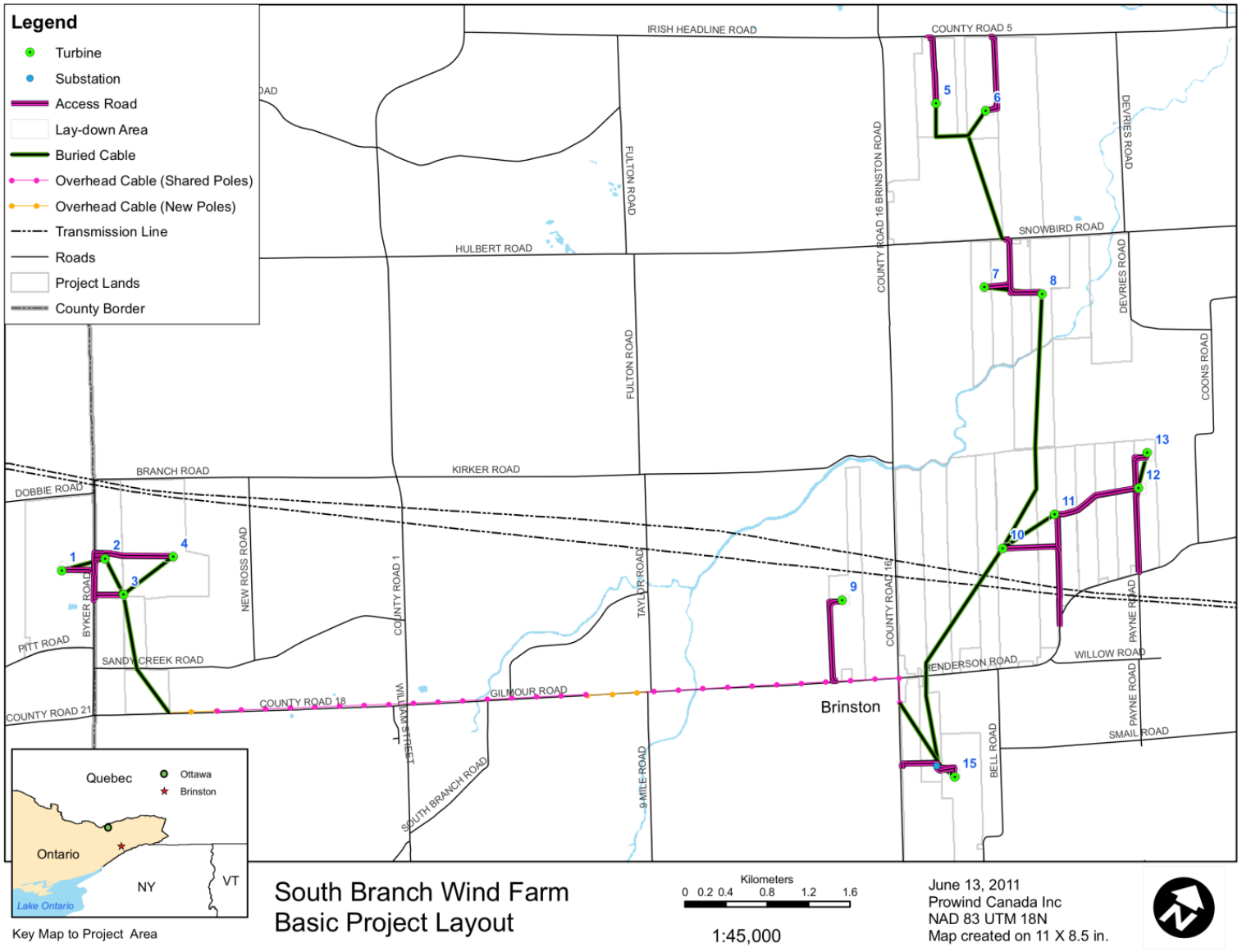


FIGURE 1 SOUTH BRANCH WIND FARM PROJECT LOCATION

FIGURE 2 SOUTH BRANCH WIND FARM PROJECT LAYOUT (NEXT PAGE)



Key Map to Project Area

3. CONSTRUCTION AND INSTALLATION ACTIVITIES

In general terms, the construction phase of a wind project consists of site preparation, construction and installation of project infrastructure, and site rehabilitation. All of which can be ongoing concurrently as work progresses across the project area.

Wind farm construction activity can occur year-round while observing certain seasonal restrictions, but is generally most heavily focused in spring, summer and fall. The earliest proposed construction activity at the South Branch Wind Farm is fall 2012, pending all necessary approvals. There is no noise bylaw in the area where the project is located and therefore construction times may be adjusted based on feedback and ongoing consultation with the local community. During peak times, construction can occur up to 7 days per week between the hours of 7:00 – 22:00, with activities producing high levels of noise being limited to 8:00 – 20:00 based on community feedback to date. Typically, construction will be conducted 6 days per week between the hours of 7:00 – 17:00, with activities producing high levels of noise commencing after 08:00. A schedule indicating the relative sequence and duration of construction activity is outlined in more detail in Section 4.1.

The construction phase includes activities such as surveying, equipment transportation, road building, foundation installation, turbine erection, collection system installation, substation installation, storage shed construction, and the potential renovation of a local building or the construction of a new building to host operations and maintenance staff.

Construction activities managed on-site will require the following temporary infrastructure:

- two 3.5 m x 19 m office trailers and room for six pickup truck parking spaces
- three temporary concrete wash-ponds (defined further in Section 3.6)
- up to four 2.5 m x 6 m temporary storage containers
- portable toilets provided by the contractor

All project activities will be undertaken according to current guidelines provided by the Township of Edwardsburgh/Cardinal, the Township of South Dundas, the United Counties of Leeds and Grenville, the United Counties of Stormont, Dundas, and Glengarry, as well as governmental agencies, Hydro One and the turbine manufacturer.

3.1. SURVEYING AND GEOTECHNICAL INVESTIGATION

Surveying and geotechnical work are the first steps of project construction. A registered Ontario Land Surveyor will mark out the exact location of project infrastructure such as turbines, access roads, lay-down areas, the substation, etc. Underground infrastructure will also be delineated during this phase using Ontario One Call. Some preliminary survey work will be performed well in advance of the start of construction to define turbine locations, where geotechnical investigations are required for foundation design. Surveying work will be carried out by a crew in one or two four-wheel drive pickup trucks.

Geotechnical studies will be conducted at each turbine location to assist turbine foundation design. An understanding of the subsurface stratigraphy is required by the turbine manufacturer and the Engineering and Procurement Contractor (EPC) to determine the appropriate foundation parameters for each turbine. Geotechnical studies involve borehole sampling within the turbine foundation area. Details of soil compaction, grain size, soil pH, and groundwater levels are gathered. Some EPCs require that up to two boreholes per foundation be drilled. Boreholes will likely be drilled using a truck mounted drill rig (~30 ton). Should field conditions be prohibitive for the use of a truck mounted drill rig, a drill rig mounted to a tracked vehicle will be used. The tracked vehicle will be transported the site on a 16 m flatbed trailer.

Access and use of the site during surveying and geotechnical investigation will be by existing roads, lanes and field edges as much as possible. In areas where topsoil is traversed and becomes compacted the landowner will be compensated for remediative ploughing efforts.

3.2. LAND CLEARING

Land clearing is necessary to prepare the land surface to facilitate further construction activities. As the project is located in intensively cultivated agricultural fields, there is little vegetation clearing required and land clearing will mostly entail the removal of topsoil from work areas and the preparation of the subsoil.

Land clearing will occur for the construction of access roads, tower foundations, crane pads, lay-down areas, the substation, concrete wash-ponds, parking areas, the storage shed, a potential new Operations and Maintenance building, and the underground electrical network. The layout of the project and subsequently the areas that are required to be cleared can be seen in Appendix A. As noted most land clearing will take place in agricultural fields. Access roads are routed along field edges and existing farm roads where possible to reduce the amount of new land clearing for the project and to minimize disruption to agricultural operations. The equipment used for land clearing will be the same equipment used to construct access roads as outlined in Section 3.3.

No topsoil will be removed from the site at any time. In areas where topsoil clearing is temporary for the construction and decommissioning phases, soil will be placed in low-lying windrows and stockpiles to limit soil loss from wind and rain. These soil piles will be located outside of the floodplain where applicable. The topsoil will be kept separate from other soil horizons for proper reconstruction of the soil profile during site rehabilitation. Quick-sprouting grass seed and/or a geo-textile type covering may be applied to the windrows to further protect the soil from erosion. Soil will be stored outside of surface drainage paths to avoid impact upstream or downstream.

In areas where permanent features (such as turbines, roads and the substation) are being installed, the topsoil will be re-distributed to the adjacent fields of participating landowners. This will occur outside of surface drainage paths to avoid impacts upstream or downstream. The existing drainage pattern will be unaltered during this process.

Land clearing will involve vegetation removal where electrical cabling or access roads intersect vegetated areas, such as roadsides and field divisions. Vegetation removal has

been heavily mitigated by the project design and the nature of the heavily cultivated landscape in the project area. Detailed discussion of vegetation impact mitigation is included in the *Natural Heritage Assessment Report*.

Crop production will remain unaffected outside the construction areas.

3.3. ACCESS ROAD CONSTRUCTION

The access road layout was designed to minimize impacts to the natural environment and farming practices while utilizing existing road entrances to the greatest extent possible. Access roads will be built on private land and will be privately maintained. Maintenance of the roads, including snow removal, is the responsibility of the wind farm operator and will be contracted to a local service provider. There will be up to 8.2 km of access roads constructed, 2.6 km will use existing laneways and road entrances.

Access roads will have a foundation of 'grade B' gravel and a finished surface of 'grade A' gravel, sourced from a local aggregate quarry and delivered to the site in dump trucks. In order to support equipment delivery vehicles, the roads must have a load bearing capacity of approximately 72 kPa at a 5 cm (2 in) depth below grade. The access roads will be built to a width of 6 m and be slightly graded to self-drain toward each edge. Access roads will be built such that the edge of the road is roughly flush with the field surface to maintain existing drainage patterns and farming operations. The total quantity of gravel required for access road construction will be determined by the selected Engineering and Procurement Contractor. It is expected that 1 km of 6 m wide access road is expected to require up to 457 loads of Grade 'B' gravel and 130 loads of Grade 'A' gravel, based on deliveries by dump trucks with 10 cubic yard capacity. Less gravel is expected to be used when upgrading existing laneways.

In some areas adjacent to access roads soil will be compacted to allow the main construction crane to "crawl" from turbine to turbine. This will be done by having tires/tracks on one side of the crane rest on the access road and on the other side rest on the compacted soil. The total width of such a corridor would be approximately 11 m during construction and the soil will be loosened after construction to restore agricultural integrity of the compacted land.

Entrances from public roadways to the wind farm access roads will require turning radii of approximately 43 m for delivery and construction equipment to safely enter and exit the construction site.

Culverts at existing entrance points that will be utilized to access participating properties will require upgrading to accommodate the increased turning radius and load capacity needed for delivery of turbine components and construction equipment. The design for any upgraded culvert installation and municipal drain crossings will comply with local municipal regulations and will prevent impacts to upstream and downstream landowners. Upgraded culverts will be required for entrances to span the roadside ditches and field drains. No natural watercourses will be crossed by access roads.

If any existing culverts along off-site transportation routes that are used for equipment delivery require upgrading, consultation with the municipality and local conservation

authority will take place. These upgrades will be part of the scope of work of the contractor charged with equipment delivery.

An approximate breakdown of the equipment used to build the access roads, crane pads and lay-down areas is outlined below. Some the listed equipment will also be used for land clearing purposes. An EPC has not yet been selected to build South Branch Wind Farm and as such there may be variation in the precise quantity and size of the machinery used:

- 2 tracked bulldozers (20 tonnes)
- 2 excavators (up to 25 tonnes)
- 2 loaders (3 tonnes)
- 2 graders (15 tonnes)
- 2 vibratory rollers (15 tonnes)
- 10 deliveries of the above equipment on flatbed trailers
- 2 tandem dump trucks (30 tonnes)
- 3 water tank trucks (15,000 L) – water contained in these trucks will be sourced and filled off-site and transported to the project area
- 2 4x4 pick-up trucks or similar vehicle

3.4. Crane Pad and Lay-down Area Construction

A 1 hectare (100 m x 100 m) turbine component "lay-down" area will be required around each turbine during the construction phase. This area is required to store tower sections, blades, the nacelle, power electronics, and the rotor hub during the construction process. It may also host a portable field office trailer and/or a portable storage container.

The lay-down area will be cleared and the topsoil may be stockpiled and seeded with quick-sprouting grass and/or covered with a geo-textile to prevent wind erosion. Stockpiles will be located outside of the floodplain, if applicable. The lay-down area will then be covered with gravel sourced from a local supplier and transported to the site via dump truck. The quantity of gravel required for each crane pad will be determined by the EPC.

The crane pad will be located within the lay-down area. The surface area of the crane pad will be approximately 800 m^2 (20 m x 40 m) at each location. The crane pad will be constructed of the same gravel material as the access roads and with a minimum bearing capacity of 287 kPa. This can require a layer of gravel approximately 0.7 m thick when compacted.

The general design of the lay-down area and crane pad is depicted in Figure 3.

At the end of the construction period, the gravel will be removed from the lay-down area with the exception of the crane pad. The topsoil will be returned to the area to enable farming activity to resume. The removed gravel will be handed over to an off-taker such as a local land owner, a municipality or other interested party. The crane pad will remain at the site during the operation phase to allow for maintenance activity, should it be required.

Equipment used to construct the crane pads and lay-down areas will be the same equipment listed for access road construction in Section 3.3.

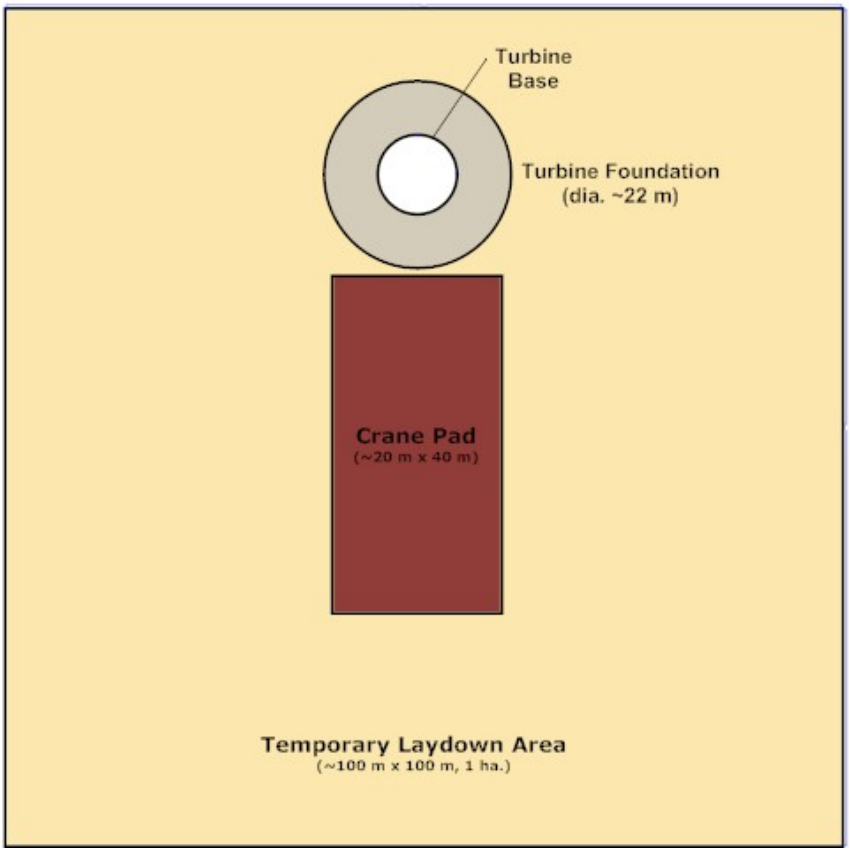


FIGURE 3 TYPICAL LAY-DOWN AREA AND CRANE PAD DESIGN

3.5. TRANSPORT OF TURBINE COMPONENTS

The wind turbine and related hardware will be transported to the site via transport trucks with specialized trailers. Oversized trucks will be necessary to transport turbine components and some construction equipment.

Not including the foundation construction, each turbine will require up to 15 heavy-haul trucks listed below for transportation of the components listed below:

- 7 – 10 for tower sections (depending on if towers will be made of steel, concrete or a combination of both)
- 1 for the hub
- 1 for the nacelle
- 2 for the pre-assembled power module (PPM) system
- 1 for the foundation mounting part
- 3 for the rotor blades

These components will be stored within the designated lay-down area until assembly.

The maximum length of any of the above vehicles will be approximately 62 m when fully loaded with a turbine component.

The turbine manufacturer or a contracted third party will oversee the logistics of transportation of major equipment to the site for construction. This will not be the direct responsibility of the wind farm developer. Oversized load permitting will be obtained whenever required and equipment routing, potential temporary road closures, or modifications to infrastructure along the transportation route will be determined by the United Counties of Stormont, Dundas, and Glengarry and/or the United Counties of Leeds and Grenville.

The load restrictions on the municipal roads during March and April will be respected for all traffic related to the wind farm construction.

Photo courtesy of M. K. Ince and Associates Ltd

FIGURE 4 DELIVERY OF STEEL TOWER COMPONENTS

3.6. TURBINE FOUNDATION CONSTRUCTION

Turbine foundation construction begins with the removal and stockpiling of topsoil as per Section 3.4. Excavated topsoil will be stockpiled in low-lying windrows outside of the floodplain, where applicable, and will be redistributed on the restored ground surface once construction is complete and the site is rehabilitated.

After the topsoil is stripped, a hole is dug for the foundation footing using an excavator. A portion of the excavated soil will be stored adjacent to the hole for backfilling purposes. The remaining soil will be trucked away from the site via dump truck and will be either used as fill at a separate work site by the contractor performing the excavation or will be stored by a third party off-site for future use as fill.

There is a possibility that the excavations for turbine foundations will penetrate below the water table. Should this be the case water will be pumped out of the hole via a submersible pump powered by a gasoline generator. The quantity of water is not expected to be in excess of 50,000 L/day. Water will be discharged to a flat area away from watercourses and drainage ditches to mitigate the potential for soil erosion and sedimentation. Areas with vegetation, preferably a woodlot, will be utilized for water discharge wherever possible, to slow and filter the runoff.

Specific on-site soil conditions will determine the final foundation design as discussed in Section 3.1; however, it is likely that shallow-spread foundations will be used at the South Branch Wind Farm. The shallow spread foundations may be supported by geo-piles if deemed necessary by foundation engineers.

There are two types of shallow spread foundations that may be required at the site, those that are subject to buoyancy forces, and those that are not. For each type, a network of reinforced steel framing (re-bar) is first constructed and then concrete is poured into a steel form. Some designs incorporate a hollow centre section with the bulk of the concrete mass being concentrated toward the outer portion of the foundation diameter. Other designs require the full foundation volume to be filled with concrete. The size of each foundation can vary significantly depending on the need to counteract buoyancy forces as summarized below:

1. Shallow spread foundations that are not subject to buoyancy forces from the water table: these foundations are approximately 20 m in diameter and up to approximately 3 m in depth. Total concrete volume per foundation can be as high as 575 m^3. Approximately 72 truckloads of concrete per foundation are required based on a volume of 8 m^3/truck load.

2. Shallow spread foundations that are subject to buoyancy forces from the water table: These foundations can be approximately 22 m in diameter and up to 3 m in depth. Total concrete volume per foundation can be as high as 815 m^3. Approximately 102 truckloads of concrete are required based on a volume of 8 m^3/truck load

If necessary, geopiles will be installed beneath the shallow spread foundations to a depth determined by foundation engineers. Piles will be installed with a pile driver until bedrock is reached or 'refusal'. The piles may be composed of steel and/or concrete.

Premixed concrete will be brought in by concrete trucks from a privately owned, off-site concrete plant. The concrete will be poured into a concrete pump truck equipped with a boom to deposit the concrete to precise areas within the foundation. The majority of rinsing and washing of concrete trucks will take place off-site on the supplier's property, but approximately 25 L/truck of rinse water will be required to be used on site before empty concrete trucks depart. This water will be supplied by 15,000 L water tank trucks

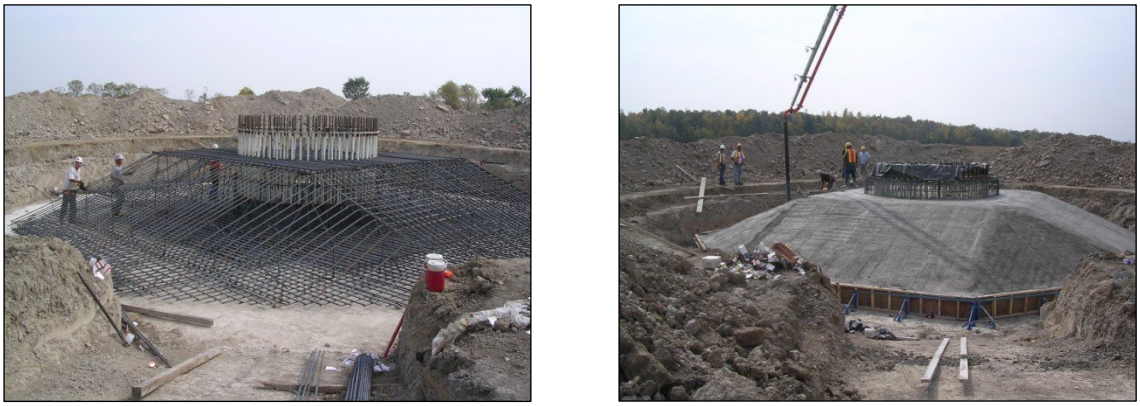
filled off-site. To this end, three concrete truck wash water settling ponds ("wash-ponds") will be constructed in the locations denoted in Appendix A, outside of the regulated floodplain. One wash-pond will be in the western portion of the project and the other two in the eastern portion to avoid unnecessary concrete truck traffic for the sole purpose of rinsing.

The wash-pond in the western section of the project will be located adjacent to Byker Road on the east side on property P2. It will be a shallow pit approximately 3 m wide x 7 m long x 0.7 m deep. One wash-pond in the eastern section of the project will be located on the south side of Hulbert Rd, east of the access road to Turbines 7 and 8 on property P12. It will be a shallow pit approximately 3 m wide x 8 m long x 0.7 m deep. The other wash-pond in the eastern portion of the project will be located near the junction of the access roads to Turbines 10 and 11 on property P24. It will be a shallow pit approximately 3 m wide x 9 m long x 0.7 m deep. Rinse water at all wash-ponds will be supplied by a 15,000 L capacity water truck, which will be filled off-site. All wash-ponds will be lined with a fine filter cloth that allows the water to drain through while the concrete sediments are collected in the pond. The wash-ponds are oversized and will have straw bales placed around the edge to mitigate any overflow impacts in the case of a major storm. All wash-ponds are located away from populated areas to mitigate potential hazards to members of the public. The wash-ponds will be surrounded by temporary fencing and a warning sign.

After construction, the filter cloth and concrete solids will be removed from each wash-pond and disposed of appropriately, in consultation with the Township of South Dundas. The pit will be backfilled with the original stockpiled materials and the topsoil will be redistributed over the area.

The steel re-bar used to strengthen the foundation will be sourced from an Ontario supplier and will be delivered to the site on 16 m flat bed trailers. The amount of steel required for each turbine foundation will be determined by a structural engineer after geological soil testing is concluded. Approximately one 16 m flat bed trailer loaded with re-bar and forms for the concrete foundation is required per turbine.

The construction of up to 14 foundations will take approximately 13 weeks to complete. A minimum of 5 weeks is necessary for each foundation to cure before turbine erection can commence.



Photos courtesy of M. K. Ince and Associates Ltd

FIGURE 5 FOUNDATION CONSTRUCTION EXAMPLE

3.7. TURBINE INSTALLATION

After the main turbine components arrive on site the turbine erection team will begin to assemble electrical equipment located in the base of the tower. Once completed, the bottom section of the tower is lifted and placed around the electrical assembly. It is then bolted to the foundation mounting ring, which has been previously set into the concrete foundation. The remaining sections of the tower are lifted and stacked on top of each other to complete the tower. Each section of tower is bolted to the previous section. The nacelle is lifted and bolted to the top of the tower.

The blades are either mounted to the rotor on the ground or lifted individually and installed. Local meteorological conditions at the time of turbine installation will determine which method is used. Once the hardware is secured in place, the electrical connections between the nacelle and electrical equipment at the base of the tower are made.

In total, 3 cranes will be used to assemble a turbine: one large crane to lift the turbine components into place and two smaller assist-cranes to secure turbine components while being lifted and to unload components from trucks as they arrive on-site. The expected crane lifting capacity for the main component lifts during turbine erection is 600 tonnes.

The cranes will arrive on site in numerous pieces and will require onsite assembly within the lay-down area. Approximately 15 flatbed trailer deliveries will be required to transport the main assembly crane to the site and approximately 20 flatbed trailer deliveries will be required to transport both of the assist cranes to the site. Up to two all terrain forklifts may also be used to assist movement and assembly of turbine components on the ground.

The cranes will be moved from turbine to turbine via wind farm access roads where possible and will be disassembled, loaded onto flatbed trailers and re-assembled when driving the crane from turbine to turbine is not possible.

Photo courtesy of M. K. Ince and Associates Ltd

FIGURE 6 CRANE ASSEMBLY

Photos courtesy of M. K. Ince and Associates Ltd

FIGURE 7 TURBINE ASSEMBLY

3.8. ELECTRICAL NETWORK INSTALLATION

The electrical collection system is used to collect and deliver the power generated from the turbines to a common point and subsequently the provincial distribution grid. A combination of underground and overhead wires will be installed.

The collection system between the turbines and the substation will consist of three electrical cables running at a system voltage of 27.6 kV, a neutral ground, and a fibre-optic cable. The fibre-optic cable is used for communication between turbines, the substation (and corresponding) remote monitoring equipment, and the Operation and Maintenance Building.

The collection system cables connect to the transformer at the base of each turbine and subsequently connect to the other turbines along the collection system route. A junction box will be used to join radial arms of the collection system and to splice cables together where required.

The collection system will be installed via direct burial in agricultural fields. Direct burial is a simple method by which an excavator or trench digger digs a trench up to approximately 1.5 m wide and to a depth below any tile drainage system or ploughing activity (typically greater than 1 m). A reel truck or tracked bulldozer then lays the cabling in the trench. Flagging will be placed below tile grade to provide warning and to identify the depth of the buried cable. A small amount of crushed gravel may be used to line the trench, determined by on-site soil conditions. Material excavated from the trench will be used to refill the trench once the cables are in place. The trench will be compacted and the original topsoil will be replaced. Any damages to the tile drainage system will be repaired by a contractor of the landowner's choosing prior to the backfilling of the trench.

High pressure directional drilling will be used where the collection system intersects existing infrastructure such as roads, certain portions of tile drainage, municipal drainage and some natural features such as water courses and municipal drains in order to minimize disruption. This method involves drilling and installing a 7.5 cm conduit at a typical depth of at least 1 m below grade or below the feature being avoided.

All electrical and fibre-optic cables will be trucked to the site on large spools. In total there are approximately 16.8 km of proposed trenching/boring required at the site if turbines are installed at all proposed locations. Certain portions of trenching will host more than one circuit of wiring depending on the final electrical design and the turbine selected for the site. Therefore the total length of buried cabling may be greater than 16.8 km.

Along roadways such as Gilmour Road/Glen Steward Road (County Road 21) and Brinston Road (County Road 16) overhead lines will be used to connect the western and eastern portions of the collection system. Consultation with the Township of South Dundas and The United Counties of Stormont, Dundas, and Glengarry has indicated that the project collection system will be permitted in the municipal road allowances. The use of shared poles with Hydro One is preferred by both municipal tiers wherever existing poles are present to save space in the road allowance. Consultation and negotiation toward a Joint Use Agreement with Hydro One is ongoing. Joint use of Hydro

One's poles will be utilized wherever possible. It is possible and likely that Hydro One will elect to upgrade their infrastructure along certain sections of roadway to accommodate joint use.

A private contractor will install new utility poles along road allowance sections where no utility poles currently exist. These poles will be installed by a utility line truck in a manner consistent with the soil conditions at each location. A utility line truck is typically equipped with a boom arm for lifting and installing poles, and an auger to dig holes. Utility poles will be delivered to the site on flatbed trailers. A typical depth below grade for utility pole installation is 2 m. Poles are expected to protrude 13-17 m above grade.

Once poles are installed, a second crew working with a boom truck will "dress" the poles with insulators and other electrical equipment in preparation for the installation of conductors. 12-16 poles can be "dressed" and installed in one day.

Once the poles are in place and dressed, cables are strung in place using boom trucks and cable reel trucks.

All overhead cable installation can occur with minimal disruption to traffic. If necessary to obstruct a single lane of roadway, flagspeople will be used to safely allow sharing of the remaining roadway.

All works will comply with Ontario Electrical Safety Authority Code regulations.

3.9. SUBSTATION CONSTRUCTION

The substation will be located on land parcel P32 (see Appendix A). Construction will involve the re-distribution of topsoil from an area of approximately 565.6 m^2 (14 m x 40.4 m). This will be performed using an excavator and/or bulldozer. The displaced top soil will be applied to adjacent land of the same owner. The substation area will then be levelled and covered with a 0.6 m layer of engineered gravel sourced from a local supplier and delivered by approximately 6 dump trucks. Concrete slab foundations will then be poured on top of the engineered gravel to form platforms for electrical cabinets and the transformer. Concrete for the platforms will be sourced from an off-site private supplier and will arrive onsite via approximately 3 concrete trucks in a similar manner as outlined in Section 3.6.

Substation electrical components will consist of switchgear, SCADA, fuses, breakers, a control room, a metal lattice tower or wooden utility pole with an antenna, a transformer, and other protection and control systems. This equipment is most often housed in grey or green electrical cabinets bolted to the concrete foundations outlined above. This equipment will be brought to the site on flatbed trucks that may be equipped with a boom to unload the equipment.

The substation will include an electrical transformer with a total rated capacity of approximately 33 MVA. The transformer will receive the project collection system at 27.6 kV and transform it to 44 kV to match the distribution voltage on Hydro One's feeder at the point of connection.

The small metal lattice tower or a wooden utility pole will be approximately 10 m in height. A lattice tower would be mounted to a concrete footing. The footing size would be determined by on-site soil conditions, it would be installed by excavating a hole to a depth below the permafrost so that a concrete column with re-bar can be poured to support the tower. A wooden utility pole would be installed in the ground using an electrical utility line truck equipped with an auger. An antenna will be mounted on the tower for the purpose of allowing the electrical system operator to communicate with the substation and control the switches that connect the wind farm to the electrical grid and Hydro One.

A chain link fence will be installed around the substation for safety and security purposes. The fencing material will be sourced from a local building supplies provider and will be delivered in approximately 3 loads from a flatbed truck with a boom.

FIGURE 8 SUBSTATION EXAMPLE

3.10. OPERATIONS AND MAINTENANCE BUILDING CONSTRUCTION

An Operations and Maintenance Facility will be required to host up to 4 staff members. The facility will consist of up to 4 workstations, a lunch room, and washroom facilities as a minimum. The structure will be connected to the project fibre-optic network to allow monitoring and control of the wind farm. There are 3 proposed locations for this facility to allow for future flexibility:

- 11058 Gilmour Road: an existing building in the hamlet of Brinston. The structure is a former Town Hall and is currently vacant. The building interior would be assessed and renovated if required. Four parking spaces for pick-up truck sized vehicles would be required outside the building. Renovation work on an existing building may require a large metal waste container for disposal of pre-existing materials at the site, landscaping equipment to improve exterior

aesthetics and add parking spaces, paving equipment if asphalt surfacing is required for the parking spaces, contractor vehicles, and the delivery of building supplies by a flatbed truck with a boom for unloading. Renovation work will be conducted between the hours of 8:00 – 22:00 as a maximum, with noise producing activity ending at 20:00 based on community feedback to date. Generally, renovation work will occur between 8:00 – 18:00. Renovation work will occur concurrently with other wind farm construction activities.

- 11099 Henderson Road: A new single storey building sized approximately 6.1 m x 12.2 m (20' x 40') would be constructed on a standard concrete foundation. The structure would be framed using wood lumber in accordance with the Ontario Building Code. Concrete for the building footings would be delivered by an off-site supplier in a similar manner as for the turbine foundations outlined in Section 3.6. An excavator would be used to dig an area for the foundation. Lumber, roof trusses, and building materials would be delivered in several flatbed truck loads equipped with a boom for unloading. The roof would be covered by either asphalt shingles or metal roofing. A septic system would also need to be installed on the premises to handle additional waste water from the building. A specialized contractor with a backhoe would be hired for the septic system installation and all necessary permits for the work would be secured from the Township of South Dundas and/or South Nation Conservation. A parking area for 4 pick-up trucks would be constructed. Timing of construction will be the same as for the previous potential O&M location.
- 11225 Henderson Road, Dundas Agri-Systems: This property is currently in use for agri-business and would serve as an ideal location for an O&M facility. Part of the main building interior would be upgraded and an addition would be added to the exterior of the building. Construction would be carried out in a manner consistent with the description of the previous two potential O&M locations, with the exception that a well, septic system, and additional parking will not be required at this location as sufficient capacity already exists.

3.11. STORAGE SHED CONSTRUCTION

A 6.1 m x 12.2 m (20 ft x 40 ft) storage shed will be built in the same area as the proposed location for a new Operation and Maintenance facility. The shed will be used to store spare parts, tools, equipment, and waste fluids (prior to disposal). The shed foundation and floor will be made of concrete and will be built using the same methodology as the new O&M facility as outlined in Section 3.10. The area within the shed that is used to store waste fluids will have a physical spill containment barrier in case of any leaks or spills from fluid containers.

The structure would be framed using wood lumber in accordance with the Ontario Building Code. Lumber, roof trusses, and other building materials would be delivered in several flatbed truck loads equipped with a boom for unloading. The roof would be covered by either asphalt shingles or metal roofing. All construction work will occur

between the hours of 8:00 – 22:00, with noise producing activity ending at 20:00 based on community feedback to date.

The shed will be secure with access limited to wind farm O&M staff, waste fluid removal contractors, and the proponent to safeguard hazardous fluids until they are removed.

3.12. WIND FARM COMMISSIONING

An extensive series of tests will be performed on each wind turbine in the wind farm prior to start up. Turbines, collection system, and substation will be checked for system continuity, expected performance, warranty validation, and adherence to operational and safety commands. Tests will be conducted by both the turbine manufacturer and Hydro One to ensure proper system integration of the wind farm. If problems or issues are identified, appropriate modifications will be made prior to start up.

The commissioning process may require the use of up to two 1500 kW portable diesel generators and associated load banks.

3.13. SITE REHABILITATION

Site rehabilitation and clean-up will occur for all areas of construction. The main objective is to restore ecosystem attributes and associated vegetation communities to pre-disturbance conditions to the largest degree possible. Site rehabilitation activities are summarized below:

- Gravel from lay-down areas, widened entrance ways and turning radii and a 1 m wide section of the access roads will be removed from the site, and sold or given to an off-taker.
- Concrete wash-ponds will be restored as described in Section 3.6.
- Stockpiled topsoil will be returned to areas where gravel has been removed or where cable trenches were filled.
- The land will be graded to pre-existing contours and drainage patterns.
- Disturbed areas that were vegetated will be re-seeded to restore the pre-existing ground cover using native plants. Cropped areas will be re-integrated into the ongoing crop cycle as defined by the landowner.
- Debris from construction activities will be collected and disposed of in an appropriate manner for the materials collected.
- Temporary structures such as the portable office trailers, storage containers, and portable toilets will be removed.
- Tile drains will be repaired or upgraded when any damage occurs to ensure continued function of the pre-existing drainage systems (these efforts will be ongoing throughout construction).

Equipment required during the site rehabilitation process is expected to include:

- 2 tracked bulldozers (20 tonnes)
- 2 loaders (3 tonnes)
- 2 graders (15 tonnes)
- 6 deliveries of the above equipment on flatbed trailers (if the equipment was not left on sight from prior use)
- 2 tandem dump trucks (30 tonnes)
- 2 four wheel drive pick-up trucks or similar vehicle

4. CONSTRUCTION AND INSTALLATION SCHEDULE AND LOCATION

4.1. SCHEDULE

The proposed construction and installation schedule is listed below in Table 1. Due to factors such as weather and equipment availability, wind farm construction schedules are subject to minor variation. Construction activity is proposed to occur between the hours of 7:00 – 22:00 up to 7 days per week as a maximum scenario. More typically, construction will occur between 7:00 – 17:00, 6 days per week. Based on community feedback, activities producing high levels of noise will be limited to 08:00 – 20:00. The likely start time for construction is fall 2012.

TABLE 1 PRELIMINARY CONSTRUCTION AND INSTALLATION SCHEDULE

ACTIVITY	DAYS
Surveying	10
Land Clearing	20
Access Road Construction	20
Crane Pad Construction	15
Electrical Network Installation	75
Substation Construction	15
Foundation Construction	90
Turbine Installation	60
Turbine Commissioning	40
Site Rehabilitation	10

4.2. TIMELINE

A general timeline of the construction and installation activities is depicted in Figure 9. This timeline represents a conservative estimate for construction duration. Given that an EPC has not yet been selected to build the project, the construction schedule may be subject to alteration.

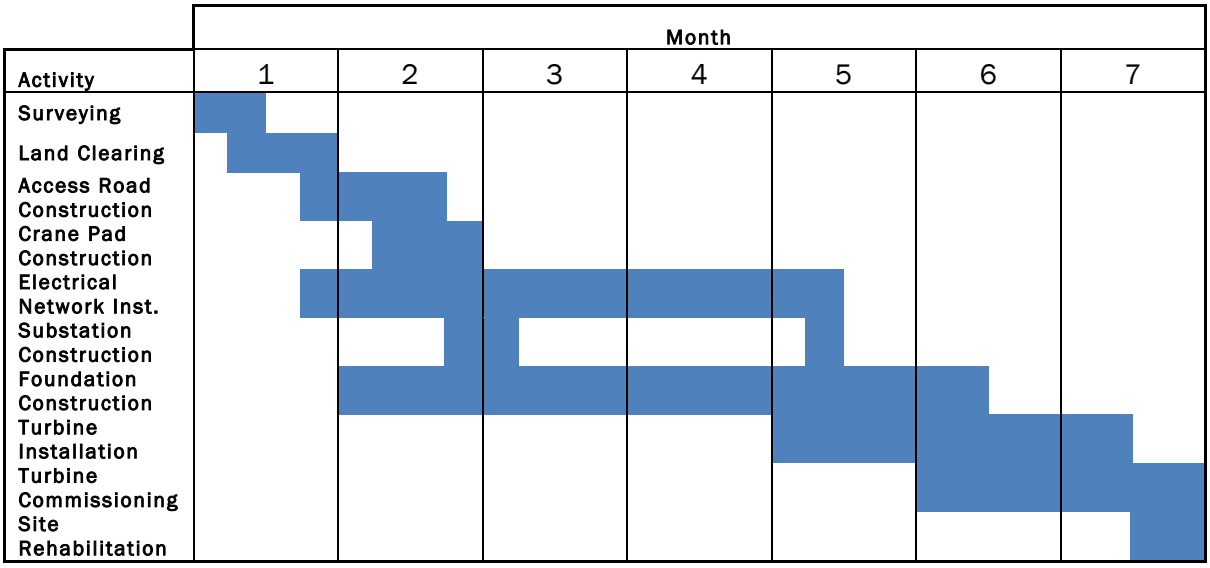


FIGURE 9 PRELIMINARY CONSTRUCTION AND INSTALLATION TIMELINE

4.3. LOCATIONS

The locations of the electrical collection system, turbines, access roads, foundations, crane pads, and lay-down areas are depicted in Appendix A.

5. Negative Environmental Effects and Mitigation Measures

Wind energy facilities, when placed properly, have few negative effects on the surrounding environment. With each project, South Branch Wind Farm included, Prowind strives to integrate wind energy into the environment as unobtrusively as possible by using agricultural land and existing access routes for the development of wind farms in Ontario. Long-standing agricultural practices have removed much of the natural heritage value of intensively cultivated land, so there are few additional environmental impacts created with the addition of up to 14 wind turbines. The EPC selected to construct the project will be required to demonstrate a history of outstanding environmental and safety records to mitigate the probability of negative environmental effects during construction.

The majority of the negative environmental effects discussed in this section are considered potential effects, but must be given due consideration. Potential effects refer to negative impacts from accidents (spills, neglect, etc.) or unlikely occurrences (archaeological discoveries). The likelihood of this occurring is low, but it poses a certain element of risk. If the wind farm is planned and constructed in a responsible manner, minimal negative environmental impacts will occur.

The table below lists the construction activities described in Section 3, the environmental impacts possible from the corresponding activity, and the mitigation measures to be employed for each impact.

The impacts and mitigation measures are summarized in Table 2 and are described in more detail in the remainder of Section 5.

TABLE 2 CONSTRUCTION ACTIVITIES, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

ACTIVITY	IMPACT	MITIGATION
Surveying and Geotechnical Investigation	None	
Land Clearing	Agricultural Land Loss	· Existing farming roads and crop divides used where possible · Planned location and timing of construction activities to minimize impact to farming practices · Turbine lay-down area will be restored after construction, with the exception of the crane pad · Landowners compensated for production loss through rental payments
	Cultural Heritage	· Pre-construction surveys and assessment conducted · Planning of wind farm avoided high potential areas
	Habitat Removal	· Located wind farm on agricultural land · Planned layout to minimize vegetation removal and habitat disruption
	Noise Disturbance	· Construction will occur between 7:00 – 22:00, with noise producing activity occurring between 8:00 and 20:00
	Soil Erosion	· Soil is placed in low-lying windrows and held in place with water, quick sprouting seed or geo-textile membrane
	Surface Water Sedimentation	· Soil erosion control measures (windrows, seeding, geo-textile membrane) will be used · Sedimentation control measures (straw bales, silt fencing) will be used · Soil stockpiles will be stored outside of the floodplain
Access Road Construction	Air Quality - dust	· Dust suppression with water during dry weather
	Noise Disturbance	· Construction will occur between 7:00 – 22:00, with noise producing activity occurring between 8:00 and 20:00
	Surface Water Sedimentation	· Soil erosion control measures (windrows, seeding, geo-textile membrane) will be used · Sedimentation control measures (straw bales, silt fencing) will be used · Soil stockpiles will be stored outside of the floodplain
Crane Pad and Lay-down Area Construction	Air Quality - dust	· Dust suppression with water during dry weather
	Noise Disturbance	· Construction will occur between 7:00 – 22:00, with noise producing activity occurring between 8:00 and 20:00
	Surface Water Sedimentation	· Soil erosion control measures (windrows, grass seed, geo-textile membrane) will be used · Sedimentation control measures (straw bales, silt fencing) will be used · Soil stockpiles will be stored outside of the floodplain

ACTIVITY	IMPACT	MITIGATION
Transport of Equipment	Air Quality - dust	· Dust suppression with water during dry weather
	Air Quality – vehicle emissions	· Efficient and minimal use of machinery
	Health and Safety – Public	· Drivers use safe, defensive driving practices · Transportation Contractor will utilize escort vehicles and/or local police as required by regulation and for safe transport around on/off ramps, key intersections, etc. · Community will be informed via news media of delivery days for heightened awareness
	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
Foundation Construction	Air Quality - dust	· Dust suppression with water during dry weather
	Cultural Heritage	· Pre-construction surveys and assessments conducted · Planning of wind farm avoided high potential areas
	Health and Safety – Public	· Drivers use safe, defensive driving practices · Traffic control personnel will be utilized where required to ensure safe entrance and exit from the site onto public roads
	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
	Soil Erosion	· Soil is placed in low-lying windrows and held in place with water, quick sprouting grass seed or geo-textile membrane · Discharge of pumped groundwater will be directed to vegetated areas if possible and flat areas as a second choice
	Surface Water Sedimentation	· Soil erosion control measures (windrows, seeding, geo-textile membrane) will be used · Soil stockpiles will be stored outside of the floodplain · Sedimentation control measures (straw bales, silt fencing) will be used · Cement wash-pond will be lined with filter cloth to collect sediment and will be sized to avoid overflow and located outside of the floodplain · Discharge of pumped groundwater will be directed away from surface water using methods to reduce erosion
Turbine Installation	Health and Safety – Workplace	· Installation crew will be trained, experienced, and have an outstanding safety record · Emergency response plan and First Aid kit will be on site
	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
	Surface and Ground Water Contamination	· Construction crew are trained and experienced · Spills kit will be located on site · MOE Spills Action Centre will be contacted immediately in the event of an accidental spill

ACTIVITY	IMPACT	MITIGATION
Electrical Network Installation	Cultural Heritage	· Pre-construction surveys and assessments conducted · Planning of wind farm avoided high potential areas
	Fish Habitat Disturbance	· Located wind farm on agricultural land and away from surface water · Cables will be directionally bored under watercourses to prevent surface impacts · Directional drilling and other construction near watercourses will be done outside of the sensitive fish breeding and spawning season of March 15 to July 1
	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
	Soil Erosion	· Soil is placed in low-lying windrows and held in place with water, quick sprouting grass seed or geo-textile membrane
	Surface Water Sedimentation	· Soil erosion control measures (windrows, grass seed, geo-textile membrane) will be used · Soil stockpiles will be stored outside of the floodplain · Sedimentation control measures (straw bales, silt fencing) will be used · Cabling will be drilled under watercourses or strung overhead · Frac-out emergency plan will be prepared
	Surface and Ground Water Contamination	· Construction crew are trained and experienced · Spills kit will be located on site · MOE Spills Action Centre will be contacted immediately in the event of an accidental spill · Frac-out emergency plan will be prepared
	Tile Drainage System Damage	· Directional boring may be utilized by the EPC to cross beneath tile drainage · Repair contractor of landowner's choosing onsite to immediately repair all damage
Substation Construction	Agricultural Land Loss	· Existing farming roads and crop divides used where possible · Planned location and timing of construction activities to minimize impact to farming practices · Landowners compensated for production loss through rental payments
	Cultural Heritage	· Pre-construction surveys and assessments conducted · Planning of wind farm avoided high potential areas
	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
	Soil Erosion	· Soil is placed in low-lying windrows and held in place with water, quick sprouting grass seed or geo-textile membrane
O&M Building and Storage Shed Construction	Cultural Heritage	· Pre-construction surveys and assessments conducted
	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
Commissioning	Noise Disturbance	· Turbine testing will occur between 7:00 and 21:00

ACTIVITY	IMPACT	MITIGATION
Site Rehabilitation	Noise Disturbance	· Construction will occur between 7:00 and 22:00, with noise producing activity occurring between 8:00 and 20:00
	Surface Water Sedimentation	· Soil erosion control measures (windrows, seeding, geo-textile membrane) will be used · Sedimentation control measures (straw bales, silt fencing) will be used

5.1. AIR QUALITY – DUST

5.1.1. Activities

The activities involved in the South Branch Wind Farm that contribute to an increase in dust in the local environment include:

- access road construction (Sec 3.3);
- crane pad and lay-down area construction (Sec 3.4);
- transport of equipment (Sec 3.5), and
- foundation construction (Sec 3.6).

5.1.2. Impacts

Air quality impacts from the above activities will involve a temporary increase in dust particulate matter in the area around the construction activities during times of dry weather.

The amount of dust created during the construction period is expected to be low and impacts will not be noticed outside the immediate project area. Impacts are variable and weather dependent; if the construction period is dry, the amount of dust will be greater than if it is wet.

The construction period is expected to be approximately seven months and the dust from increased truck traffic will cease upon completion of the wind farm construction period.

This is a temporary effect that will have minimal impacts on the surrounding environment.

5.1.3. Mitigation

To reduce and mitigate the potential for increased dust, efficient use of equipment and supplies will be a priority. This will also be a part of efficient construction scheduling and budgeting. Supplies brought in from off-site will follow coordinated schedules to reduce the necessary number of loads and consequent trips. For example, the crane will be brought on site and scheduled to install all the turbines before leaving the site, turbine components will be delivered to the turbine lay-down areas directly instead of an intermediate staging area, etc. In this way dust created from truck traffic will be reduced as much as possible.

Additionally, water will be applied to the access and municipal roads if the ground is very dry and dust is identified as a problem. Water will be brought in from off-site in a water truck and applied to the access roads and municipal gravel roads.

5.2. AIR QUALITY – VEHICLE EMISSIONS

5.2.1. Activities

The primary activity involved in the South Branch Wind Farm that contributes to the increase of emissions from construction vehicles is:

- transport of equipment (Sec 3.5).

5.2.2. Impacts

The air quality impact from transportation of equipment to the project site is exclusive to the construction and decommissioning periods and is therefore a temporary effect. The transport truck and flatbed trailers used to deliver the turbine components contribute the majority of the vehicle emissions released during the construction period; however, emissions from concrete trucks, construction crew vehicles, backhoes, cranes, dump trucks, etc. will contribute a portion of emissions.

The amount of emissions contributed during the construction period is expected to be low and impacts will not be noticed in the local area.

The construction period is expected to be approximately seven months and the emissions from vehicles will cease upon completion of the wind farm construction period.

This is a temporary effect that will have minimal impacts on the surrounding environment.

5.2.3. Mitigation

To reduce and mitigate the potential for increased vehicle emissions, efficient use of equipment and supplies will be a priority. This will also be a part of efficient construction scheduling and budgeting. Supplies brought in from off-site will follow coordinated schedules to reduce the necessary number of loads and consequent trips. For example, the crane will be brought on site and scheduled to install all the turbines before leaving the site, turbine components will be delivered to the turbine lay-down areas directly instead of an intermediate staging area, etc. In this way vehicle emissions from construction activities will be reduced as much as possible

The selected EPC and any subcontracted parties will be expected to utilize trucks and machinery that are in good repair to prevent excessive exhaust emissions. Additionally, the wind energy generated during the operation phase of the project will add zero-emission electricity for Ontario and will more than offset the emissions produced during construction activities.

5.3. AGRICULTURAL LAND LOSS

5.3.1. Activities

The activities involved in the South Branch Wind Farm that contribute to the reduction in agricultural land area available for farming practices include:

- land clearing (Sec 3.2)

5.3.2. Impacts

Agricultural production in the local area will be impacted slightly due to the loss of some useable land. A small amount of land will be taken out of production and will be replaced for the lifetime of the project with wind farm related infrastructure such as access roads, turbines and a substation. During the construction period, further agricultural land will be temporarily taken out of production for construction components including turbine foundations, electrical network trenches, crane pads, and lay-down areas.

The area of land removed from agricultural production during the operational phase of the project will include turbines, crane pads, new access roads, new O&M building, storage shed and substation. Permanent features will total approximately 4 hectares of land. The area of land temporarily taken out of agricultural production during the project construction and decommissioning phases will be up to approximately 23 hectares total.

The construction period is expected to be approximately seven months and land used for construction activities will be returned to production upon completion of wind farm construction.

Each property involved in the wind farm project could potentially lose portions of their land for one growing season, but regular agricultural practices can continue on the land around the construction activities and wind farm infrastructure.

5.3.3. Mitigation

To reduce and mitigate the impacts of construction activities on agricultural production, the access roads and electrical cabling will make use of existing farming roads and crop divides to the greatest extent possible. In this way, the minimum amount of agricultural land is taken out of production for wind farm construction. These features were designed in consultation with project participant landowners to ensure a satisfactory partnership between Prowind and the participating residents.

Construction related activities are planned to ensure that the minimum amount of disruption to farming practices is experienced through both location and timing. A map of construction related activities is presented in the construction site plan diagram, Appendix A of this report.

The impact of agricultural land loss is mitigated through land rental payments to the landowner. The annual payments compensate and reward the landowner for hosting a

wind turbine on their land along with any associated infrastructure. This rental payment will more than replace the opportunity cost of the land temporarily and permanently removed from agricultural production.

The temporary land lost during construction for the lay-down area will be returned to productivity after construction and outside of maintenance periods. The gravel will be removed from the surface of the lay down area and agricultural practices can continue around the base of turbine and crane pad.

5.4. CULTURAL HERITAGE

5.4.1. Activities

The activities involved in the South Branch Wind Farm that contribute to the risk of disruption of undiscovered cultural heritage resources include:

- land clearing (Sec 3.2);
- foundation construction (Sec 3.6);
- electrical network installation (Sec 3.8;
- substation construction (Sec 3.9);
- operation and maintenance building construction (Sec 3.10), and
- storage shed construction (Sec 3.11).

5.4.2. Impacts

There is risk associated with construction activities relating to cultural heritage preservation. There is potential for undisturbed artifacts or remains of Aboriginal or European origin to be discovered during soil disturbance and removal.

If artifacts or remains are discovered it may indicate a larger cultural heritage site lies below the project area that also risks disturbance. Care is needed when dealing with cultural heritage artifacts as construction activities pose a risk to their preservation.

There is potential to impact existing built cultural heritage features and cultural heritage landscapes currently existing in the project area. These can be impacted directly through removal of heritage features or through viewscape alteration with the addition of the turbines.

5.4.3. Mitigation

To mitigate the potential impact to cultural heritage resources from construction activities, pre-construction surveys and assessments have been undertaken. A Stage 1 Archaeological Impact Assessment and a Heritage Impact Assessment were conducted in November 2010. A Stage 2 Archaeological Assessment of all project areas occurred between November 2010 and June 2011. Results of all studies are presented in the *Archaeological and Heritage Resource Assessment Report*.

The studies determine the level of risk associated with the landscape in regards to likeliness of a cultural heritage resource discovery.

The Heritage Assessment Report identified some homes with Cultural Heritage Value or Interest, and some Cultural Heritage Landscapes, but there are nor direct impacts to these features. The report concluded there will be minimal impact to heritage resources. The Ministry of Tourism and Culture agreed with these findings.

The Stage 1 and 2 Archaeological Resource Assessment Report found two scatter plot areas within the project area. One was deemed to not require further investigation and one resulted in the removal of a turbine from the project plan. The report concluded that no additional archaeological work was required at the South Branch Wind Farm. The Ministry of Tourism and Culture agreed with these findings.

If during construction any artifacts or human remains are found, the Ministry of Tourism and Culture will be notified immediately and additional work will be required at that time.

5.5. FISH HABITAT DISTURBANCE

5.5.1. Activities

The sole activity involved in the South Branch Wind Farm that has potential to contribute to fish habitat disturbance is:

- electrical network installation (Sec 3.8).

It is noted that impacts to fish habitat due to loss of riparian vegetation can also occur during turbine assembly and erection, construction of access roads and of other infrastructure due to the effects of erosion which is discussed in section 5.9 These same mitigation measures will be followed to avoid, minimize or repair damage to riparian vegetation.

5.5.2. Impacts

The potential impacts from construction activities on fish habitat are associated with the installation of the electrical network spanning potential areas of fish habitation with buried electrical cable. This occurs in five locations within the project area. Further detail on the exact locations of this construction detail can be found in the *Water Assessment Report*, Table 3.

The buried electrical cable will be installed via high pressure directional drilling. and there is a risk of a "frac-out" during construction. A frac-out is the fracturing of the stream bed from below, releasing sediment and hydrocarbons (from drilling lubricants) and disturbing the stream bed. A frac-out will cause impacts to fish habitat by way of increased surface water sedimentation, surface water contamination or riparian vegetation removal.

5.5.3. Mitigation

To reduce and mitigate the potential effects of fish habitat disturbance, the South Branch Wind Farm was planned on agricultural land for the purpose of minimizing environmental impact, including fish habitat disturbance. Agricultural areas are highly altered from their natural state for maximized crop productivity. Many of the

watercourses in this area have been buried (drains), levelled or otherwise altered from their natural state.

The layout was planned to avoid watercourse alterations wherever possible to limit the environmental impact of the wind farm on the landscape. Where watercourses do require crossing, as noted above, the cabling will be drilled below the stream bed to avoid surface disruption.

Sedimentation and contamination will be mitigated by the measures outlined in Sections 5.10 and 5.11 respectively. They include adequate buffering between construction/decommissioning activities and the watercourse, the use of sedimentation control measures such as silt fencing and/or straw bales alongside the watercourses, and surface water monitoring before and after construction.

Vegetation removal will be avoided as much as possible, however further attempts to minimize loss of vegetation will include: (1) erosion control measures such as hedgerows, straw bales, dampening and reseeding, (2) trimming vegetation along laneways, corridors and drainage ditches, rather than removal of entire plants and (3) re-vegetation efforts in areas that were temporarily disturbed. Native seeds or plants will be used to the extent feasible.

The sensitive time periods for in-water work due to fish spawning and rearing is March 15th to July 1st. No in-water work is proposed, but this time period will be avoided as best as possible during construction around watercourses.

Additionally, an emergency frac-out plan will be prepared by the EPC to address impacts, emergency contacts, immediate actions and remediation plans.

5.6. HABITAT REMOVAL

5.6.1. Activities

Activities involved in the South Branch Wind Farm that contribute to wildlife habitat removal are:

- land clearing (Sec 3.2).

It is to be noted that impacts to terrestrial habitat can also occur during turbine assembly and erection, construction of access roads and other infrastructure due to the indirect effects of erosion. Habitat removal due to erosion is dealt with in Section 5.9, Soil Erosion.

5.6.2. Impacts

The impact on terrestrial species habitat from construction activities at the South Branch Wind Farm location will be in the form of vegetation removal; however, impacts will be minimal considering the present land use of the area. The project is located within an active agricultural landscape where there is little remnant natural habitat remaining. The remaining habitat will mostly remain intact, with the exception of small sections of roadside ditches vegetated with grasses and small shrubs.

Wildlife habitat may be located in the riparian area long the South Branch River and within the identified woodlands.

Neither the riparian area, nor woodlands will be directly disturbed by construction activities.

5.6.3. Mitigation

To reduce and mitigate the potential effects of habitat removal, the South Branch Wind Farm was planned on agricultural land where there is little natural habitat remaining. This location was scanned and is known to be free of highly sensitive ecosystem value such as migration corridors or unique habitat elements. A significant wildlife evaluation was conducted and determined that little significant wildlife exists within 120 m of the project location; three areas have been identified as significant wildlife habitat, nine of which will be directly disturbed. By placing a wind farm in this type of environment, risks are minimized.

Additionally, the layout was planned to avoid removal of vegetation in those unfarmed areas, such as roadside ditches, hedgerows and around participating homesteads. This vegetation does retain some habitat value. Access roads and cable routes were planned to make use of existing farming roads wherever possible.

Impacts to existing vegetation during construction activities will be minimized through avoidance; however, some vegetation will be lost due to land clearing activities described in 3.2. Attempts to minimize loss of vegetation will include: (1) trimming vegetation along laneways, corridors and drainage ditches, rather than removal of entire plants and (2) re-vegetation efforts in areas that were temporarily disturbed. Native seeds or plants will be used for re-vegetation to the extent feasible.

5.7. HEALTH AND SAFETY

A. PUBLIC (INCREASED TRAFFIC)

5.7.1. Activities

The activities involved in the South Branch Wind Farm that contribute to public health and safety due to increased traffic in the area include:

- transport of equipment (Sec 3.5), and
- foundation construction (Sec 3.6).

5.7.2. Impacts

Due to construction equipment moving to and from the site during the above named activities, the amount of traffic, especially heavy construction traffic, will increase during the construction period. The delivery of the turbines will require the use of oversized heavy haul trucks. Each turbine will require approximately 15 heavy haul truck deliveries as described in Section 3.5.

Foundation construction will require up to 102 concrete truckloads per foundation, which will significantly increase concrete truck traffic in the local area during the foundation construction period.

Increased traffic may pose a more difficult driving situation for those in the local area, but this is expected to be a minor and temporary inconvenience.

5.7.3. Mitigation

To reduce and mitigate the effects of increased traffic on public safety, drivers of construction equipment and supply vehicles will be trained professionals and use safe, defensive driving practices.

The community will be informed at the beginning of the construction period to create a heightened awareness of the risks and increased construction traffic going to and from the construction site.

If necessary, traffic control personnel will be employed at public road access points to facilitate entry and exit to and from the site in a safe manner.

The transportation contractor will utilize escort vehicles and/or the local police as required by regulation. This presence will ensure traffic is controlled safely around these large vehicles that may require room in oncoming lanes of traffic to manoeuvre around corners, off of highways, etc.

B. WORKPLACE

5.7.4. Activities

The primary activity involved in the South Branch Wind Farm that presents a risk to workplace health and safety is:

- turbine installation (Sec 3.7).

5.7.5. Impacts

Although there is a risk to the construction crew at all times during all activities, wind turbine installation poses a unique risk. Working at such great heights poses a serious danger to the turbine installation crew. This activity involves the coordination of heavy machinery lifting large turbine components at significant distances off the ground. Serious or fatal injuries can be caused in the case of an accident.

5.7.6. Mitigation

The staff and crew that will be hired for the South Branch Wind Farm turbine assembly will be trained and professional workers. Experience and knowledge of the risks involved significantly increases the safety of the project site.

If an emergency does arise during construction, an emergency response plan will be available on site with emergency contact numbers and locations of emergency facilities. Appropriate first aid equipment and supplies will be available on site.

The EPC selected to construct the project will be required to demonstrate a history of outstanding safety records on wind project sites.

5.8. NOISE DISTURBANCE

5.8.1. Activities

The activities involved in the South Branch Wind Farm that contribute to additional noise are:

- land clearing (Sec 3.2);
- access road construction (Sec 3.3);
- crane pad and lay-down area construction (Sec 3.4);
- transport of equipment (Sec 3.5);
- foundation construction (Sec 3.6);
- turbine installation (Sec 3.7);
- electrical network installation (Sec 3.8);
- substation construction (Sec 3.9);
- commissioning (Sec 3.10),
- operations and maintenance building construction (Sec 3.11)
- storage shed construction (Sec 3.12)
- site rehabilitation (Sec 3.13).

5.8.2. Impacts

The impacts of noise on the surrounding environment may cause a disturbance during the construction period. Construction equipment and activity can be noisy and disruptive to people living nearby and resident wildlife.

Any disruptions from construction activities are expected to be temporary and short-lived.

5.8.3. Mitigation

There are no noise bylaws governing the project area. However, construction activity will occur between the hours of 7:00 – 22:00 as maximum scenario. Based on consultation feedback, high noise producing activity will be limited to the hours of 08:00 – 20:00 under typical operations. Consultation with the community on these proposed operational hours will be ongoing during the construction phase.

In addition, construction equipment will be well maintained and managed to run efficiently and minimize excess noise and usage.

A noise complaint website will be developed for the South Branch Wind Farm to record and manage responses to complaints of this nature. This will be available online and via telephone (web address and phone number to be determined before construction begins). The contact details will be posted on at least 2 signs in the project area.

Complaints related to noise will be addressed by the proponent in consultation with management of the EPC overseeing construction. A response to the plaintiff will be

provided in a timely manner and all communication will be documented and kept in an electronic file in the proponent's database for the duration of the project lifetime.

5.9. SOIL EROSION

5.9.1. Activities

The activities involved in the South Branch Wind Farm that may contribute to soil erosion include:

- land clearing (Sec 3.2);
- foundation construction (Sec 3.6);
- electrical network installation (Sec 3.8), and
- substation construction (Sec 3.9).

5.9.2. Impacts

Any activities that involve the disruption of soil at the South Branch Wind Farm have the potential to cause soil erosion. The disturbed soil is removed from the surface and contains valuable topsoil integral to successful farming practices.

Soil will be stockpiled and reserved for the purpose of replacing the topsoil and lower soil horizons during the site rehabilitation component of the construction period. These stockpiles are subject to erosion from wind and rain and consequently the loss of valuable topsoil.

Foundation construction may require pumping water from the foundation area. The water will be discharged onto land and may cause erosion.

Erosion of soil in the project area can create instability in the watercourse banks and surrounding land. This can lead to habitat removal and sedimentation of surface watercourse.

5.9.3. Mitigation

To reduce and mitigate the impacts of soil erosion at the South Branch Wind Farm, loose soil will be placed in long, low-lying windrows outside of the floodplain, where applicable. This arrangement of soil will mitigate the loss of soil by wind, by keeping it as low to the ground as possible. The soil will be seeded with quick sprouting grass seed and/or geo-textile membrane to protect the soil from erosion due to rain and wind. Until the grass has sprouted, the soil may be dampened with water to prevent wind erosion.

In areas where the grade and nearby natural features call for it, silt fencing will be placed between the construction activities and surface watercourses. Silt fencing will capture any eroding soil, keep it onsite and out of the surface water.

Discharged water pumped from the foundation area will be directed to a vegetated area and away fro surface water features where the soil is less prone to erosion. Vegetated areas also help to filter any sediments from the discharged water. If a vegetated area is

not accessible, water will be discharged to a flat area away from surface water to reduce erosion and sedimentation of surface water, as much as possible.

5.10. SURFACE WATER SEDIMENTATION

5.10.1. Activities

The activities involved in the South Branch Wind Farm that may contribute to surface water sedimentation include:

- land clearing (Sec 3.2);
- access road construction (Sec 3.3);
- crane pad and lay-down area construction (Sec 3.4);
- foundation construction (Sec 3.6);
- electrical network installation (Sec 3.8), and
- site rehabilitation (Sec 3.13).

5.10.2. Impacts

Activities involving soil disturbance have the potential to facilitate transport of loose soil to nearby surface watercourses. This would increase the turbidity of surface water and reduce water quality.

The above noted activities involve the movement of soil and increase the risk of the transport of this soil to the surface water. Surface water sedimentation poses a risk to downstream aquatic species and general water quality.

There are several locations within the project area where a project component comes within 120 m of a surface water feature.

The majority of the above noted water crossings are to be intersected by the electrical network. The electrical cable will be drilled under the watercourse, causing no damage to the streambed or riparian area. Alternatively, the electrical network will be strung on existing hydro poles, with no direct impact to the watercourse below. During drilling, there exists a risk of a frac-out, causing an increase in surface water sedimentation.

Other agricultural drains will be crossed by access roads, but most of these, all except one, are currently crossed by farming roads and have existing culverts installed. The existing culverts may require upgrades to be able to handle the heavy equipment and turning radii. The potential for surface water sedimentation will be created when the culvert is installed or replaced, but the functions of these agricultural drains are low and not environmentally sensitive.

The construction of the foundation may require water to be pumped and discharged onto the surface. This may result in erosion and sedimentation of surface water.

Construction activities will create loose soil and the potential for surface water sedimentation from this loose soil.

5.10.3. Mitigation

To reduce and mitigate the potential impacts of sedimentation, construction activities have generally been planned to avoid crossing watercourses. Only one location will require a new water crossing, all other currently exist as farming roads. Electrical lines will be drilled under the watercourse to avoid surface impacts.

Where construction activity comes within 120 m of a surface watercourse, sedimentation will be mitigated by using sedimentation control measures such as straw bales and silt fencing. These tools will be placed between construction activities and the watercourse.

Where loose soil is stored within the project area, this will be located outside of the floodplain. Soil erosion control measures described in Section 5.9 will be used to prevent the movement of loose soil. These measures include seeding soil piles with quick sprouting grass seed, placing a geo-textile membrane over the piles, and/or dampening the soil with water. This will reduce the loose soil available for transfer to the surface water, reducing the risk of surface water sedimentation.

Water discharged during the dewatering of the foundations will be discharged away from surface watercourses, to avoid release of sediments to the watercourse. Instead, water will be directed toward vegetated areas to reduce the likelihood of soil erosion. If vegetated areas are not available, water will be directed to a flat surface area, as far from surface water as possible.

Surface water monitoring will be conducted before and after construction to better assess the impacts of construction activities on surface water quality. Baseline data will be collected prior to the construction phase of the wind farm. This will include water quality parameters such as suspended solids and F1 –F4 hydrocarbons.

After construction activities have been completed and the site rehabilitated, water samples will be taken again at the same sample locations. This data will be compared to the baseline data and evaluated for change that can be attributed to wind farm activities.

Further details on the surface water monitoring program can be found within the Environmental Effects Monitoring Plan, Section 4.0 of the *Design and Operations Report*. This section includes a map of sample locations to be tested for surface water sedimentation.

5.11. Surface and Ground Water Contamination

5.11.1. Activities

The activities involved in the South Branch Wind Farm that may contribute to surface water contamination include:

- turbine installation (Sec 3.7), and
- electrical network installation (Sec 3.8)

5.11.2. Impacts

There is potential for the above construction activities to negatively impact water quality through contamination from accidental spilling of on-site hazardous fluids.

Hazardous fluids, such as oil and lubricants, are used in the installation of the turbines and during the directional boring of the electrical network.

The oils and lubricants needed for turbine installation will be present on site in small quantities. There is a potential risk that these fluids will spill onto the soil and into the ground water or runoff in the nearby surface water. The likelihood that these fluids will be spilled and/or contaminate ground and surface water at these small quantities is low.

There is a risk of surface water contamination during the drilling process for the buried electrical cable under watercourses. If a frac-out is to occur during drilling, lubricants used for drilling will be exposed to the surface water.

5.11.3. Mitigation

To reduce and mitigate the potential effects of surface and ground water contamination, extra care will be taken while handling hazardous fluids. Construction and installation staff are trained professionals and will be aware of the impacts and care necessary when handling theses products.

Construction is generally located greater than 120 m from the high water mark of surface watercourses. Where construction activities are located less than 120 m from surface watercourses sedimentation control measures, such as silt fencing and/or straw bales will be implemented to slow the overland transport of contaminants if a spill should occur.

Construction activities will be contained within the lay-down areas indentified on the construction plan and depicted in Appendix A. Tile drainage used within the project areas also indicated poorly drained soils. Poorly drained soil will limit the impact of contamination on groundwater. Contaminated soil will be removed from the site and disposed of in a manner outlined by the municipality and/or the MOE .

Additionally, a spills kit will be on site to deal with any accidental hazardous fluid spill. The MOE Spills Action Centre will be notified immediately of any spill event.

Surface water monitoring will be conducted before and after construction to better assess the impacts of construction activities on surface water quality. Baseline data will be collected prior to the construction phase of the wind farm. This will include water quality parameters such as suspended solids and F1–F4 hydrocarbons.

After construction activities have been completed and the site rehabilitated, water samples will be taken again at the same sample locations. This data will be compared to the baseline data and evaluated for change that can be attributed to wind farm activities.

Further details on the Surface Water monitoring program can be found within the Environmental Effects Monitoring Plan, Section 4.0 of the *Design and Operations Report*.

This section includes a map of sample locations to be tested for surface water sedimentation.

A frac-out emergency plan will be prepared to address the impacts, emergency contacts, immediate actions and remediation plan.

APPENDIX A

CONSTRUCTION SITE PLAN DIAGRAM

South Branch Wind Farm - Construction Site Plan Turbines 1-4

Legend

- Project Boundary
- 120m Project Buffer

Project Elements

- Turbine
- Crane Pad
- Lay-down Area
- Access Road
- Overhead Cable (New Poles)
- Buried Cables
- Temporary Soil Storage
- Concrete Wash Pond
- Project Lands

Noise Receptors

- Non-participant, Inhabited
- Non-participant, Vacant Lot
- Participant Receptor

Existing Infrastructure

- 230 kV Transmission Line Easement
- Utility Setback
- Constructed Drain (LIO)
- Roads (LIO)
- Lot and Parcel Data
- County Border

Natural Features

- OHN - Waterbody (LIO)
- OHN - Watercourse (LIO)
- Wetland Area (LIO)
- Wooded Area (LIO)
- 5m Contours

Kilometers
0 0.1 0.2 0.3 0.4

1:8,000

Aerial Imagery: June 21, 2011
Company: TerraServer Prowind Canada Inc
Image Date: 10/20/2004 NAD 83 UTM 18N
Horizontal Accuracy: 45cm +/- Map created on 11.x 17 in.
Resolution: 0.6 m All distances in metres

Quebec
Ottawa
Brinston
Ontario
NY
Lake Ontario

Key Map to Project Area

South Branch Wind Farm - Construction Site Plan - Turbines 5 to 8

Legend

- Project Boundary

Project Elements

- Turbine
- Crane Pad
- Lay-down Area
- Access Road
- Temporary Soil Storage
- Buried Cables
- Concrete Wash Pond
- Storage Shed
- Construction Site Office
- Operations Building
- Project Lands

Noise Receptors

- Non-participant, Inhabited
- Non-participant, Vacant Lot
- Participant Receptor

Existing Infrastructure

- Transmission Line 230kV
- Utility Setback
- Road
- Lot and Parcel Data

Natural Features

- OHN - Waterbody (LIO)
- OHN - Watercourse (LIO)
- Wetland Area (LIO)
- Wooded Area (LIO)
- Flood Plain (SNC)

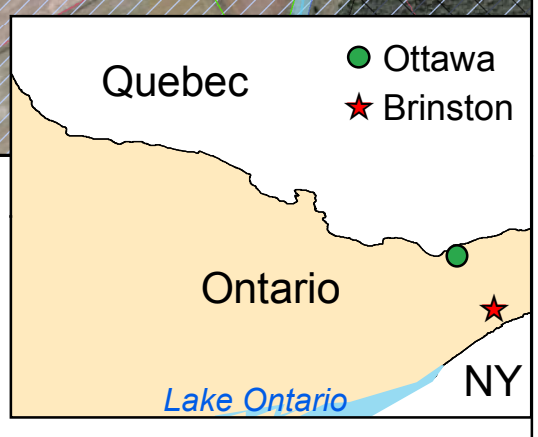
1:9,000

Kilometers

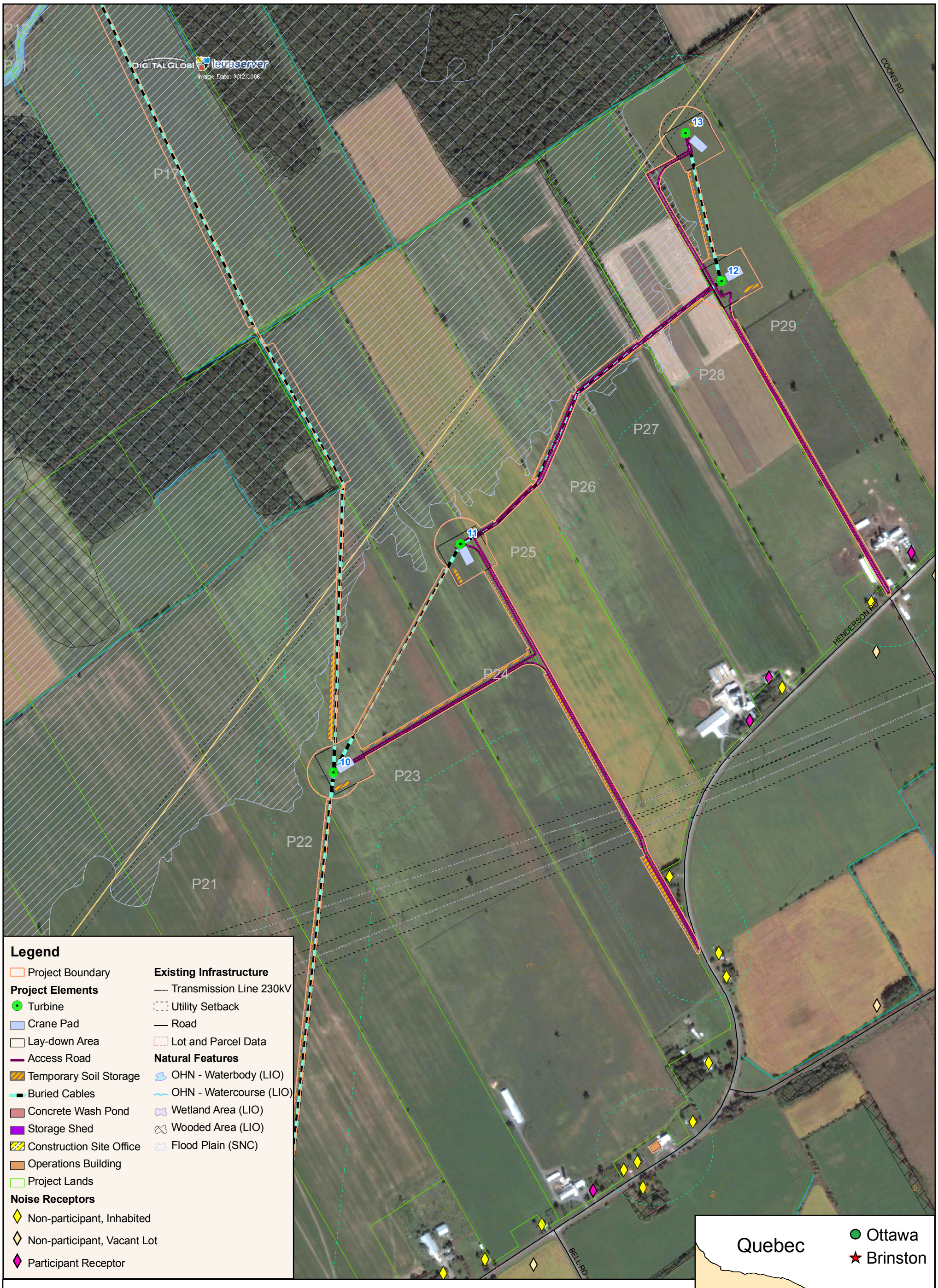
0 0.1 0.2 0.3 0.4

Aerial Imagery:
Company: TerraServer
Image Date: 10/20/2004
Horizontal Accuracy: 45cm +/-
Resolution: 0.6 m

March 2, 2012
Prowind Canada Inc
NAD 83 UTM 18N
Map created on 11x17 in.



Key Map to Project Area



South Branch Wind Farm - Construction Site Plan - Turbines 10 to 13

1:8,000

Kilometers

0 0.1 0.2 0.3 0.4

Aerial Imagery:
Company: TerraServer
Image Date: 10/20/2004
Horizontal Accuracy: 45cm +/-
Resolution: 0.6 m

March 2, 2012
Prowind Canada Inc
NAD 83 UTM 18N
Map created on 11x17 in.

South Branch Wind Farm - Construction Site Plan - Turbines 9 & 15

Hydro Line
Bell Telephone Line (Former)
P18
P19
P20
P21
P31
P32
P33
9
15
Brinston
GILMOUR RD
HENDERSON RD
COUNTY RD 2
WX
WZ
XB
CG CH CK CL CM CN CO CP CQ CR CS CT CU CV CW CX CY CZ DA DB DC DD DE DF DG DH DJ DK DL DM DN DO DP DQ DR DS DT DU DV DW DX DY DZ EA EB EC ED EE EF EG EH EI EJ EK EL EM EN EO EP EQ ER

Legend

- Project Boundary
- 120m Project Buffer

Project Elements

- Turbine
- Crane Pad
- Lay-down Area
- Substation
- Access Road
- Overhead Cable (Shared Poles)
- Overhead Cable (New Poles)
- Buried Cables
- Temporary Soil Storage
- Storage Shed
- Operations Building
- Project Lands

Noise Receptors

- Non-participant, Inhabited
- Non-participant, Vacant Lot
- Participant Receptor

Existing Infrastructure

- 230 kV Transmission Line Easement
- Telephone Easement (Former)
- Utility Setback
- Constructed Drain (LIO)
- Road
- Lot and Parcel Data

Natural Features

- OHN - Waterbody (LIO)
- OHN - Watercourse (LIO)
- Wooded Area (LIO)
- Flood Plain (SNC)
- 5m Contours

Kilometers
0 0.075 0.15 0.225 0.3

1:6,000

Aerial Imagery: June 21, 2011
Company: TerraServer Prowind Canada Inc
Image Date: 10/20/2004 NAD 83 UTM 18N
Horizontal Accuracy: 45cm +/- Map created on 11.x 17 in.
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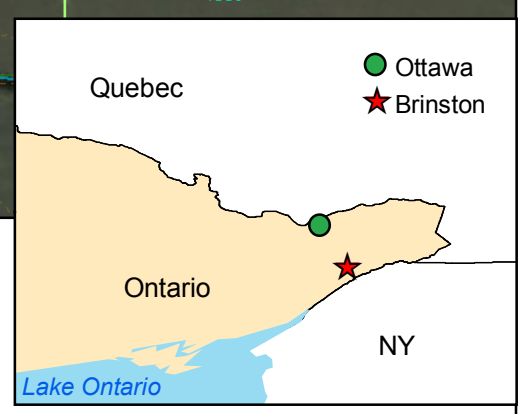

Key Map to Project Area