In order to meet noise approvals for Turbine 35 and restrict development within 30 metres of a water body, realignment of a tributary of Pine River approximately 25 metres to the south will be required. Once appropriate approvals are in place and the alignment has been constructed, all wind turbines and transformers will be located beyond 30 metres of the average annual high water mark of this water body.

7. ACCESS TO ADJACENT LANDS

As outlined in *Ontario Regulation 359/09*, all lands within 120 metres of a project component are required to be assessed for water bodies. In the case of the Dufferin Wind Power Project, access to water bodies located on non-participating lands within 120 metres of the Project Location was not granted by the landowners, with few exceptions. Water bodies located on adjacent lands where access was not available were assessed from property lines, old rail corridors and road rights-of-way, where applicable. This alternative site investigation was conducted in accordance with the amendments made to *Ontario Regulation 359/09* on January 1, 2011.

8. PROJECT ACTIVITIES

8.1 Construction Timing Restrictions

Construction activities that have the ability to impact wildlife and the natural environment will be undertaken at appropriate time periods to minimize these impacts. Vegetation removal in areas deemed as significant wildlife habitat will occur outside of the breeding bird season, April 15 to July 15, wherever possible. If DWP requires land clearing activities in sensitive wildlife habitat areas to occur within the breeding season a nest search would have to be undertaken. If a nest is found then land clearing activities would have to wait until the end of the breeding season. If no nests were found, land clearing activities could be initiated. Please refer to the Environmental Impact Study Report for further details and commitments to protect wildlife and wildlife habitat.

Vegetation removal in areas where amphibians are known to exist will occur outside of the breeding season, April 15 to June 15. Construction adjacent to wet areas will be undertaken outside of the amphibian breeding season, wherever possible.

Throughout the construction process, there will be on-going communications with the public and municipal and County officials (including the road superintendent) to coordinate and distribute information about road closures and construction delays.

8.1.1 Project Construction Schedule

Table 2 outlines the proposed project construction schedule. This schedule will be updated based on the timing of the approval of the REA application and project final design. It is anticipated that from mobilization of the construction crews to commissioning the Project will take approximately eight months. Construction of the project will begin as soon as all required permits are granted and REA/NTP approval is obtained.

Table 2: Proposed Construction Schedule

Construction Activity	Date of Commencement	Schedule
Site Preparation		
Land Survey, Archaeological Investigations, Geotechnical Survey, and Pre-Construction Road Survey	Preliminary surveying in Spring 2012 Pre-construction surveying in early Spring 2013	8 weeks for preliminary surveys 12 weeks for pre-construction surveys
Land Clearing – Active Agricultural Land	Spring 2013	1-2 months
Land Clearing – Sensitive Habitat Areas	Outside of Breeding Season, unless field work undertaken as described below	1 month
Soil Stripping, Grubbing and Grading	Spring 2013	1-2 months
Development of Access Roads	Spring/Summer 2013	1-2 months
Temporary Storage / Laydown Area	Spring/Summer 2013	1-2 months
Turbine Laydown Areas and Crane Pad	Spring/Summer 2013	1-2 months
Component Installation and Connection		
Meteorological Towers	Spring/Summer 2013	1 month
Project Substation & Switching Station (230 kV) or POI Substation (69 kV)	Spring/Summer 2013	3 months
Pad Mount Transformers	Spring/Summer 2013	2 months
Turbine Foundations	Summer/Fall 2013	2-3 months
Wind Turbine Assembly and Installation	Fall 2013	2-3 months
Underground Collector System Installation	Summer/Fall 2013	2-3 months

Table 2: Proposed Construction Schedule		
Construction Activity	Date of Commencement	Schedule
Horizontal Directional Drilling (HDD)	Summer/Fall 2013	2 months
Power Line Installation - 230 kV Line OR Power Line Installation - Dual 69 kV Line	Summer/Fall 2013	3 months
Operations & Maintenance Building	Summer/Fall 2013	2 months
Turbine Commissioning	Winter 2013	1-2 months
Post-Installation Activities		
Clean up and Reclamation	Spring 2014	1 month

8.1.2 Construction and Installation Activities

This section provides a detailed description of the construction activities and proposed schedule to bring the facility into operation. As shown in Table 2, construction and installation activities will consist of:

- Site preparation
- Component installation and connection
- Post-installation activities.

For all three construction activities, the following attributes were considered:

- Materials brought on site and construction equipment used
- Timing and operational plans
- Temporary uses of land
- Temporary water takings
- Materials/waste generated at, or transported from, the Project Location.

8.1.3 Site Preparation

8.1.3.1 Pre-Construction Activities

Land Surveying

A survey has been completed for the project location by a licensed Ontario Land Surveyor (OLS). As part of this work, private utility locators were retained to determine the location of any underground utilities that might affect the feeder line road crossings and routes along existing road allowances. The feeder line paths were then altered, as necessary, to avoid existing utilities. The OLS surveyed and staked the following areas:

- Construction zones around wind turbine sites (component laydown areas) - 200 metres by 200 metres
- Access roads, hammerheads and bump out areas as well as vehicle turning radii for component delivery that may infringe on private land
- Land for the project substation
- Land for the central Laydown Area
- Land for the Operations and Maintenance (O&M) Building

- Land for the Point of Interconnect (POI) Substation (Option 1)
- Land for the Switching Station (Option 2)
- Crane paths and individual wind turbine crane pads
- Power line routes within the Project Location (Option 1 and Option 2)
- Underground Collector System (feeder lines).

These areas have been collectively identified as the "Buildable Area" on Figure 2a, and include areas that could be affected by construction.

Prior to construction, an OLS will also stake the exact location for fencing, construction zones, access roads, foundations, collector lines, power line easements, crane paths and substations. Any designated archaeological and environmental features and their applicable setbacks (e.g., significant wildlife habitat, etc.) will also be clearly defined and identified to prevent unnecessary encroachment. Please refer to the Natural Heritage Assessment for more information on natural heritage setbacks.

Archaeological Investigation

Stage 1 and Stage 2 Archaeological Assessments were completed in all of the above-noted areas. Project components were shifted to avoid archaeological features wherever possible. Please see the Archaeological Assessment reports for additional information in Appendix A of the Construction Plan Report.

Geotechnical Survey

Geotechnical work for the Project Location was completed in December 2011/January 2012, and involved 56 borehole samples taken in the proposed wind turbine, project substation and Operation and Maintenance (O&M) facility locations. The boreholes were advanced using track-mounted drill rigs and were drilled to depths ranging from 3.5 metres to 17.4 metres below the existing ground surface, using a combination of auger drilling and rock coring.

Drilling, sampling and in-situ testing (including Standard Penetration Testing) was carried out at regular intervals and at selected locations, including bedrock coring. Standpipe piezometers were installed in all boreholes to allow for measurement of groundwater levels. All boreholes were then backfilled with soil cuttings and sealed at the ground surface. Laboratory testing included determination of natural water content, Atterberg Limits (plasticity), soil density and grain size distribution (sieve and hydrometer). Soil and rock resistivity measurements were carried out for the project substation area.

The geotechnical investigation found that the site is underlain by a layer of dense, predominately granular till, which is underlain by lime bedrock at depths ranging from 3.5 metres to 13.8 metres (the single exception is at T1 and T2 where the rock is more than 17.4 metres deep). Groundwater levels measured were typically greater than 4 metres below the existing ground surface (the single exception was at T1 where the measured groundwater was 1.5 metres deep). Generally, these conditions are considered favourable from a geotechnical perspective for supporting wind turbines on typical large spread footings.

Please refer to Appendix C of the Construction Plan Report for the Preliminary Geotechnical Report.

Pre-Construction Road Survey

A pre-construction road survey will be performed prior to the start of construction to document pre-existing road conditions prior to the start of construction. The pre-construction survey will include videotaping, coring, and measurements of municipal and County roads to be used during construction. The requirements of the pre-construction road survey will be developed in cooperation with municipal and county road supervisors and the results of the survey will be provided to each road supervisor two weeks prior to the commencement of construction.

8.1.3.2 Construction Activities

Land Clearing

The Project is largely located on agricultural land which is currently under agricultural production of row crops, pastureland or land that has been left fallow. Most land is already cleared of natural vegetation. Bush, trees, and other vegetation will be cleared from some construction areas as required. The Project was designed to minimize the amount of land clearing and negligible land clearing will occur within, or adjacent to, any significant natural feature, as identified in the Natural Heritage Report package.

Clearing may also be required for portions of the access roads, crane paths, collector lines and power line right-of-way. Temporary bridges will be installed to cross watercourses and drains where required. These temporary structures will be removed from the site after water crossing culverts/structures are installed.

Soil Stripping, Grubbing and Grading

In all construction areas the topsoil will be removed and temporarily stockpiled to avoid damage or contamination to the soil. The project will require minimal amounts of vegetation removal, however, grubbing will be carried out in areas with vegetation in order to remove roots and slash generated during site clearing activities.

Soils that are unsuitable for road or turbine pad construction will be stockpiled for re-use during decommissioning or graded into adjacent areas. Excess soil will be stockpiled away from drains and watercourses and stabilized to prevent erosion. Grading will be done in such a manner as

to avoid altering existing drainage patterns in the area. Grading will be undertaken to smooth irregular ground surfaces and to ensure road grades are suitable for service vehicles and trucks delivering turbine components. The turbine laydown areas will be graded and compacted to ensure a safe working area for cranes.

Development of Access Roads

Access roads will be approximately 20 metres wide during construction (and reduced to approximately 5 metres wide at the end of construction). The access roads will be constructed with approximately 300 millimetres of granular 'B' Type II sub-base and a finished surface of 200 millimetres granular 'A' material. The total recommended thickness will be 500 millimetres to 600 millimetres based on site conditions. The use of gravel will reduce the need for water for dust control during construction. The sub grade is intended to be free of depressions and sloped (at a minimum grade of 2 percent) to provide effective drainage.

During construction of the road, the topsoil will be stripped and either stored or spread on-site and some cut and fill is expected prior to the placement of the granular base. Access road sub grades are expected to consist of the existing native granular deposits. The sub grade will be cut as cleanly as possible to minimize disturbance and be proof rolled with heavy rollers to locate any loose or disturbed areas. If weak areas or other incompatible material are detected during proof rolling, further excavation and subsequent backfill with approved native deposits (if moisture content within 3 percent of optimum moisture content) or imported granular materials may be required. The replacement granular materials should be compacted to 100 percent Standard Proctor Maximum Dry Density. If materials are required to be removed from the site, a private licensed hauler will be engaged to dispose of materials at a licensed facility.

All activities that generate noise (including road construction) will occur within the hours of 6:00 a.m. and 11:00 p.m., as per the Township of Melancthon Excessive Noise By-law 31-2002. The access roads will be constructed prior to the balance of construction activities.

One new watercourse crossing is planned for the development of the access road between T35 to T36. There may also be the need for the crossing for two municipal drains (near T45 and T25). Drain mappings provided by the Township indicates the potential for drains to be located in this area. The status of these two drains is being confirmed with the Township of

Melanchthon). Culverts will be constructed at crossing locations to accommodate vehicular access and construction traffic across the watercourse, while maintaining unimpeded flow within the watercourse. These culverts will remain during the operations phase.

For the required culvert crossings for access roads, DFO Operational Statements (included in Appendix A) for constructing roads across watercourses will be followed, along with any mitigation requirements of the Nottawasaga Valley Conservation Authority (NVCA) and Grand River Conservation Authority (GRCA). Input from Conservation Authorities will be used to determine the in-water works construction timing window to avoid sensitive aquatic biological periods. If the timing of construction cannot avoid sensitive periods, temporary dam installations can be constructed. Appropriate approvals are being sought from DFO, NVCA and GRCA. Crossing requirements for the municipal drains will be determined through the *Drainage Act* approvals process with the municipality.

Central Temporary Storage/Laydown Area

A central temporary storage and laydown area will be located on Lot 26, Concession 2, Township of Melancthon (shown on Figure 2a). This area will be the centralized work area for field offices, vehicle fueling, and storage of equipment and materials. Turbine components may also be temporarily stored at this location if the turbine erection pads are not ready to receive components at the time of delivery. The laydown area will be fenced and locked during non-working hours with a 24 hour per day security presence. The footprint of this area is expected to be up to 6 hectares with two access points (driveways) from 3rd Line Road. This access provides adequate sight line visibility and will allow for safe exiting for both trucks and passenger vehicles. Designated fueling at the central laydown area will meet safety and regulatory requirements. Please refer to the Environmental Effects Monitoring Plan and the Emergency Response and Communications Plan, part of the Design and Operations Report, for further details regarding standards and protocols for Best Management Practices.

An alternate temporary storage/laydown area within Strada Aggregates Inc.'s Shelburne pit located on the west half of Lots 11 and 12, Concession 3 O.S., Township of Melancthon may also be used to store the wind turbines, blades, tower sections and other components in the event of unanticipated permitting delays. The floor of the Melancthon pit was used previously to store 69 wind turbines and their associated components for the neighboring TransAlta Melancthon Wind Farm. Access to and from the Melancthon pit would be from 4th line which

provides adequate sight line visibility and will allow for safe access and exiting for both trucks and passenger vehicles.

Turbine Laydown Area and Crane Pad (Individual Turbine Sites)

An area of approximately 200 metres by 200 metres (4 hectares) will be cleared, if required, and leveled at each turbine location to provide a turbine laydown area. This area is necessary in the event that construction issues are encountered at a turbine site allowing the turbine to be easily stored within the existing cleared area with little consequence to the project schedule. Although some of the turbine laydown areas may be sized somewhat differently to account for archaeological finds, natural features and topography, each laydown area will be approximately 4 hectares. All supporting studies include these laydown areas as part of the REA submission.

The turbine laydown area at each turbine site is comprised of:

- A staging and equipment storage area for the erection of the towers and securing of the nacelle and blades
- A crane pad, with dimensions of approximately 20 metres by 50 metres, to support the crane used for construction. The crane pad will be leveled to grade with a maximum slope of 1 percent of the total length of the entire area. A 2 metre wide gravel path will be constructed around the crane pad and turbine foundation
- A total leveled and compacted laydown area with a radius of at least 20 metres is required. Leveled areas free from obstacles are also required for 50 metres on either side of the laydown area, in addition to three, 50 metre, obstacle free, leveled areas that are required for laydown and assembly of the wind turbine blades.

8.1.3.3 Materials Brought On-Site and Construction Equipment

Temporary construction fencing will be erected to demarcate the buildable areas, as shown on Figure 2a. Temporary construction fencing and silt fencing will also be used to identify locations where significant archaeological resources and significant wildlife habitat were identified to ensure their protection and preservation.

Table 3 outlines the estimated materials required and construction equipment that will be used for the site preparation phase.

Table 3: Materials Brought to Site and Construction Equipment: Site Preparation Activities		
Site Preparation Activity	Required Equipment	Required Materials
Land Surveying, Archaeological Investigations, Geotechnical Survey, and Pre-Construction Road Survey	5-6 Light trucks	Survey stakes
	2-3 Truck or track-mounted drill rigs 1 Video car	Fuel, water, and grease for equipment
Land Clearing and Soil Stripping, Grubbing and Grading	3 Excavators	Fuel and lubricating grease for equipment
	3 Loaders	
	3 Tracked Bulldozers	
	2 Backhoes	
	4 Dump trucks	
	4 Compactors	
	3 Graders	
	2 Water Trucks	
	4 Cranes	
	1 Feller Buncher	
	1 Tree Processor	
	2 Log trucks	
Access Roads, Turbine Laydown Areas and Crane Pads, and Temporary Storage and Laydown Area	Same equipment used for land clearing	0.3 m to 1 m Pit Run Gravel
		0.2 m to 0.3 m 0" to 3/4" Gravel
		Approximately 157,134 m^2 of geotech fabric
		6 temporary office trailers
		Ancillary support equipment
		Culverts
		Fuel and lubricating grease for equipment

8.1.3.4 Timing and Operational Plans

Construction activities will commence once all necessary permits (REA, building permits, etc.) have been obtained, materials and workforce have been mobilized, and weather conditions are conducive to begin construction. Construction is expected to start in the spring of 2013, as soon as road and weather conditions permit. Work will be prioritized and scheduled to minimize disturbance to avian breeding areas during the April 15 to July 15 breeding season and to comply with the municipal noise by-law and municipal spring road use restrictions. Please refer to the Environmental Impact Study Report for more information regarding land clearing

and sensitive wildlife habitat. Construction is expected to take approximately eight months and the wind farm is schedule to be placed into commercial service by December 31, 2013.

The primary roads used for equipment and component delivery will be a combination of highways, arterial roads and County and municipal rights-of-way. In some cases temporary widening and/or sign removal will be required to allow for sufficient turning radius for delivering primary components to the project site. A Traffic Management Plan will be created by the Construction Manager for the selected construction contractor in conjunction with Dufferin County, Melancthon Township and the Ministry of Transportation, as required, and will be established for the purpose of ensuring safety while minimizing interference with existing road use. Transportation routes, safety measures, and the potential for rehabilitating County Roads will be identified, as applicable, during pre-construction, construction, and post-construction stages.

The Construction Manager will meet with Dufferin County and Melancthon Township to review the project area, the expected haul and construction routes and any road improvements or changes needed to access the project area or for drain crossings in accordance with criteria established by Dufferin County and Melancthon Township. The Construction Manager will work with Dufferin County and Melancthon Township to determine the best routes and timing related to school bus routes, local agriculture operations and local traffic. The Construction Manager, in coordination with Dufferin County and Melancthon Township road supervisors, will perform a pre-construction road survey prior to the start of construction activities to confirm the road conditions, sight lines, signage locations, drain crossings, and need for possible road improvements. DWP will post reasonable security in the form of a letter of credit, surety bond or parental company guarantee to ensure rehabilitation of any road damage caused by the project.

During construction, the Construction Manager will manage traffic in accordance with all Provincial and County laws in the applicable jurisdiction. The project manager will ensure the appropriate signage is posted at the entrance and exit to the construction site, warning of the activity. The Construction Manager will provide the necessary personnel to ensure safe ingress, egress, and traffic flow, to and through the project area as needed. The TMP will ensure safe turning movements to and from the site to avoid the need to back onto public roads. During construction, all signage, signalling and related controls, will be undertaken in accordance with the *Manual of Uniform Traffic Control Devices, Ministry of Transportation Division 5, Temporary*

Conditions, April 1987. The Construction Manager will ensure that roads are maintained and cleaned as needed in accordance with County and municipal standards. The Construction manager will report any damage resulting from construction activity to Dufferin County and Melancthon Township.

Following construction, the Construction Manager will perform a post-construction road survey and provide this to Dufferin County and Melancthon Township road supervisors for comparison to the pre-construction road survey and review. Where road damage is identified, the Construction Manager will obtain estimates to repair the road to the pre-construction condition. The Construction Manager will also restore any temporary construction site access points and remove any temporary road improvements related to the Project. The road security will be returned to the Project upon satisfactory inspection of the public roads and any repair work on a mutually-agreed upon date following the end of construction.

As outlined in Table 2, surveying, archaeology and geotechnical studies have been completed. These were completed to identify the "Buildable Area" locations, determine geotechnical conditions within the project area, and support detailed design and engineering work. Pre-construction surveys and agreements, including the pre-construction road survey and Traffic Management Plan, will be completed prior to start of construction.

8.1.3.5 Temporary Uses of Land During Construction

During construction, land will be used temporarily to support construction activities. This will include land around the wind turbines, along access roads, substations and the O&M facility, as well as along collector and power line routes. In preparation for construction, a stage 2 archaeological assessment of these potentially affected lands was completed in 2012, and this assessment was cleared by the Ministry of Tourism, Culture and Sport. These temporary uses of land during construction include:

- Temporary turbine staging areas surrounding each wind turbine foundation (up to a 200 metre by 200 metre square). After the project is commissioned the construction and laydown areas around each turbine foundation will be rehabilitated to their original condition (e.g., to allow agricultural activity to resume)
- The central construction laydown area will be up to 6 hectares in size. There will be two temporary access points (driveways) entering the site from the 3rd Line road. As a

post-construction activity, the area will be rehabilitated to its original condition and returned to agricultural production

- Access roads will be reduced from approximately 20 metres to 5 metres and "hammerheads" and "bump outs" may be eliminated after turbine delivery dependent upon landowner requirements
- Crane paths over fields will be rehabilitated to the original condition of the land
- Crane pads – in the event some crane pads are removed following construction, the used land will be remediated and stormwater management will be addressed as required by the storm water management plan
- Municipal/County roads, structures and culverts – road widening and strengthening for delivery trucks can be left in place or removed as requested by the Township of Melancthon and the County of Dufferin. It is anticipated the widened sections of intersections will be removed after component delivery but the access road entrances, any culverts, or strengthened structures would remain.

Following construction, the buildable area and temporarily used areas will be remediated to pre-construction conditions. All of the above temporary uses of land are illustrated in Figure 2a.

8.1.3.6 Temporary Water Takings

There are no temporary water takings proposed during the site preparation phase of construction.

8.1.3.7 Materials/Waste Generated at, or Transported from, the Project Location

Topsoil and subsoil, if required, will be stripped from access roads and temporary laydown areas and will be stockpiled and covered for re-use on site, where feasible.

Any hazardous wastes that are used or have been stored on site, such as lubricating oils, will be removed in accordance with *Ontario Regulation 347, Environmental Protection Act* and disposed of at a Ministry of the Environment (MOE) licensed facility. This type of waste will be centrally stored at the central laydown area and removed from the site routinely by an MOE licensed hauler. The final decision on waste disposal or recycling will be made by the on-site contractor who will refer to the *Environmental Protection Act* before submitting a Generator Registration Report for waste produced at the facility. Considerable organic material will be

generated by land clearing and soil stripping, grubbing and grading activities. All trees, brush and root material will be chipped and offered to landowners or the municipality. As a last resort, the chips will be trucked by a licensed private hauler to a nearby landfill facility, have organic waste services.

Portable toilets will be used during the construction phase of the project and sewage will be collected by an MOE licensed local hauler and disposed of off-site.

8.1.4 Component Installation and Connection

Turbine Foundations

The project expects to use a standard spread-footing foundation design for the 49 wind turbine foundations. Depending on soil conditions, the size of the excavation for the turbine will be up to 3 metres deep and 18 metres in diameter. A tracked excavator will be used to excavate the foundation. Depending on weather conditions, each excavation will take approximately two to three days. Soil not required or unsuitable for backfill will be stockpiled on site or re-used during decommissioning or graded into adjacent areas.

The project's 2012 geotechnical assessment found that groundwater in the project area was relatively deep, averaging approximately 4 metres below ground. Topographic and surficial geology mapping and historical borehole data provide similar findings.

The turbine foundations will require large diameter, relatively shallow, excavations to facilitate construction. The thickness of the turbine bases, as well as the depth of the excavation required for the foundations will not be finalized until detailed design and engineering has been completed. However it is assumed that the depth of excavations will be at least 2.5 metres to provide adequate stability and frost protection. It should also be noted that the groundwater levels can vary and are subject to seasonal fluctuations as well as fluctuations in response to major weather events. Higher groundwater levels should be expected during wetter periods of the year (e.g., spring run-off and during periods of extended rainfall). Lower groundwater levels should be expected during dryer periods of the year (e.g., summer and during dry spells).

As identified in the geotechnical assessment, the groundwater table at 11 of the 49 turbine sites was found to be less than 4 metres below the surface grade. Even with these conditions,

dewatering requirements, including seepage, are not expected to exceed 50 m^3 (50,000 L) per day, which means that a Permit to Take Water should not be required. However, groundwater measurements will be revaluated closer to the time of construction and in relation to final excavation requirements and the detailed construction schedule in order to minimize dewatering requirements through proactive management and scheduling. Any dewatering activity will be pumped out to an acceptable receiving area (e.g., properly filtered sumps and/or ditches).

Foundation formwork and rebar will be installed to reinforce the foundation, and will be inspected. Concrete will be poured from concrete trucks with concrete strength testing completed one a predetermined number of loads. Formwork will be struck after the concrete has met the desired strength and the excavated area will be backfilled and compacted until only the lower tower base portion of the foundation is left above ground. Large bolts will be set into the concrete, which will be used to anchor the turbine tower to the foundation.

It is expected that the concrete for the foundations will be supplied by local suppliers. The exact amount of concrete required will depend on ground/soil characteristics and final foundation design. DWP anticipates using a typical spread footing foundation which will be octagonal in shape and with a diameter of between 16 metres and 17.5 metres depending upon the wind turbine model used and specific site conditions. The turbine tower pedestal is expected to be approximately 4 metres in diameter and will be anchored to the concrete foundation using approximately 140 large diameter anchor bolts.

Ready mix trucks will be used to transport the concrete to the site. Approximately 35 to 50 truck trips will be required per foundation and pedestal depending upon the wind turbine model used and final foundation design. Although not currently anticipated, concrete pump trucks may be required if the ready mix concrete trucks cannot reach the foundation from the site's buildable area footprint. Construction of each foundation (e.g., formwork, rebar placement, and concrete pour) will be completed within approximately one week. The foundation and pedestal will then need to cure for 21 to 28 days prior to erection of the turbine. The forms for the foundations will be removed and the excavated area back-filled and compressed such that only the tower base portion of the foundation will be above ground.

Wind Turbine Assembly and Installation

The wind turbine swill be delivered in section and will be assembled on-site. The internal equipment will be bolted to the foundation and then the first tower section will be placed over the equipment and bolted to the foundation using the hold-down bolts that are set in the concrete when the foundation was poured. The remaining tower sections are then lifted and bolted into place on top of each other. Next, the nacelle is lifted and mounted to the top of the tower. The individual blades are connected to the rotor hub on the ground and then the rotor/blade assembly is lifted and bolted onto the nacelle. In some situations, a single-blade lifting technique may be used where space or high wind constraints prevent the blade and nose cone assembly from being lifted in one piece.

The track propelled construction cranes used to erect the wind turbine weigh approximately 450 tons and are approximately 11 metres wide and 15 metres long (not accounting for the boom and counter weights). Given the crane size, roads, bridges and culverts used for transport may have to be widened and structurally enhanced or a temporary bridging structure may be employed. These requirements will be confirmed through discussions with municipal and County staff.

Pad Mount Transformers

At the time the wind turbine foundation is excavated and poured, a small concrete pad, underground grounding system and underground electrical connections is installed to support the wind turbine's pad mount transformer. The pad mount transformer steps-up the wind turbine's output voltage to 34.5 kV so it can be transferred to the project substation via the wind farm's collector system and is located outside by the base of the wind turbine. Once the wind turbine is erected, the pad mount transformer is brought to the site using a flatbed truck and offload and installed at the site by crane. Installation of the pad mount transformer and the cabling between the turbine and transformer takes approximately three days per turbine.

Electrical Collector System (Feeder Line) Installation

The collector system ("feeder lines") will be composed of 34.5 kV underground lines connecting the individual turbines to the project substation. The feeder lines will generally follow the turbine access roads and remain on private land, although in some cases, to reduce the

distance of the lines or to address topography or environmental constraints, the lines may divert from the roads, cross agricultural fields, or run along the municipal rights-of-way; which have been accounted for in the project design.

The majority of underground cables will be installed using a combination of ploughing and trenching (either by trenching, backhoe, or by hand where required). The feeder lines will be directionally drilled under roads, wetlands and watercourse features.

Underground lines will be installed on leased or licensed lands and will be buried to a depth of approximately 1 metre to 1.2 metres with a width of the trench being approximately 1 metre. The cable will be placed into the trench from a spool pulled by a truck or bulldozer. The material removed from the trench will later be used as backfill in the trench.

The underground lines will not interfere with normal agriculture practices but construction will cause a short term temporary disturbance. All underground cabling will be mapped and Ontario One Call, landowners and local government will be notified of the cable locations. Any damages to local tiling or drainage systems from project construction will be repaired at the project's expense.

Horizontal Directional Drilling (HDD)

HDD will be used to install feeder lines underneath some watercourses, wetland features and roads, where required. Please refer to Figures 2a through 2d for all locations where HDD is necessary for feeder lines and the 230 kV transmission line.

When work is done in a riparian area, HDD will be used to minimize impacts and will be done at an appropriate depth below watercourses to avoid frac-out, and with appropriate consideration given to minimize sediment and erosion control. A directional boring machine (e.g., Vermeer) will be used and will require the use of drilling fluid or 'mud' consisting of silica and bentonite. HDD will require the excavation of shallow pits at the ends of each drill site and the machine may or may not be located in the pit. Once bored, a high-density polyethylene (HDPE) casing is then pulled through, followed by three conductors (one per phase), a fiber optic duct and a separate ground cable (if used).

Where the underground line will cross a watercourse, the appropriate DFO Operational Statements (Appendix A) will be followed or a letter of authorization will be obtained.

Project Substation (34.5 kV to 69 kV) and Point of Interconnect Substation – Dual-Circuit 69 kV Power Line Option

The locations of the 69 kV project substation (located on west half of Lot 26, Concession 2, Township of Melancthon) and point of interconnect substation (located on Part Lot 14, Concession 1 EHS, in the Town of Mono) are shown in the Site Plan Report. In the event the 69 kV power line option (Option 1) is used, these sites will be prepared using tracked bulldozers and excavators to strip topsoil and subsoil, as required, to create an even work surface. An access road will be installed at each substation location to allow for safe ingress and egress to the site.

Soil management will be incorporated into these processes to facilitate site reclamation. Existing vegetation (agricultural crops) will be stripped with the topsoil, which will be stockpiled separately from stripped subsoil in a temporary workspace adjacent to the site. Tree clearing will occur at the Point of Interconnect substation area as this facility will be located within a non-significant woodlot to reduce sound emissions and the visual impact of the facility on neighbouring receptors.

Following site clearing, foundations, underground conduit, grounding systems and above ground equipment including the power transformer(s) will be installed at each site. A grounding grid will also be installed at each site and will fully comply with the Canadian Electric Code (CEC). With the exception of the power transformers, which will require specialized, heavy-load, delivery trucks, the substation equipment and materials will be delivered by flatbed trucks and standard size vehicles and offload by truck crane.

The project substation and point of interconnect substation will consist of an open-air design with one power transformer located at each site. The transformers will be single-walled and built for reduced noise emissions. At the project substation, the power transformer will step-up the voltage from 34.5 kV to 69 kV for connection to the dual-circuit, 69 kV power line. At the point of interconnect substation, the power transformer will then step-up the voltage from 69 kV to 230 kV for connection to the provincial grid. Each substation will have a security fence installed that provides a safety barrier and prevents unauthorized access.

Each power transformer will have its own containment system to capture and control any oil leaks or hazardous discharge from the transformer. The containment system will consist of a concrete basin, oil water separator and clean water discharge. The containment system will be sized based upon a worst-case scenario and be capable of containing greater than 100% of the oil within the transformer, 24 hours of continuous storm water from a multi-year rain event (e.g., a 25-year storm), and any additional discharge from any fire suppression systems that may be installed at the substation. The containment system will also include an oil water separator(s) that automatically senses oil within any water in the containment system and prevents this oil from being discharged through the containment system's clean-water discharge. DWP is also evaluating additional absorbent/membrane containment systems that may be used to augment and improve the concrete containment system.

Water captured by the containment system will be pumped out for ground discharge if no oil is mixed with the water. If oil is found in the water, the water/oil mix will be pumped to a tanker truck by a licensed operator and taken off-site for disposal at an MOE approved licensed facility.

The containment system will be inspected by trained wind farm staff on a regular basis for proper operations and material condition. A comprehensive emergency response plan will be implemented as part of the wind farm's operating procedures and in the event of a spill, municipal, county, and provincial governments will be notified, and updated on an ongoing basis, as part of the containment and remediation process. The design and operation of the containment system will comply with all MOE regulations.

Project Substation (34.5kV to 230kV) and Switching Station – 230 kV Power Line Option

The locations of the 230 kV project substation (located on the west half of Lot 26, Concession 2, Township of Melancthon) and the switching station (located at 7 Shannon Court Township of Amaranth – Lot 4, Plan 131) are shown in the Site Plan Report. In the event the 230 kV power line option (Option 2) is used, these sites will be prepared using tracked bulldozers and excavators to strip topsoil and subsoil, as required, to create an even work surface. An access road will be installed at each location to allow for safe ingress and egress to the site.

Soil management will be incorporated into these processes to facilitate site reclamation. Existing vegetation (agricultural crops) will be stripped with the topsoil, which will be stockpiled separately from stripped subsoil in a temporary workspace adjacent to the site.

Following site clearing, foundations, underground conduit, grounding systems, and above ground equipment will be installed at each site. A grounding grid will also be installed at each site and will fully comply with the Canadian Electric Code (CEC). The power transformer for the project substation will be shipped via train to the project site using the nearest rail siding to the project substation and then specialized, heavy-load, delivery truck and crane to the reach the substation area. The remaining substation and switching station equipment and materials will be delivered by flatbed trucks or standard size vehicles and offloaded at the sites by truck crane.

The project substation and switching station will consist of an open-air design. The 34.5 kV to 230 kV power transformer will be located at the project substation. The transformer will be single-walled and built for reduced noise emissions (please note as it relates to the switching station, that a switching station is not required to undergo a Noise Study as per *Ontario Regulation 359/09*, as it is not a significant source of noise). At the project substation, the power transformer will step-up the voltage from 34.5 kV to 230 kV for connection to the 230 kV power line. At the switching station, a line connection will be built to interconnect the 230 kV power line with the Orangeville TS and connection to the provincial grid. Both the project substation and 230 kV switching station will have a security fence installed that provides a safety barrier and prevents unauthorized access.

The 230 kV power transformer will be placed inside a containment system to capture and control any oil leaks or hazardous discharge from the transformer. The containment system will consist of a concrete basin, oil water separator and clean water discharge. The containment system will be sized based upon a worst-case scenario and be capable of containing greater than 100% of the oil within the transformer, 24 hours of continuous storm water from a multi-year rain event (e.g., a 25-year storm), and any additional discharge from any fire suppression systems that may be installed at the substation. The containment system will also include an oil water separator(s) that automatically sense oil within any water in the containment system and prevents this oil from being discharged through the containment system's clean-water discharge. DWP is also evaluating additional absorbent/membrane containment systems that may be used to augment and improve the concrete containment system.

Water captured by the containment system will be pumped out for ground discharge if no oil is mixed with the water. If oil is found in the water, the water/oil mix will be pumped to a tanker

truck by a licensed operator and taken off-site for disposal at an MOE-approved licensed facility.

The containment system will be inspected by trained wind farm staff on a regular basis for proper operations and material condition. A comprehensive emergency response plan will be implemented as part of the wind farm's operating procedures and in the event of a spill, municipal, county, and provincial governments will be notified, and updated on an ongoing basis, as part of the containment and remediation process. The design and operation of the containment system will comply with all MOE regulations.

Power Line Installation – Dual-Circuit 69 kV Option

In the event the dual-circuit 69 kV Power Line Option (Option 1) is selected, a three phase, dual-circuit, 69 kV power line will be constructed to connect the project to the provincial power grid. The dual-circuit, 69 kV overhead line would connect the project substation (located on west half of Lot 26, Concession 2, Township of Melancthon) to the point of interconnect substation (located on Part Lot 14, Concession 1 EHS, in the Town of Mono). The 35.6 kilometre power line would run along the road right-of-way on top of Hydro One power poles under a Joint Use Agreement with Hydro One. The power line would run through the Townships of Melancthon, Mulmur and Amaranth and the Town of Mono. The route was selected to minimize the power line's length and to avoid sensitive environmental features. Selection of the route was also based on consultations with the public, local municipalities, the Niagara Escarpment Commission, Provincial Ministries, the Ontario Power Authority, Hydro One, and Ontario's Independent Electricity System Operator (IESO).

Under the Joint Use Agreement with Hydro One, Hydro One would be responsible for constructing the portion of the power line where Hydro One power poles already currently exist (approximately 34.2 kilometres of the line) and DWP would be responsible for constructing the portion of the power line where Hydro One power poles currently do not exist (approximately 2.7 kilometres of the line). Once the new pole line is installed, DWP would be responsible for installing ("stringing") the 69 kV cables along the tops of the poles. DWP would be responsible for the costs of the new power line including the sections that Hydro One constructs. Please refer to Figures 2b through 2d which show existing Hydro One poles and the locations where DWP will have to construct new poles along the proposed route.

Construction of the power line would require Hydro One to replace older and smaller existing power poles with new, larger, poles and to install additional poles along the right-of-way to support the additional circuits. The new power line would consist predominately of wood poles ranging in height from 10.5 m to 24 m (35 feet to 80 feet) and installed to a typical depth of 2.5 m to 3 m. The power line will require 8 m to 10 m of space within the road right-of-way and some sections of the right-of-way may require clearing (e.g., where no poles currently exist or where additional tree trimming is required). Pole spacing is expected to range from 45 m to 55 m and is subject to Hydro One's final design.

For construction, new power poles and line materials will be staged along the proposed route and existing circuits will be rerouted or temporarily relocated. Existing poles to be replaced will be "flush cut" or removed ("pulled") using hydraulic pole pullers, which are powered from either line trucks or portable generators. Truck mounted pole-hole power borers/augers will be used to dig holes for the new poles. A truck mounted rock cutting drill will be used when rocks are encountered when digging new pole holes. Soil cuttings will be graded into adjacent areas and rock spoils will be removed. There will be no construction debris left in the right-of-way. In parallel, new poles will be framed, laid along the road right-of-way, and readied for installation. Insulators and other associated hardware will be installed on the poles at this time or following pole installation. New poles will be installed using a truck mounted derrick ("boom"), winch lines and hand tools. The installation ("stringing") of power cables will be accomplished using boom trucks, reel trucks, pullers and tensioners.

There are limited effects associated with the construction of the pole line. Potential short-term effects are limited to the construction activities associated with accessing existing structures for removal or replacement, removal of hardware, installation of new poles and stringing operations. The increase in traffic from construction activities will be minimal along the roadway as the work will be done by vehicles working off of the road and in the established adjacent right-of-way. Possible soil contamination should not be a significant issue as any excavated soil will be used as backfill and since the new treated poles will be placed in the same area, any contamination from the new or old poles will be contained to a small area along the right-of-way at the pole locations. Other than viewshed impacts, potential long-term effects are not anticipated because there is a pre-existing power line that runs along the majority of the route. No special mitigation is anticipated since any environmental concerns can be adequately addressed by the Hydro One (2009) "*Environmental Guidelines for Construction and Maintenance of Transmission Facilities.*"

Stage 1 and Stage 2 archaeological assessment of the 69 kV power line route was completed in 2012 and this assessment was cleared by the Ministry of Tourism, Culture and Sport. Should any artifacts be uncovered during construction, a licensed archaeologist will be contacted to assess significance and if necessary develop an appropriate plan of action including notification of the Ministry of Tourism, Culture and Sport and local government.

Power Line – 230 kV Option

In the event the single-circuit, 230 kV Power Line Option (Option 2) is selected, a three phase, single-circuit, 230 kV power line will be constructed to connect the project to the provincial power grid. The single-circuit, 230 kV overhead line would connect the project substation (located on west half of Lot 26, Concession 2, Township of Melancthon) to the switching station (located at 7 Shannon Court, Township of Amaranth – Lot 4, Plan 131). The 48 kilometre power line would run along a private easement and a former railroad right-of-way. The power line would run through the Township of Melancthon, the Town of Shelburne and the Township of Amaranth. The route was selected to minimize the power line's length, to avoid sensitive environmental features and to minimize the overall impact to the local community. Selection of the route was also based on consultations with the public, local municipals, Dufferin County, Conservation Authorities, Provincial Ministries, the Ontario Power Authority, Hydro One, and Ontario's Independent Electricity System Operator (IESO).

DWP would be responsible for the costs and constructing and maintaining the 230 kV power line. Construction of the power line would involve installing new wood poles along the proposed route and installing ("stringing") a single-circuit, 230 kV line at the top of the poles. The new power line would consist predominately of free-standing wood poles ranging in height from 21 metres to 24 metres (70 feet to 85 feet) depending upon terrain and topography and installed to a typical depth of 2.5 metres to 3 metres. Some guyed poles will also be required where the power line shifts to either side of the easement or transitions through curves or difficult terrain. The power line's private easement is 30 metres wide and the width of the easement running along the side of the railroad right-of-way will be determined by final engineering and will be structured so as not to interfere with future use of the rail right-of-way. The majority of the 230 kV route is clear of obstacles however some sections of the easement will require clearing (e.g., tree trimming, brush clearing, etc.). Pole spacing is expected to range from 90 metres to 200 metres and is subject to the power line's final design and consultation with local stakeholders.

For construction, new power poles and line materials will be staged along the proposed route. Truck mounted pole-hole power borers/augers will be used to dig holes for the new poles. A truck mounted rock cutting drill will be used when rocks are encountered when digging new pole holes. Soil cuttings will be graded into the adjacent area and rock spoils will be removed. There will be no construction debris left in the easement. The construction process will utilize the existing rail bed as much as possible for the staging of installation ("boom") trucks, support vehicles, and materials, as well as actual construction operations, in order to minimize the impact to the edges of the rail right-of-way and environmental features. In areas where construction activities require installation vehicles to move off the rail bed, tracked vehicles, timber mats, and pre-approved clean fill will be used to support work in these areas. In parallel, new poles will be framed, laid along the easement, and readied for installation. Insulators and other associated hardware will be installed on the poles at this time or following pole installation. Poles will be installed using a truck mounted derrick ("boom"), winch lines, and hand tools. The stringing of power cables will be accomplished using boom trucks, reel trucks, pullers and tensioners.

Sections of the 230 kV line will be buried underground either though horizontal directional drilling (HDD) or open trenching. The 230 kV line will be installed underground in these sections to avoid environmental features and populated areas as well as for some road and line crossings. In particular, DWP intends to install the 230 kV line underground along a short section of the line route in the Town of Shelburne. Underground cabling will be installed on a sand bed a minimum of 1.1 metres below grade. A concrete safety cap will be installed over the line along with standard warning tape and then backfilled. Excess backfill will be graded into the adjacent area to prevent and/or minimize soil contamination.

There are limited effects associated with the construction of the pole line and underground sections. Potential short-term effects are limited to the construction activities associated with installation of new poles and cable stringing operations. Short-term disruptions may occur to recreational use along the rail right-of-way (i.e., walkers, ATV, snowmobile, and horseback riding, etc.) during construction operations however these disruptions will be limited and restricted to the lines' relatively short construction period. DWP will provide the local community with ongoing updates prior to and during the construction process so people know where and when construction activities will be occurring along the rail right-of-way.

Any increase in traffic from construction activities is expected to be minimal as the majority of construction activities will occur along the private easement and rail right-of-way and off municipal and County roads. Possible soil contamination should not be a significant issue as any excavated spoil will be used as backfill and since the new treated poles will be placed in the same area any contamination from the new poles or disturbed soils will be contained to a small area along the easement at the pole locations. Other than potential viewshed impacts, potential long-term effects are not anticipated because the power line will be sited along long standing agricultural lands and a utility corridor that supported previous rail operations for over 100 years.

Stage 1 and Stage 2 archaeological assessment of the 230 kV power line route was completed in 2012 and this assessment was cleared by the Ministry of Tourism, Culture and Sport. Should any artifacts be uncovered during construction, a licensed archaeologist will be contacted to assess significance and if necessary develop an appropriate plan of action including notification of the Ministry of Tourism, Culture and Sport and local government.

Operations and Maintenance (O&M) Building

An O&M building will be constructed on site on the same land parcel as the project substation (Located on Lot 26, Concession 2, Township of Melancthon). The footprint of the O&M building will be approximately 2 hectares and will include the O&M building, visitor and staff parking, and a fenced in maintenance yard. The project substation will be located directly behind the maintenance yard and will have security fencing as well. The facility will provide office space for staff and maintenance personnel, storage space for ready service spares and maintenance equipment and operational space for the monitoring and management of the wind farm during commercial operations. The O&M building will have a small kitchen and washroom facilities for staff and visitors. A water well will be dug on-site to provide a potable source of water for the O&M building. Domestic wastewater will be managed by the construction of a small septic tank and field bed. The septic tank and field bed will be located on the O&M property to avoid disrupting agricultural operations on the surrounding land. Access to the building will be from County Road 21. It is expected eight to ten full-time and five part-time employees will work from the O&M building.

Meteorological Towers

Two meteorological towers are currently installed and operating in the project area. These older existing towers will be removed once the construction is started and two new, 85 metre, permanent meteorological towers will be installed. The new locations for the meteorological towers are Lot 26, Concession 2 and Lot 28, Concession 8, Township of Melancthon. The meteorological towers are shown on Figure 2a.

Turbine Commissioning

Turbine commissioning will occur once the wind turbines have been fully installed and electrical connections are complete. Commissioning involves testing and inspection of electrical, mechanical and communications operability. A detailed set of operating instructions must be followed to connect with the local electrical system.

8.1.4.1 Materials Brought On-Site and Construction Equipment

The materials required for construction include, but are not limited to, wood, concrete, steel, electrical cabling and poles, turbine components and road base. Materials will be stored at each individual turbine site and at the project's central laydown area as required. If the turbine pads and laydown areas are not ready to receive the turbine components as they are delivered, the components will be temporarily stored at the central laydown area, located on Lot 26, Concession 2, Township of Melancthon.

An alternate temporary storage/laydown area within Strada Aggregates Inc.'s Shelburne pit located on the west half of Lots 11 and 12, Concession 3 O.S., Township of Melancthon may also be used to store the wind turbines, blades, tower sections and other components in the event of unanticipated permitting delays. The floor of the Melancthon pit was used previously to store 69 wind turbines and their associated components for the neighbouring TransAlta Melancthon Wind Farm. Access to and from the Melancthon pit would be from 4th line which provides adequate sight line visibility and will allow for safe access and exiting for both trucks and passenger vehicles.

Specialized heavy-lift trucks, trailers and cranes will be used to deliver the turbine components to the project location. Concrete and pump trucks will deliver concrete to the project. Standard

light and heavy trucks (e.g., 18-wheelers, step-trucks, pickups, etc.), will bring all remaining materials to the project location. Generally, all heavy machinery, fuels and lubricants, metal rebar, tools, and power cable will be stored at the central laydown area and then transported to where they are required. The approximate number of trips made by delivery vehicles is listed in Table 4.

The central laydown area will be fenced and lit for security reasons. Dufferin Wind Power Inc. will consult with the Township of Melancthon regarding site lighting to ensure the proposed lighting plan conforms to the Township's rural lighting standards. The central laydown area will be monitored by 24 hour on-site security and will be gated and locked outside of normal business hours.

Concrete will be delivered to each site by truck, as needed. Both aggregate and concrete is expected to be sourced through local suppliers. As wind turbine foundations are cured and access roads are completed, turbine components will be delivered to each turbine laydown location adjacent to the wind turbine foundation. As mentioned, if the laydown areas are not completed in time for turbine delivery, turbine components will be stored at the central construction laydown area until individual laydown areas are complete and ready to receive component and material deliveries.

All materials and construction equipment that will be brought on-site are listed in Table 4. In addition to staff and worker's personal vehicles, the table provides an estimate of the amount of materials and number of vehicle loads and/or trips required, per construction task, to construct the wind farm facility.

Table 4: Materials Brought to Site and Construction Equipment: Component Installation and Connection Activities		
Component Installation and Connection Activity	Required Equipment	Required Materials
Wind Turbine Foundations	Same equipment used for land clearing	Fill
	Multiple 16 m^3 concrete trucks (30-40 trucks per foundation) Approximately 1470-1960 deliveries using 16 m^3 concrete trucks Concrete pumper trucks, if required	Concrete ready mix
	12-18 deliveries using flatbed trucks for rebar, forms, and support equipment	Approximately 23,520 m^3 - 31,360 m^3 of concrete
		Rebar and Formwork
		Electrical Conduit
		Grounding supplies
		Anchor bolts
		Fuel and lubricating grease for equipment
Project Substation and Collector System (Feeder Lines)	4-5 light trucks	Power Transformer
	1 Delivery using specialized vehicle for main transformer	Switch Gear
		Circuit Protection/Isolation Equipment
	5-6 Deliveries using flatbed trucks	Auxiliary Transformers
	2 excavators	Metering Equipment
	1 loader	Grounding and Safety Equipment
	3-4 Dump trucks	Modular Control Building
	1 compactor	Approximately 159 km of 34.5 kV cable
	1 grader	Approximately 50 km of fiber optic and 50 km of grounding cable
	2-3 Trenching machines	Junction boxes
	2-3 Cable reel trucks/trailers	Miscellaneous equipment and materials
	1-2 Boom trucks	Fuel and lubricating grease for equipment

Table 4: Materials Brought to Site and Construction Equipment: Component Installation and Connection Activities		
Component Installation and Connection Activity	Required Equipment	Required Materials
	1-2 Horizontal Directional Drill Rigs	Concrete and Rebar
	3-4 Horizontal Directional Drill Support Vehicles	Oil Containment System
	25-30 Deliveries using flatbed trucks for cable and equipment	
Wind Turbine Delivery and Erection	Truck-mounted crane or rough-terrain forklift	Tower Sections (3 or 4 Sections per Turbine)
	Approximately 495 total truckloads using both standard and specialized transport vehicles to deliver wind turbine components	Nacelles (Machine Head)
		Rotors/Hubs
		Blades (three per unit)
	9 Truckloads for each GE 1.6 wind turbine	Preassembled Power Modules (PPM)
	12 Truckloads for each GE 2.75 wind turbine	Pad Mount Transformers (1 per turbine)
	12-16 Deliveries using flatbed trucks for pad mount transformers	Ancillary & Support Equipment
	2-4 Deliveries using flatbed trucks for temporary generator sets	Two 1,500 kW generator sets with load banks
	3 Cranes (800t+ crawler crane with two smaller support cranes)	Fuel and lubricating grease for equipment
	25-30 Deliveries using flatbed trucks and specialized vehicles for primary crane components	
Interconnection Line	35-45 Deliveries along power line route using flatbed trucks for cable, equipment, and poles	230 kV Line Option
		Approximately 144 km of 230 kV utility cable
	1- 2 Auger trucks	New wood or steel monopoles
	1 -2 Boom trucks	Approximately 48 km of OPGW wire
	2-3 Cable reel trucks/trailers	Circuit Isolation Equipment
	1 -2 Horizontal Directional Drill Rigs	Concrete, rebar
	3-4 Horizontal Directional Drill Support Vehicles	Drilling mud
		69 kV Line Option
		Approximately 222 km of 69 kV utility cable
		New wood utility poles

Table 4: Materials Brought to Site and Construction Equipment: Component Installation and Connection Activities		
Component Installation and Connection Activity	Required Equipment	Required Materials
		Approximately 37 km of OPGW wire
		Step-up transformer / Isolation Equipment
		Concrete, rebar
230 kV Switching Station	1 Grader	Circuit Breaker
	5-6 Deliveries using flatbed trucks	Disconnect Switches
	2 Excavators	Modular Control Building
	3-4 Dump trucks	Metering Equipment
	1 Compactor	Grounding & Safety Equipment
69 kV Point of Interconnection	4-5 Light trucks	Power Transformer
	1 Delivery using specialized vehicle for main transformer	Switch Gear
	1 Grader	Circuit Protection/Isolation Equipment
	5-6 Deliveries using flatbed trucks	Auxiliary Transformers
	2 Excavators	Metering Equipment
	1 Loader	Grounding & Safety Equipment
	3-4 Dump trucks	Modular Control Building
	1 Compactor	Oil Containment System
Operations and Maintenance Building	10-12 Light trucks	Approx. 1.9 tons/m^3 of pit run gravel
	2 Boom Trucks	Off Loading Materials
	2-3 Concrete trucks, multiple trips	Brick, mortar, concrete, rebar
	10-15 Deliveries using flatbed trucks	Electrical, mechanical, civil, plumbing, telecommunication systems
Meteorological Towers	1 -2 Light trucks	Approximately 6 m^3 of concrete for foundations
	1-2 Delivery using a flatbed truck	Meteorological tower components (2 meteorological towers)
	1 Support Crane	Electrical, sensor, and telecom systems

8.1.4.2 Timing and Operational Plans

Installation activities will begin once all necessary permitting has been obtained. As outlined in Table 2, many of the construction tasks will occur in tandem. Once the first access roads and turbine foundations are in place turbine installation can begin at those sites, while other work crews prepare access roads and turbine foundations at other turbine sites. The feeder lines, power lines and substations can also be constructed while turbines are being installed. As per the Project schedule, installation activities will occur from late spring into winter 2013.

Construction timing restrictions to minimize effects on natural heritage features will be observed as previously described in Section 8,1.

8.1.4.3 Temporary Uses of Land

As discussed, all phases of construction (including component installation and connection) will temporarily use areas for construction around the wind turbines, access roads, substation, collector and power lines, and O&M building. There will also be temporary laydown areas around each wind turbine and the central construction laydown area. A Stage 2 archaeological assessment for these areas has been undertaken, and clearance obtained from the Ministry of Tourism, Culture and Sport. Following construction, the buildable area will be remediated to pre-construction conditions.

Similar to the Site Preparation Phase, the temporary use of land includes the following:

- Temporary turbine staging areas surrounding each wind turbine foundation (up to a 200 metre by 200 metre square). After the project is commissioned, the construction and laydown areas around each turbine foundation will be rehabilitated to their original condition (e.g., to allow agricultural activity to resume).
- The general construction central laydown area will be up to 6 hectares in size. There will be two temporary access points (driveways) entering the site from the 3rd Line road. As a post-construction activity, the area will be rehabilitated to its original condition and returned to agricultural production.
- Access Road – during construction, access roads will be up to 20 metres in width to support delivery of large components. At the completion of construction (i.e., component delivery) the road widths will be reduced to a standard 5 metre width

for normal operations. "Hammerheads" and "bump outs" for turbine delivery will be eliminated after delivery.

- Crane paths over fields will be rehabilitated to the original condition of the land.
- Municipal/County roads, structures and culverts – road widening and strengthening for trucks can be left in place or removed as requested by the Township of Melancthon and County of Dufferin. It is anticipated the widened sections of intersections will be removed after component delivery but access road entrances, new culverts, or strengthened structures will remain.
- Feeder Lines – after the feeder lines have been trenched-in and installed, land within the easements will be rehabilitated back to its original state.
- HDD – directional drilling the power lines under wetland features and roadways requires a staging area (entrance and exit pit) at each side of the HDD. Both staging areas on either side of the drill site will be levelled. Once the conduit is in place, the staging areas will be returned to their pre-construction state.

8.1.4.4 Temporary Water Takings

The only potential water takings are that from turbine foundation dewatering.

8.1.4.5 Materials/Waste Generated at, or Transported from, the Project Location

Most of the waste that will be generated on site will be construction debris. At the central laydown area, there will be several garbage bins for different types of construction debris. Debris will be sorted on site and hauled to either the Township of Mono Landfill, the Township of Amaranth Landfill or, in cases where either landfill cannot accept the waste (i.e., hazardous), it will be trucked to a licensed Transfer and Recycling Facility by a licensed hauler.

Any hazardous wastes used or stored on site, such as lubricating oils, will be removed in accordance with *Ontario Regulation 347, Environmental Protection Act* and disposed of at a MOE licensed facility. This type of waste will be stored centrally at the central laydown area and will be routinely removed from the site by an MOE licensed hauler. The final decision on waste disposal or recycling will be made by the on-site contractor who will refer to the *Environmental Protection Act* before submitting a Generator Registration Report for waste produced at the facility.

It will be the responsibility of the Project Manager to ensure the site is left in a manner that is clean and free of debris.

8.1.5 Post-Installation Activities

Clean-up and Reclamation

Clean up and remediation will occur concurrently with other construction and installation activities and will occur as soon as possible after installation of project infrastructure at each turbine site.

Construction debris will be collected and disposed of off-site at a licensed facility.

In areas, where soils have been stripped, soils will be replaced and re-contoured using stockpiled materials. Temporary storage and laydown areas will be converted back to their original use. Where soils are compacted, sub soils will be ripped to alleviate compaction and stripped subsoil and topsoil will be replaced. Areas where soil was disturbed will be reseeded.

8.1.5.1 Materials Brought On-Site and Construction Equipment

Table 5 lists materials and construction equipment to be brought to site as part of post-installation activities.

Table 5: Materials Brought to Site and Construction Equipment: Post-Installation Activities

Post-Installation Activity	Required Equipment	Required Materials
Clean up and Reclamation Activities	3-4 Light trucks	Fuel and lubricating grease for equipment
	1-2 Tracked bulldozers	Seed and plantings
	2-3 Loaders	Additional topsoil, if required
	1-2 Tandem dump trucks	
	1-2 Graders	

8.1.5.2 Timing and Operational Plans

As outlined in Table 2, full clean-up and reclamation will occur as soon as possible after winter 2014. Laydown areas will be cleaned-up as soon as installation activities are completed at each

specific laydown area. It is anticipated that clean up and reclamation activities can occur concurrently with many installation and connection activities.

8.1.5.3 Temporary Uses of Land

The buildable area used for construction purposes and shown on Figure 2a, will be reclaimed during this phase of construction.

8.1.5.4 Temporary Water Takings

There are no expected water takings during this phase of construction.

8.1.5.5 Materials/Waste Generated at, or Transported from, the Project Location

Garbage and debris will be removed and disposed of at an approved location. The Township of Mono and Township of Amaranth Landfills are able to handle the majority of refuse for disposal. Any hazardous waste produced on site or items that either landfill cannot accommodate will be trucked by a licensed hauler for disposal to the County of Dufferin Transfer and Recycling Facility, or other MOE licensed facility as required.

8.2 Operations and Maintenance

The following activities listed in Table 6 are associated with the operation and maintenance of the wind facility. These activities will take place over the lifetime of the facility.

Table 6: Operations and Maintenance Activities

Activity	Description
Wind turbine operations	Wind farm operations will be monitored and managed locally by on-site maintenance staff and also remotely at an off-site Network Operations Center (NOC). On site staff will perform preventative maintenance on the wind turbines including changing oil, filters, and routine cleaning. Schedule maintenance activities will include inspections of the turbine, tower structure, and surrounding area for material readiness, safety, and cleanliness, lubrication of moving parts, bolt tightening, and systems testing. Unscheduled maintenance such as replacing worn parts, diagnostic investigations, and repairs will be performed as required and in accordance with manufacturer's specifications.

Table 6: Operations and Maintenance Activities	
Activity	Description
Transformer substations and electrical transmission operations	Wind farm and support staff will perform routine inspection and maintenance of all switchgear, buildings, ancillary systems, and safety equipment in the project's substation and switching facilities. This preventative maintenance will be carried out to ensure that the substation and switching facilities are kept in good working order at all times. Unplanned maintenance or repairs will be performed as required. The project's power lines will be visually inspected every six months and a detailed physical inspection will be performed every five years. Tree trimming will be performed on a set schedule and as needed.
Periodic maintenance and inspection of project components	Maintenance staff will periodically inspect components to ensure continued safe operation. Routine maintenance, security visits and other measures will be conducted as needed. Normal maintenance on the individual wind turbines occurs twice per year, and will include complete checks of structural soundness, electronics systems and changing of hydraulic and lubricating fluids. Maintenance activities will follow a checklist provided by the turbine manufacturer. Substations will undergo regular checks and maintenance to ensure safe and reliable operation.
Cleaning of Turbines	Turbines will be cleaned as required to prevent accumulation of dirt and other debris that may restrict normal operation.
Routine to major maintenance	Unexpected maintenance occurs infrequently and typically involves the replacement of a major component, such as a gearbox, transformer or blade. In the event of a major malfunction, a crane may be required to lift the affected component. Crane pads are expected to be left in place and will be used during repair operations and installation phase, where possible, and mitigation and monitoring measures described in the Construction Plan Report will be followed. Delivery of replacement turbine components will follow measures outlined in the Transportation Plan, appended to the Construction Plan Report.
Periodic landscape and road maintenance	Short native vegetation will be planted once construction activities are complete. Regular maintenance may include mowing grass and trimming. Grading, ditch maintenance, shouldering may also be required during the operations phase of the project. Snow removal and application of sand and/or de-icing agents (i.e., salt) may be required during the winter months to maintain safe conditions for maintenance activities. There will be infrequent, short-duration emissions from motorized vehicles during the operations phase. This will result from accessing the Operations and Maintenance facility or from transporting maintenance personnel on-site.
Inspections and testing	Activities will be carried out as required by the local utility, wind farm staff, consultants, and other governing bodies.
Water Taking	The O&M facility will contain a small washroom and kitchen facilities. A small water well will be installed on-site.

Table 6: Operations and Maintenance Activities	
Activity	Description
Sewage Disposal	A septic system, with a small field bed, will be constructed to service the O&M facility. The septic tank, typically constructed of concrete or fiberglass, will conform to industry standards and local building codes. The septic tank will be pumped regularly and it will be the project owner's responsibility to ensure proper maintenance of the system.
Waste Management	Project operations will result in the generation of solid waste (office waste, materials packaging, used mechanical parts, etc.) and used turbine lubricant and oils. Waste will be stored in a secured area of the Operations and Maintenance Building. A Spills Response Plan, prepared as part of the Design and Operations Report, provides further details about handling potentially hazardous materials and procedures for reporting spills under the Environmental Protection Act. Non-hazardous waste will be collected and disposed at the Township of Melancthon and Township of Amaranth landfills. Hazardous waste, such as used transformer or turbine oil, will be disposed at the County of Dufferin Transfer and Recycling Facility or other licensed facility.

8.3 Decommissioning Plan Overview

8.3.1 Decommissioning During Construction (Abandonment of Project)

If the project was abandoned during construction and installation activities, the potential effects may be piles of exposed subsoil and topsoil, as well as exposed excavations ranging from 1 metre to 5 metres in depth resulting from construction activities. This exposed soil may result in negative effects to the surrounding environment form storm water run-off and fugitive dust emissions. Run-off may result in sedimentation of nearby lands and watercourse. Soil compaction from construction equipment, especially in temporary laydown/storage areas, on crane pads and access roads, could marginally reduce water infiltration and result in slight increases in the movement of water by overland flow. Sediment transport to surface water bodies could result in the direct or indirect harmful alteration, disruption or destruction of aquatic habitat, sedimentation or cause negative biological responses in aquatic species. Fugitive dust emissions as a result of abandonment activities have the potential to coat vegetation and alter wildlife habitat function.

Potential negative effects will not differ from those during construction and installation activities. As part of the project's mitigation strategy, stockpiles of soil will be covered with tarps or plastic sheeting during prolonged stoppages in to prevent erosion, run-off and fugitive dust emissions. Vegetation removal adjacent to water bodies will be minimized to the extent

agreed to by the MNR, NVCA, and GRCA and will be avoided wherever possible to reduce potential sedimentation of watercourses. Silt fencing will be constructed on the closets edge of the construction area from watercourses and wetlands where works are performed in the Regulation Limit. If the project is abandoned during construction, the land will be reconfigured to the original or otherwise effective grade to allow for surface drainage.

Once construction activities cease, excavated soil will be replaced to restore the original soil horizons and land use. Heavy compacted subsoil will be ripped or moderately compacted soils will be ploughed. Areas with disturbed soil (e.g., trenches and plough seams) 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 from construction activities will be repaired or replaced to restore field drainage and return the area to the previous land use (typically agriculture).

The proposed mitigation strategy is considered sufficient to control potential negative environmental effects from decommissioning activities in the case of project abandonment. Therefore, no residual effects monitoring plan are proposed following conclusion of clean-up and reclamation activities. As some conditions may not be apparent for a period of time following decommissioning, DWP will maintain the project contact number for a minimum of one year following abandonment and will respond to landowner concerns via this method or by an on-site visit.

8.3.2 Decommissioning After Ceasing Operation

This section describes the activities that will be completed during decommissioning of the project after ceasing operations. Many of the activities in decommissioning the project are similar to those completed during construction of the project, but would likely occur in reverse chronological order. Initial decommissioning activities will include delivery of equipment, materials, and construction vehicles to the site that will be used for decommissioning. Once these resources are in place, the decommissioning work will commence with land clearing (topsoil removal and storage) activities and the creation of temporary storage/laydown areas at each wind turbine site, substation locations, and other locations within the project area to support the decommissioning process. Initial decommissioning activities (i.e., mobilization, land clearing, and construction of temporary laydown/storage areas) is described in more detail in the project's Construction Plan Report.

As some conditions may not be apparent for a period of time following decommissioning, DWP will maintain the project contact number for a minimum of one year following the Project's end-of-life decommissioning and will respond to landowner concerns via this method or by an on-site visit.

8.3.2.1 Procedure for Dismantling or Demolishing the Project

The following section describes the activities that will be used to dismantle or demolish (decommission) the project. These processes are based on current industry experience and "best practices" and may be subject to change based on new technology, procedures or changing regulatory requirements in the future.

A dedicated project manager will be assigned to manage the decommissioning process and to coordinate with landowners and local government throughout the decommissioning process. DWP will post reasonable security to ensure the safe and complete decommissioning of the wind farm. Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and until the site is stabilized. Decommissioning and site restoration activities will be undertaken with the input of the landowners, local government, and provincial regulations.

Wind Turbines

The wind farm decommissioning process will include de-energizing the project and removing the wind turbines including the nacelle and blades, steel tower, pad mount transformer, and all above ground cables and fixtures using a large crane and associated support vehicles. The dismantled wind turbine components will be sorted by type and destination and may be stored temporarily on-site while awaiting transport off-site. Before directing components to disposal or re-cycling facilities, efforts will be made to reuse equipment and salvage parts for existing wind farms with similar turbine technology. Turbine components will be delivered to the appropriate landfill, scarp yard, or industrial recycling areas by large truck and trailer combinations. Approximately 10 to 12 truckloads per wind turbine (490-588 truckloads for the project) are expected to be required to transport the dismantled wind turbine components off-site however, the total number of truck loads may be reduced 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).

The wind turbine foundations would be cut 1 metre below grade and the remaining portion of the foundation would be left in place. Excavators mounted with hydraulic hammers will be used to break up and remove sections of the foundation and removed concrete will be crushed using a mobile crushing unit before being loaded onto dump trucks for removal from the site. Rebar/metal framework, conduits, anchor bolts and piles above 1 metre depth will also be cut using a hydraulic cutter on the excavator and then removed. Removed concrete, rebar and other materials will be transported off-site and disposed of at an approved landfill. Underground power cables at the wind turbine site would be cut below grade and the buried portion of the cables would be left in place. All above ground power poles, cabling and fixtures at the wind turbine site would be removed. The land at each wind turbine site will be ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Excavated areas requiring additional fill will be restored with clean subsoil and topsoil. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted).

Underground Collector System

Underground cables will be cut at connection points and the ends will be cut off at a point $\geq$ 1.0 metre below grade and left in place. This will avoid disturbing large areas of agricultural land, in comparison to the areas that would be disturbed and potential environmental effects, if the

cables were removed completely. Cables at directionally drilled water crossings will remain in place though the connection point will be severed at a point satiated outside of the GRCA and NVCA Regulation Limit. It is anticipated that the cut underground cables will have no effects on the soil, environment, or cultivation practices since the cut cables will be inert, contain no materials known to be harmful to the environment and will be well below the cultivatable depth for agricultural activities (in the subsoil zone). Cable markers placed during construction would also remain in place to warn anyone who may dig in the area after the Project has been fully decommissioned. Cables will be removed from all municipal road allowances.

To access the underground cables for cutting, a small excavator or backhoe will be used. If the land where these decommissioning activities occur is disturbed, it will be ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Excavated areas requiring additional fill will be restored with clean subsoil and topsoil. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted).

Project Substation/Interconnect Substation

The project substation and interconnect facilities will either be dismantled and the land returned to pre-construction conditions or the facility would be rezoned and used for another application acceptable to the County and Townships (e.g., additional transmission capacity to support area growth). If reuse or rezoning is not approved, the substation and interconnect facilities will be de-energized and dismantled.

Power transformers, structural framing, modular control facilities, communication and control circuits, and all remaining equipment will be removed using a crane and support vehicles. Following removal of the aboveground structures, the substation and interconnect facilities foundations will be demolished in a manner similar to the wind turbine foundations. Excavators mounted with hydraulic hammers and cutters will break up and remove sections of the foundation. The removed concrete will be crushed using a mobile crushing unit before being loaded in dump trucks for removal from the site. All concrete material will be recycled where possible or disposed of off-site at an approved facility. The gravelled parking area surrounding the facilities will be removed and the gravel will be sold or delivered to the local waste management facility. Power and communications cables will be cut below grade and the buried portion of the cables will be left in place. The land used for the substation and interconnection facilities will be

ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Areas of compaction will have the subsoil ripped. Excavated areas requiring additional fill will be restored with clean subsoil and topsoil. Soil management will include soil testing for contaminates in accordance with regulatory requirements at the time of decommissioning. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted).

Operations and Maintenance Facility

The O&M facility would either be demolished and the land returned to agricultural use, or perhaps more likely, the facility would be rezoned and used for another application acceptable to the County and Township (e.g., a local business). If rezoning is not approved, the facility will be demolished in accordance with Provincial regulatory requirements at the time of decommissioning. The land used for the O&M facility will be ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Excavated areas requiring additional fill will be restored with clean subsoil and topsoil. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted).

Interconnection Power Line

All overhead cables, power poles, and associated equipment that are not shared with Hydro One, or other utilities, will be removed using cranes, boom trucks, and other support vehicles. Pole holes will be removed and the holes will be filled with clean fill. Foundations for power poles will either be removed or cut below grade and left in place. Disturbed areas will be reseeded with native vegetation if required. Prior to decommissioning the power line, DWP will consult with Dufferin County, NVCA, GRCA, and municipal governments to ensure public awareness and proper remediation.

Access Roads and Crane Pads

During decommissioning, access roads would be temporarily widened from 5 metres to approximately 11 metres to accommodate track-mounted/crawler cranes that will be required to dismantle the wind turbines. Additional widening may be required at intersections and along public roads depending upon the turning radius of vehicles used for decommissioning. Any

stripped topsoil from this activity will be stored at the work site or in temporary storage/laydown areas and will be covered with plastic sheeting to prevent erosion and fugitive dust emissions. Following the decommissioning of the wind turbines, substations, and underground collector system, the access roads and crane pads will either be removed or left in place at the request of the landowner. In the event the access roads and crane pads are removed, bedding material will be stripped and transported off-site or reused in approved applications. Areas of compaction along the former access road and crane pads will have the subsoil ripped. The disturbed land will be ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Excavated areas requiring additional fill will be restored with clean subsoil and topsoil. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted).

Culverts installed during construction will either be removed or left in place at the request of the landowner or Municipal Road Supervisor. If the landowner requests that the culvert be removed, DWP will secure approvals from the DFO, NVCA, GRCA, and/or the MNR. Following removal of the culverts, the land will be contoured to maintain current drainage patterns and riparian vegetation will be replanted with a mixture of species acceptable to the NVCA or GRCA depending upon the location.

Metrological Towers

Unless otherwise requested by Dufferin County, Melancthon Township, or local aviation groups, the metrological towers will be removed and the land would be restored to pre-construction conditions. The meteorological towers would be disassembled in sections using a crane and then removed from the site for reuse or disposal at the appropriate facilities. Metrological tower foundations would be cut 1 metre below grade and the remaining portion of the foundation would be left in place. Power and communication cables leading to each of the meteorological tower sites would be cut below grade and the buried portion of the cables would be left in place. Clean subsoil and topsoil would be used to restore the land to pre-construction conditions and the land would be seeded to mitigate potential soil erosion.

Temporary Storage/Laydown Areas

All temporary storage/laydown areas used for decommissioning and wind farm operations will be removed or left in place at the request of the landowner. In the event the temporary

storage/laydown areas are removed gravel bedding material will be removed and transported off-site or reused in approved applications. The land will be ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Excavated areas requiring additional fill will be restored with clean subsoil and topsoil. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted).

8.3.2.2 Restoration of Land and Water Negatively Affected by Facility

To the extent possible, site restoration activities will start immediately following removal of surface and subsurface project components. The main objective will be to restore ecosystem attributes and associated vegetation communities to pre-construction conditions to the extent possible using accepted industry practices at that time. Additional information relating to the pre-construction state of the project area and interconnection line routes can be found in the Project's *Natural Heritage Assessment* reports. Since the majority of the project area is considered agricultural land, site restoration activities will include:

- Potential for soil contamination occurring during the project and need for soil contaminant testing
- Original soil horizons, soil types, and nutrient content
- Size and type of infrastructure being removed (magnitude of environmental effects)
- Erosion and sedimentation control strategy and other "Best Practices."

Affected lands will be restored by replacing subsoil and topsoil in areas where soil was removed for access road construction and the creation of temporary storage/laydown areas during decommissioning activities. The land will be ploughed to mitigate compaction and then graded and contoured for reuse by the landowner. Areas of compaction will have the subsoil ripped. Excavated areas requiring additional fill will be restored with certified clean subsoil and topsoil that matches the existing soil types as closely as possible.

Soil management will include soil testing for contaminates in accordance with regulatory requirements at the time of decommissioning. DWP will test soil for contaminants using these standards and will also prepare an Erosion and Sediment Control Plan and practice soil conservation strategies, including respective and separately stockpiling different soil horizons and soil types.

Any damage to tile drains caused by decommissioning activities will be repaired by the project to ensure continued drainage of the land. An annual seed mixture will be planted on exposed spoils to mitigate soil erosion until the selected land use is restored (typically until the first agricultural crop can be planted). It is assumed that each landowner will continue their desired agricultural management practices and plant their desired crop during the next planting season after decommissioning.

In non-agricultural areas where decommissioning activities and disruption to the land occur, re-vegetation will be accomplished using native plant species or agronomic mixes acceptable to NVCA, GRCA and the MNR. Re-vegetation success and the potential for soil erosion may be affected by the timing of seasonal plantings; therefore a cover crop or sheeting may be used to minimize the risk of soil erosion until appropriate weather conditions permit re-vegetation. During decommissioning, and prior to authorizing any work, the Project will consulate with, and secure approvals from, the DFO, NVCA, GRCA, and the MNR for any required restoration of watercourses (i.e., planting vegetation, removing watercourse crossings).

The removal of culverts (at the landowner's or Township's request) will require authorization for the DFO via either the NVCA or GRCA. After culverts are removed, the banks and channel bed will be contoured to match upstream and downstream grade. Native riparian vegetation will be planted to prevent erosion and promote proper riparian function. Underground watercourse crossing (i.e., for collector system cables) will remain in place after decommissioning to avoid disturbances to watercourses that would otherwise be predicated if removal of cables was required.

For additional information, please refer to the Environmental Effects Monitoring Plan, within the project's Design and Operations Report, for a summary of potential environmental effects and proposed mitigation measures for construction/demolition works, which will be similar to the decommissioning work.

There may be potential impacts to terrestrial vegetation and wildlife during the restoration activities for the 69 kV point of interconnect substation, as it is to be located within a non-significant woodlot. The disturbance will be temporary in nature during decommissioning and restoration activities. This woodlot will be planted with the same types of trees that were removed during construction or trees similar to the surrounding environment at the time of restoration.

8.3.2.3 Procedures for Managing Excess Waste and Materials

The only materials from the Project that will remain on-site after decommissioning will be the portion of the turbine foundations and underground cable that were cut and left in place 1 metre below grade and any access road or crane pads that were requested by the landowner(s) to be left in place. These remaining infrastructure components are not expected to have any significant negative environmental effect because they will be inert, contain no materials known to be harmful to the environment, and will be below the cultivatable depth for agricultural activities (Turbine foundations and underground cables) or will be used to support agricultural activities (access roads). The project's interconnection power line will be designed for a 50-year life and so this project component may also remain in place at the request of Dufferin County and/or Hydro One; who may take ownership of the asset to support provincial electricity grid operations. The majority of project materials however may be reused; therefore limiting the amount of waste expected as an outcome from decommissioning.

Wind turbines that are able to remain operational after decommissioning of the wind farm (and hence retain a portion of their operational value) will be carefully disassembled and sold on the secondary market for use elsewhere. Dismantled wind turbines that are non-operational have a high salvage value as well due to their steel and copper components. These components are easily recyclable and there is a ready market for scrap metals. The remaining non-metal components of wind turbines are primarily fiberglass and plastic that will be sold to recycling facilities or crushed and disposed of in licensed landfills. By the time the wind farm reaches the end of its useful life, recycling technologies are expected to have improved and may potentially have the ability to thermally or mechanically recycle wind turbine blades increasing the wind farms' salvage value and decreasing its environmental footprint.

Transformers and transmission lines are designed for a 50-year lifespan so these items may be refurbished and sold for reuse. Copper and aluminum from the electrical lines will also be salvaged. Aggregate material from the decommissioning of the access roads, crane pads and temporary storage/laydown areas will also be recycled for future use as aggregate base course, general fill, or non-structural fill. These various materials will be removed form site, catalogued for management and tracking purposes, and will be transported and disposed of in accordance with all provincial regulations. Materials that are able to be reused at other wind farm facilities, or that can be sold as is, will be stored temporarily on-site prior to delivery to their final destination. Metals and other structural components from demolished buildings and

foundations, turbine towers, nacelles, hub, turbine tower wiring, and collector system conductors may also be sold to a licensed scrap metal facility.

Any hazardous waste that is used or has been stored on site, such as oils, fuel, and lubricants, will be removed in accordance with *Ontario Regulation 347* and disposed of at an off-site licensed facility in a manner outlined by Dufferin County and Melancthon Township. Lubricants recovered from dismantled substation transformers, turbine gearboxes, and yaw mechanisms will be disposed of using the same waste streams as those used for construction equipment lubricants, since they do not contain and PCBs or other unconventional hazardous materials. Wooden power poles may be recycled for other uses at a licensed recycling facility which would strip chemical-treated exterior, dispose of the chemical-infused wood in a landfill, and re-milling the remaining wood core for various end uses.

All wastes will be transported by an MOE licensed hauler. The final decision on waste disposal or recycling will be made by the on-site contractor who will refer to the *Environmental Protection Act* before submitting a Generator Registration Report for waste produced at the facility. Given that methods of managing wastes and recyclables may change in the future, information in this report will be updated as necessary to conform to future local and provincial requirements.

Prior to the start of decommissioning work, DWP will coordinate and consult with the public, Dufferin County, affected municipal governments, Conservation Authorities, and Provincial ministries to ensure that the decommissioning of the project, and the management of all excess waste and materials, is in compliance with all required regulations.

In support of the Project's Decommissioning Plan, environmental monitoring plans have been developed and are discussed in more detail in the *Environmental Effects Monitoring Plan* S*ection 8 of the Design and Operations Report and Section 10 of the Environmental Impact Study* document submitted with the REA Application. DWP is also preparing an Environmental Management and Protection Plan that will further outline environmental protection and monitoring strategies for the construction, operation and decommissioning of the Dufferin Wind Power Project.