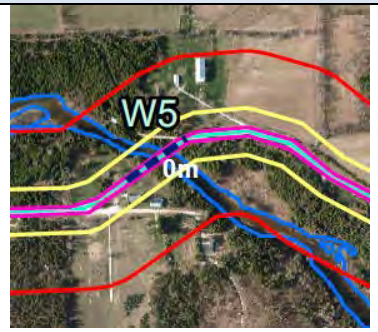
Table 6: Summary of Confirmed Water Bodies identified within 120m of the Project Location

Feature ID	Distance to Project Component (refer to Figures 4-7 for location of each water feature)	Level of Sensitivity
W2 Unnamed tributary and Seepage Area	 W2 - 0m from underground collection line in existing road right of way.	W2 is considered to be of moderate sensitivity as it is an area where the overburden is reduced such that seepage of groundwater occurs. There was also fish documented in W2 during field survey. The site has had some alteration through the placement of a culvert to allow for fish passage and conveyance of water under the crossing of Concession 4 Road. This site was treated as significant wetland within the NHA; such that no project components will be constructed within the feature (directional drilling of underground electrical line is proposed).
W4 Unnamed tributary	 W4 - 0m from underground electrical collection in existing road right of way.	W4 connects significant wetland features. The site has had some alteration through the placement of a culvert to allow for movement of water under the crossing of Concession 4 Road. Fish are documented in the channel on the north side of the road. This site was treated as significant wetland within the NHA; such that no project components will be constructed within the feature (directional drilling of underground electrical line is proposed). This feature is considered to be of moderate sensitivity.

<table>
<tr><th>Feature ID</th><th>Distance to Project Component
(refer to Figures 4-7 for
location of each water feature)</th><th>Level of Sensitivity</th></tr>
<tr><td rowspan="2">W5, W21, W22
Saugeen River</td><td> 

W5 - 0m from underground collection line within existing road right of way (installed through attachment to bridge structure or overhead line).

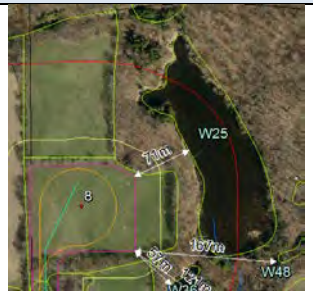
W21 – 34m from underground electrical collection line within existing road right of way;</td><td>The Saugeen River is classified as a cold water system and is considered to be of high sensitivity. The river provides habitat for Brown and Brook Trout as well as other fish species. The river is in its natural form through most of the areas that lie within 120m of the project location. The Saugeen valley was also determined to be a significant valleyland through the NHA process.</td></tr>
<tr><td> 

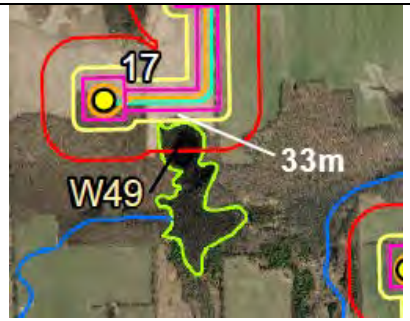
W22 –80m from construction disturbance of Turbine 7 and associated access road and underground electrical collection line.</td></tr>
</table>

Feature ID	Distance to Project Component (refer to Figures 4-7 for location of each water feature)	Level of Sensitivity
W9 Unnamed tributary	 W9 - 0m from underground collection line in existing road right of way.	W9 connects significant wetland features. The site has had some alteration through the placement of a culvert to allow for movement of water under the crossing of Southline road. Fish were not documented during site visits. Abundant algae in channel under spring condition. This site was treated as significant wetland within the NHA; such that no project components will be constructed within the feature (directional drilling of underground electrical line is proposed). Characteristics of W9 suggest low sentivity; however, this feature has been included in the category of moderate sensitivity because of its connection to a significant wetland feature.
W11 Unnamed tributary	 W11 - 0m from underground collection line in existing road right of way.	W11 connects drainage from agricultural fields to a significant wetland feature. The site has had some alteration through the placement of a culvert to allow for movement of water under the crossing of Boot Jack Ranch Road. No fish were documented; this is an intermittent channel that provides seasonal flow. Although the thermal regime, degree of alteration and function of the channel suggest low sentivity, W11 has been included in the category of moderate sensitivity because of its connection to a significant wetland feature.

Feature ID	Distance to Project Component (refer to Figures 4-7 for location of each water feature)	Level of Sensitivity
W15, W16, W18, W26, W28 Unnamed tributary	 W15 – 5m from underground electrical collection line in road right of way; W16 – 0m from underground electrical collection line in road right of way; W28 – 0m from underground electrical collection line in road right of way	The thermal classification of this tributary is coldwater. The section identified as W15 is an altered, channelized portion that runs along the north side of County Road 4. The remainder of the tributary flows through agricultural fields and includes the crossing of several roads through culverts. The tributary is in a much more natural state upstream and downstream of the project location. This tributary is considered to be of moderate sensitivity as it flows within 120m of the project location based on its thermal regime and connectivity to more natural areas.
	 W26 – 112m from underground electrical collection line in road right of way;	 W18 – 57m from turbine 10 and associated access road and underground electrical collection

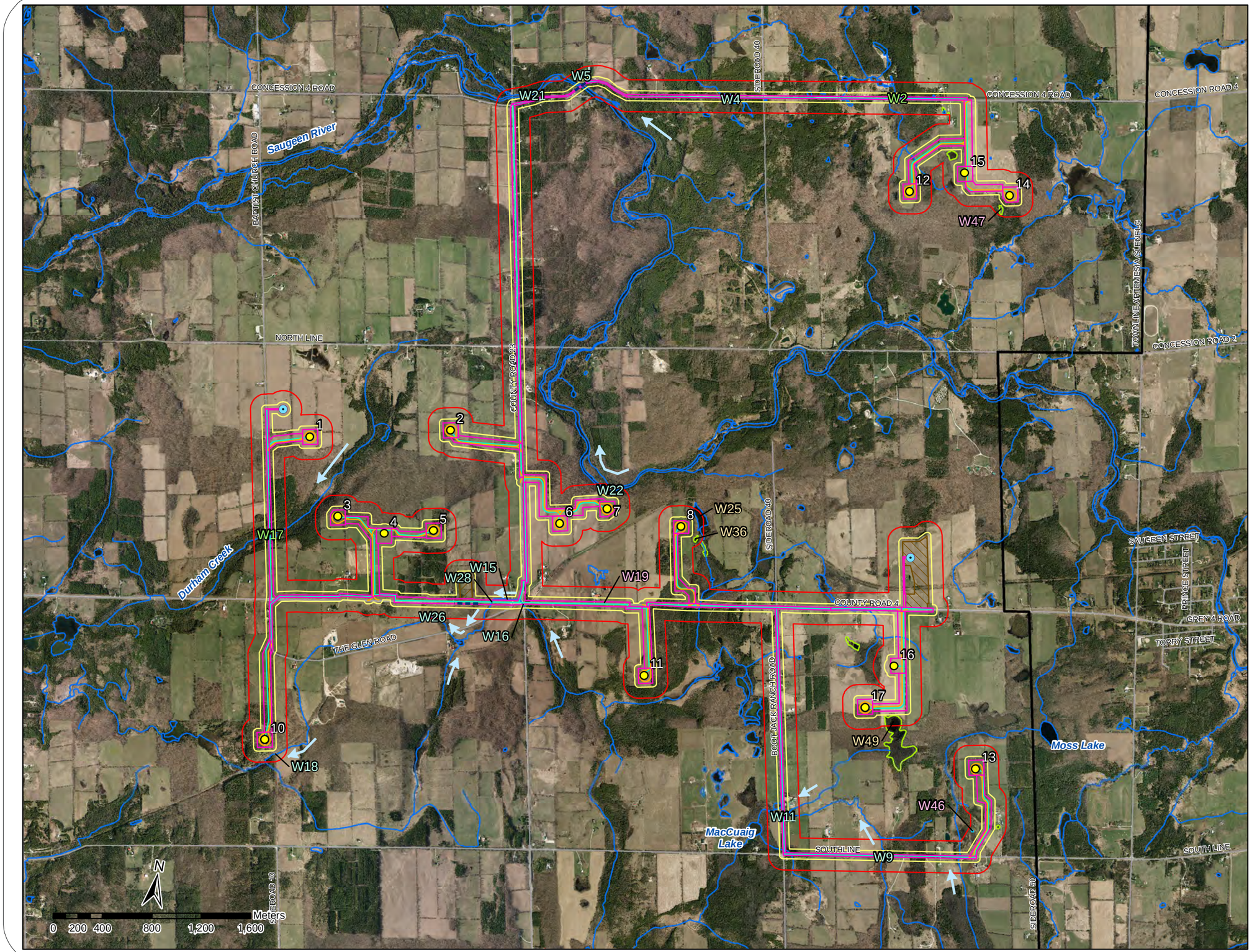
Feature ID	Distance to Project Component (refer to Figures 4-7 for location of each water feature)	Level of Sensitivity
W17 Durham Creek Seepage Area	 W17 - 0m from underground electrical collection line in road right of way	W17 is part of Durham Creek and considered to be of high sensitivity as it is an area where the overburden is reduced such that seepage of groundwater occurs. Water temperatures (11C – July 2012) suggest the degree of groundwater discharge is significant. Fish documented in Durham Creek downstream of this location include Brook Trout. The site has had some alteration through the placement of a culvert to allow for conveyance of water under the crossing of Baptist Church Road; otherwise it is in a natural state. This site was treated as significant wetland within the NHA; such that no project components will be constructed within the feature (directional drilling of underground electrical line is proposed). It also has a substantive riparian corridor that allows for movement of wildlife.
W19 Seepage area	 W19 – 0m from underground electrical collection line in road right of way	W19 is considered to be of low sensitivity to impacts given the limited seepage found at the site and the degree of berming employed for the construction of CountyRoad 4 which is anticipated to allow for containment of the collection line within the road right of way.

Feature ID	Distance to Project Component (refer to Figures 4-7 for location of each water feature)	Level of Sensitivity
W25 Pond	 W25 - 71m from Turbine 8 and associated access road and underground electrical collection.	W25 is considered to be of low sensitivity to impacts given the buffering capacity of the surrounding forest, the distance from project components and the degree of mitigation prescribed for the feature (as a water body, part of a PSW and significant wildlife habitat).
W36 Pond	 W36 - 57m from Turbine 8, access road and underground electrical collection.	W36 is considered to be of low sensitivity to impacts given the buffering capacity of the surrounding forest, the distance from project components and the degree of mitigation prescribed for the feature (as a water body and part of a PSW).
W46 Seepage Area	 W46 – 86m to underground electrical collection and access road to Turbine 13	W46 is considered to be of low sensitivity to impacts given its distance from project components and the degree of mitigation prescribed for the feature (as a water body, part of a PSW and significant wildlife habitat).

Feature ID	Distance to Project Component (refer to Figures 4-7 for location of each water feature)	Level of Sensitivity
W47 Seepage Area	 W47 – 45m from Turbine 14 and associated underground electrical collection and access road.	W47 is considered to be of low sensitivity to impacts given its distance from project components, the buffering capacity of the adjacent forest and the degree of mitigation prescribed for the feature (as a water body, part of a PSW and significant wildlife habitat).
W49 Pond	 W49 – 33m from access road and underground electrical collection line to Turbine 17.	The minimum setback (30m) was applied to this feature; however, given its degree of naturalness and the limited buffering capacity of the surrounding vegetation it is considered to be of moderate sensitivity to impacts. Several types of mitigation were prescribed for the feature within both the NHA and WBR (as a water body, a significant wetland feature, and significant wildlife habitat) .

Notes: NHA – East Durham Wind Energy Centre Natural Heritage Assessment (LGL 2012)
ELC mapping and descriptive table provided in Appendix B.

Mapping of significant wetlands other wetlands identified and addressed within the NHA are included in Appendix B.



LEGEND

- Stream
- Seepage
- Pond
- Stream and Seepage
- Flow Direction

Site Plan (2012-11-21)

- Turbine
- MET Tower
- Access Road
- Construction Disturbance
- Underground Collection
- Overhead Transmission
- MET Tower 200ft Disturbance Area
- Substation
- Laydown Area
- 30m Buffer from Project Components
- 120m Buffer from Project Components
- Study Area (Dec 2011)
- ELC Plant Community Boundary
- Watercource (LIO, 2012-06-19)
- Waterbody (LIO, 2012-06-19)

Confirmed Water Bodies within 120m of Project Components

LGL LIMITED
environmental research associates

Project	TA8119	**Figure**	8
Date	Dec, 2012	**Prepared By:**	KC
Scale	1:30,000	**Verified By:**	LKR

4.0 WATER BODY REPORT

4.1 REA REQUIREMENTS

O. Reg. 359/09 requires that a Water Body Report (WBR) be prepared where project components occur within setback prohibitions. The purpose of the report is to address potential negative environmental effects and propose mitigation as they relate to project activities. There are generally two setback prohibitions outlined in the Regulation. Section 39 prohibits the construction, installation or expansion of a renewable energy generation facility in a project location that is in, or within 30 metres, of the average annual high water mark of a lake (including a Lake Trout lake), intermittent stream, permanent stream or seepage area. This prohibition does not apply if, in addition to a WBR, turbines and transformer substations remain greater than 30m from the lake, stream or seepage area. In the current project the 30m minimum setback for turbines and the transformer substation has been applied. The only project component proposed within 30m of a water body is underground electrical collection line to be installed within existing road right of ways. The collection line is further discussed in subsequent sections of the WBR. Section 40 of the O. Reg. 359/09 prohibits the construction, installation or expansion of a renewable energy generation facility in a project location that is within:

- 120m of the average annual high water mark of a lake (other than a Lake Trout Lake), intermittent stream, permanent stream or seepage area; and
- 300m of the average annual high water mark of a Lake Trout Lake at or above development capacity.

The proposed project location is not within 300m of a Lake Trout lake, or 120m of any other lake feature. Project components do occur within 120m of streams, ponds and seepage areas. These components are further addressed in subsequent sections of the WBR.

The WBR report must:

- Identify and assess negative environmental effects of the project to a water body and the area within 30m of that water body;
- Identify mitigation measures for negative effects;
- Describe how the environmental effects monitoring plan addresses the negative effects; and,
- Describe how the construction plan report addresses any negative environmental effects.

Water bodies identified in this report have also been considered within evaluations of significance conducted for wetlands, wildlife habitat, valleylands and woodlands as part of the NHA process (LGL, 2012). The following subsections (Sections 4.2 through 4.5) describe the construction, operation and decommissioning activities associated with the Project that were used to identify potential negative environmental effects and proposed mitigation as they relate to water bodies (Section 4.6).

4.2 PROJECT DESCRIPTION

Details of the project location and components are found in Section 1.1. In order to inform the WBR information has been gathered regarding the water body features in the project area, and an understanding of the environmental sensitivities and constraints, and their associated attributes and functions, has been detailed through the Water Assessment Report. The current design of the project reflects an interactive approach whereby environmental information has been provided to the project team and many modifications to the project design have resulted.

4.3 CONSTRUCTION ACTIVITIES

Details of construction activities in this section are taken from the Draft Project Description Report: East Durham Wind Energy Centre (Genivar, 2012a).

4.3.1 Materials

The wind turbine technology proposed for this Project is the 1.6-100 MW GE model wind turbine. The turbines are 3-bladed, upwind, horizontal-axis wind turbines that are state of the art technology. The turbines have a 100 m diameter with a swept area of 7,854 m^2; each blade is connected to the main shaft via the hub. The turbine is mounted on an 80 m tubular steel tower which contains an internal ladder provided for maintenance access. The turbine will be constructed on a foundation that is approximately 400 m2. The foundation consists of poured concrete and steel rebar to provide added strength. The nacelle (located at the top of the tower) houses the main components of the wind turbine such as the rotor shaft, gear box, couplings, control panel, bearing brackets and the generator. The nacelle is equipped with sound-proofing, is ventilated and the interior is illuminated with electric lights. Some of the wind turbines will have external lighting in accordance with the requirements of Transport Canada (TC).

4.3.2 Surveying

Surveys will be required to locate the turbines, crane pads, access roads, electrical lines and the substation. Geotechnical sampling will also be required, typically conducted using a truck mounted drill rig.

4.3.3 Construction Laydown

A 6 hectare (15 acre) site will be constructed for the temporary storage of construction material and as a site for the construction office trailers. Following clearing and grubbing of any vegetation, the topsoil at the temporary laydown area will be removed and approximately 600 mm of clean compacted crushed gravel will be imported as needed. The excavated topsoil will be re-used on site as feasible. A temporary electrical service line will be connected to the existing distribution line adjacent to the laydown area for the purpose of providing power to the construction office trailers. Typical equipment for the construction of the laydown area includes trucks, graders, and bulldozers. It is anticipated it will take 1 week to construct the laydown area by a crew of six people (Genivar Draft Feb. 2012).

4.3.4 Turbine Construction

A 122m by 122m area for each turbine requires clearing in order to provide sufficient space for the laydown of the wind turbine components and the assembly activities. During the time of construction, the area (122m by 122m) must be cleared, levelled and accessible. Typically topsoil is removed and fill is placed as required, and specific to the geotechnical conditions at each turbine site. Adjacent to the turbine pad, the crane pad will typically be constructed at the same time to a size of 15m by 35m. Approximately 600mm of clean compacted crushed gravel will be imported as required for the crane pads. Once the turbine has been erected, the crane pad will be restored to prior use. These activities require equipment such as trucks, graders and bulldozers; a crew of 4 to 6 people; and last for 1 to 2 days. Turbine components will arrive on-site via flatbed trucks, and two cranes may be used to install the equipment. The assembly will occur over several days (4 to 5 days), require a crew of approximately 15 to 20 people. Light vehicles will be used to transport personnel to and from the sites. Cranes may move by trackmount or require disassembly to transport around the project site. It is anticipated that areas around the turbine will be restored to previous agricultural use during turbine operation and after decommissioning.

4.3.5 Electrical Collection

Underground cabling is comprised of 24V cables and fibre optics lines will be buried between each turbine and the collection system. Above ground electrical junction boxes will be utilized where necessary to connect sections of underground cabling. Excavated soils will be sidecast then re-used as backfill. Power conductors will be at a depth of 0.9m below grade. Farming practices are not anticipated to be affected by collection cables due to their depth and location beneath access roads. Trenchers or diggers may be used depending on soil conditions. A crew of six people is anticipated, with construction length varying by length of line.

Where woodlots, wetlands or watercourses are encountered along the proposed collection route, horizontal direction drilling may be employed to minimize or avoid impacts to these features. Entry and exit pits will be required, as well as erosion control at the drill locations. Two to three support trucks and a crew of workers will be required. Drilling is done utilizing drilling equipment, bentonite and/or a polymer mix to inject into the drill hole.

4.3.6 Electrical Connection Line

An above ground electrical line may be required to connect the transformer to the Hydro One distribution system. This would employ standard poles within the municipal road right of ways.

4.3.7 Transformer Substation

The electrical substation will be located on private property and is estimated at 0.4ha in size. It will include equipment such as an isolation switch, a circuit breaker, a step-up power transformer, switch gear, instrument transformers, ground and metering equipment. It will be fenced and have signage. An electrical service line will be connected to the local distribution line in order to provide electrical power to the substation control house. It may take up to 4 months to construction, and will require topsoil stripping and stockpiling. Topsoil will be reused as feasible on site. Equipment is expected to include a small crane, forklifts and concrete trucks with a crew of 25-40 people.

4.3.8 Permanent Meteorological Tower

One to two permanent meteorological towers are proposed, a monopole structure of 60 metres in height. It is anticipated it will take two days to install by a crew of 6 people, using winches to secure the pole. No significant soil clearing or vegetation removal is anticipated.

4.3.9 Reclamation

Waste and debris generation will be minimized and recycling or reuse of materials will be done where feasible. Best management practices will be utilized during construction to avoid spills, including spill preparation in the event of an accidental spill. Stripped topsoil will be replaced, and re-contoured and re-seeded as appropriate. Erosion controls will be removed when soils have stabilized and erosion risk is removed.

4.5 OPERATIONS ACTIVITIES

The Project will require full time technical and administrative staff to maintain and operate the facility. It is expected that four to six full time workers will be required to keep the facility operating properly. The primary workers will be wind technicians who carry out maintenance on the turbines, along with a site supervisor. The wind turbines should be operating when the wind speed is within the operating range for the turbine and there are no component malfunctions. Each turbine has a comprehensive control system that monitors the subsystems within the turbine and the local wind conditions to determine whether the conditions are suitable for operation. If an event occurs which is considered to be outside the normal operating range of the turbine (such as low hydraulic pressures, unusual vibrations or high generator temperatures), the wind turbine will immediately take itself out of service and report the condition to the SCADA system. A communication line connects each turbine to the operations centre, which closely monitors and, as required, controls the operation of each turbine.

Maintenance activities will include routine six-month tasks, which include taking the turbine out of service and having 2 to 3 technicians service the turbine. Lubricants, mechanical components and oil filters are routine maintenance items. Materials such as surplus lubricants will not be stored on site, Spill prevention procedures will be adhered to.

Unplanned maintenance may be required in the event of component failures. A crew of at least 2 is required to service turbines. Large equipment may be required should major components require replacement. This may require the construction of a temporary access road to accommodate large equipment such as cranes, similar to during construction. This is considered a low likelihood with only a small percentage of turbines needing to be accessed with large equipment during their operating life.

Electrical system maintenance, including collector lines and substation, may include preventative maintenance activities. Routine activities may include condition assessment, monitoring of the secondary containment system, and potentially vegetation clearing around the transformer lines to ensure safe operation.

4.6 DECOMMISSIONING ACTIVITIES

If the facility is to be decommissioned and turbines are to be removed at the end of their lifespan, the impacts will be similar to the construction phase, but in reverse sequence. The procedures will include:

1. The creation of temporary work areas. In order to provide sufficient area for the lay-down of the disassembled wind turbine components and loading onto trucks, a 122 m by 122 m square must be cleared, levelled and made accessible. The topsoil will be removed and some material may need to be added.

2. The creation of crane pads. The crane pads will typically be 15 m x 35 m in size and will be located within the temporary work area around each wind turbine. The topsoil at the crane pad will be removed and approximately 600 mm of compacted crushed gravel will be added. Once the turbine disassembly is complete, the gravel area around each turbine will be removed and the area will be restored to prior use using stockpiled topsoil.
3. The use of cranes to remove the blades, hub and tower segments.
4. The use of trucks for the removal of turbines, towers and associated equipment.
5. The removal of the top 1 m of the turbine foundations and replacement with clean fill and stockpiled topsoil. The fill and topsoil will be contoured to allow cultivation in the case of agricultural lands.
6. Road bedding material will be removed and replaced with clean subsoil and topsoil for reuse by the landowner for agricultural purposes. It is proposed to leave culverts in place following the operations phase.
7. Cutting underground electrical lines, burying the ends to 1 m below grade, and leaving the lines in place. Above-ground lines and poles will be removed and the holes will be filled with clean fill.
8. The substation will be demolished. This will be decommissioned in a manner appropriate to and in accordance with the standards of the day. All materials will be recycled, where possible, or disposed off-site at an approved and appropriate facility.

4.7 POTENTIAL NEGATIVE EFFECTS AND PROPOSED MITIGATION

Potential environmental effects are generally categorized into the construction and decommissioning phase, and the operations phase, where the general activities are described in the previous section. The potential negatives affects (as well as the proposed mitigation, monitoring and contingency measures, and anticipated residual effects) on water bodies associated with the project phases are summarized in Table 7.

Project roads and turbines are proposed for placement in agricultural areas, outside of the identified water body features. All proposed turbine and access road disturbance limits are more than 30m from water bodies. Road/turbine construction may be associated with the following negative environmental effects as they pertain to water features and the 30 metres of land surrounding them:

- Silt or sediment transported overland into adjacent water features;
- Alteration to surface water drainage patterns or obstruction of lateral flows;
- Accidental spills from fuels or chemicals used by construction machinery;
- Reduced infiltration of water due to compaction of soils from manoeuvring of heavy equipment;
- Increased erosion or sedimentation as a result of clearing or grubbing; and,
- Alteration to stream flow in the event that dewatering is necessary to install turbine foundations.

Operation effects are restricted to those related to increased impervious surface area as a result of access road and turbine construction. However, use of permeable surfaces and application of a minimum 30m setback from features is anticipated to minimize impacts as they relate to operations.

Electrical collection cables where associated with access roads and turbines, are contained within the access road and turbine footprints considered above, and do no present additional impacts beyond what is stated. The electrical collection outside of these areas is proposed for within the existing road right of way; and, although there are several locations where collection must cross water features all of these locations have existing road crossings of the water feature. The proponent has committed to crossing these features using directional drilling or through non-intrusive means in order to prevent impacts to water features. In many cases these water crossings also represent a crossing of significant wetlands as identified in the NHA, such that directional drilling is prescribed in order to remain outside of the feature. Overhead collection is proposed as an alternate construction method for crossing of the Saugeen River with electrical collection, should attachment to the existing bridge structure at that location prove to be unachievable. Operational effects as they relate to electrical collection are not expected; and, unless replacement of collection lines is required, no additional impacts are anticipated post-installation.

No other project components are located within 120m of water bodies. Negative effects associated with each project component as it relates to water features, as well as the recommended mitigation, monitoring and contingency measures are detailed in Table 7 below. Mitigation and contingency measures included below are consistent with those outlined in the Environmental Effects Monitoring Plan as described in the Draft Design and Operations Report: East Durham Wind Energy Centre (Genivar, 2012b)

Table 7: Summary of Potential Negative Effects and Proposed Mitigation Measures for Water Body Features

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
Construction/Decommissioning of Turbine & Associated Access Roads and Underground Collection (where underground collection coincides with access roads) No in-water works are proposed for construction of project components. Construction of proposed access roads to turbines and associated underground electrical collection lines do not entail the crossing of any water body features; nor are any of these components within 30m of a water body. Construction of proposed turbines 7, 8, 10, and 14 (and associated underground electrical collection and access roads) are within 120m of water bodies (streams, ponds and seepage areas); and W6, W46 and W49 are within 120m of access roads (and associated underground electrical collection). No turbine construction is proposed within 30m of a seepage area or any other type of water body.				
W22	80m from Turbine 7	1. Increased erosion, sedimentation and turbidity from clearing and grubbing on adjacent lands for construction of turbines, pads/turnaround areas, access roads, and underground electrical collection lines. Increased nutrient and/or contaminant inputs to water bodies as a result of overland transport of sediment-laden runoff from the construction area.	1. Develop and implement an Erosion and Sediment Control Plan before commencement of construction as per Ontario Provincial Standard Specifications (OPSD 219.130). Utilize erosion blankets, erosion control fencing, straw bales, siltation bags, etc. For construction activities within 30 m of a water body, to mitigate potential excessive erosion and sedimentation. Additional erosion and sediment control materials to be kept on hand, (i.e., heavy duty silt fencing, straw bales). Maintain all sediment and erosion control measures until disturbed areas have been replanted and stabilized. Schedule grading to avoid times of high runoff volumes (spring and fall), wherever possible. Temporarily suspend work if excessive flow of sediment discharge occurs until additional mitigation measures are in place.	1. No additional monitoring or contingency is prescribed as water features are outside of 30m setback. In addition, water features within 120m of the project location are already treated as part of significant woodland, valleyland, wetland and wildlife habitat such that mitigation, monitoring and contingency plans are prescribed for those features in the Natural Heritage Assessment prepared for the East Durham Wind Energy Centre (LGL, 2012). Residual Effects: As infrastructure is outside of 30m setback no residual effects are anticipated to water feature or surrounding 30m of land.
W25	71m from Turbine 8			
W18	57m from Turbine 10			
W47	45m from Turbine 14			
W36	57m from Turbine 8			
W6	79m from access road & electrical collection to Turbine 13			
W46	86m from access road & electrical collection to Turbine 13			
W49	33m from access road & electrical collection to Turbine 17			

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			Re-vegetate disturbed areas to pre-construction conditions as soon as possible after construction activities are complete using species native to Ontario in naturally vegetated areas.	
		2. Removal/disturbance of topsoil and increased soil compaction from manoeuvring of heavy machinery, excavation and backfilling resulting in reduced infiltration of precipitation and increased overland flow.	2. Minimize vehicle traffic on exposed soils, avoid compacting or other hardening of natural ground surface, and avoid the movement of heavy machinery on areas with sensitive slopes. Where feasible, lighter vehicles and lighter machinery should be used in and around natural areas. Any vehicles used within natural areas should use wide-based tires. Tracked vehicles should be avoided.	2. No additional monitoring or contingency plan proposed beyond what is described for sediment and erosion control. Residual Effects: As infrastructure is outside of 30m setback no residual effects are anticipated to water feature or surrounding 30m of land.
		3. Soil / water contamination by oils, gasoline, grease and other materials from construction equipment, materials storage and handling.	3. Ensure machinery is maintained free of fluid leaks. Site maintenance, vehicle washing and refuelling stations where contaminants are handled at least 30 m away from natural features or water bodies. Vehicle refuelling and maintenance should be done on spill collection pads. Store any stockpiled materials at least 30 m away from a water body to prevent deleterious substances from inadvertently discharging to the environment.	3. Monitoring: Conduct daily inspections of construction equipment for leaks / spills. Implement contingency measures in the event of a spill. Contingency Measures: • In the event of a spill, immediately stop all work until the spill is cleaned up; • Install a spill collection pad for refuelling and maintenance; • Notify MOE's Spills Action Centre of any leaks or spills; • Assess and remediate affected soils and water by using spill kit kept on site;

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			Develop a spill response plan and train staff on associated procedures. Maintain emergency spill kits on site. Control soil / water contamination through best management practices. Dispose of any waste material from construction activities by authorized and approved off-site vendors.	• For spills near water bodies, analyze water samples for general chemistry (e.g., temperature, pH, dissolved oxygen, and conductivity), suspended solids, turbidity, nutrients and total metals (e.g., copper, iron, zinc and aluminum). • Monitor daily to ensure proper cleanup is completed. Residual Effects: With adherence to the 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to the water feature or surrounding 30m of land.
		4. In the event that dewatering is necessary for the excavation of turbine foundation areas: • a reduction in streamflow (due to reduced groundwater upwelling) may occur. This would result in increased surface water temperatures from reduced groundwater contributions. • an increase to streamflows in watercourses that receive dewatering discharge may occur. Groundwater discharge has potential to cause streambed and/or bank erosion and downstream sedimentation if not managed properly.	4. Control rate and timing of water pumping; pump from deep wells to infiltration galleries adjacent to water bodies or wetlands. Control quantity and quality of stormwater discharge using best management practices, and implement infiltration techniques to the extent possible Restrict taking groundwater and surface water during drought conditions. The water taker will regulate the discharge at such a rate that there is no flooding in the downstream area and no soil erosion, or stream channel scouring is caused at the point of discharge. The	4. Monitoring: Monitor water level and streamflow at proposed discharge locations for duration of dewatering activities using staff gauges, water level data loggers, and manual in-stream flow measurements tools to calculate watercourse assimilation capacity. Collect surface water samples from discharge locations before and after construction. Analyze for general chemistry (e.g., temperature, pH, dissolved oxygen, and conductivity), suspended solids, turbidity, nutrients and total metals (e.g., copper, iron, zinc and aluminum). These data will be used to determine background watercourse water quality at discharge locations. In conjunction with the streamflow measurements, these

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			water taker will use a discharge diffuser or other energy dissipation device, if necessary, to mitigate flows which physically alter the stream channel or banks. Siltation control measures will be installed at both the taking location upstream of the construction site and (if necessary) the discharge site and will be sufficient for the volumes pumped. All measures will be taken to properly maintain these control devices throughout the construction period. Time construction to avoid periods of habitat use to the extent possible, these timing windows are applied to protect fish from any works in and around water during spawning, migration and other critical life history stages. Construction timing windows are based on site specific criteria such as type of fish species present, thermal regime and fish spawning times (spring or fall). General restricted in-water work timing windows established by DFO are • Fall Spawning Period – October 1st to May 31st • Spring Spawning Period – May 1st to July 15th Maintain extra erosion and sediment control materials on site (e.g., heavy duty	data will allow for site-specific loading calculations to determine watercourse assimilation capacity. The findings of the monitoring program will be reported back to MOE following the completion of dewatering activities for the entire Project. Monitor erosion and sedimentation of receiving watercourse before and during dewatering events, including cross-sections, bank erosion pins and bed material. Contingency Measures: • Control rate and timing of water pumping; pump from deep wells to infiltration galleries adjacent to water bodies. Residual Effects: With adherence to the 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to the water feature or surrounding 30m of land.

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			silt fencing, straw bales). Maintain sediment and erosion control measures in place until disturbed areas have been stabilized (i.e., re-vegetated). Schedule grading within 30 m of watercourses to avoid times of high runoff volumes. Temporarily suspending work if excessive flows of sediment discharges occur until mitigation measures are in place. Direct discharged water to an appropriately sized energy dissipating outlet device to prevent erosion at the point of discharge. Pass groundwater from dewatering activities (if required) through a sediment filtration system prior to being discharged to a watercourse. Control soil / water contamination through best management practices.	
		5. Changes in surface water drainage patterns.	5. Minimize changes in land contours and natural drainage; maintain timing and quantity of flows. Any grading of lands adjacent to natural features should match existing grades at the identified set-back, or buffer from the features.	5. No additional monitoring or contingency is prescribed as water features are outside of 30m setback. In addition, water features within 120m of the project location are already treated as part of significant woodland, wetland, valleyland and wildlife habitat such that mitigation, monitoring and contingency plans are prescribed for those features in the Natural Heritage Assessment prepared for the East

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
				Durham Wind Energy Centre (LGL, 2012). Residual Effects: With adherence to the 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to the water feature or surrounding 30m of land.
		6. Degradation of fish habitat as a result of reduced water quality (e.g. increased erosion, introduction of sediments and associated contaminants and/or nutrients to water body).	6. As no construction is proposed within 30m of a watercourse, no degradation to fish habitat is anticipated. No additional mitigation is prescribed beyond what is identified for dewatering activities (if necessary). Fish spawning timing windows for construction activities (other than dewatering) do not apply due to distance from water bodies.	6. No additional monitoring or contingency is prescribed beyond what is identified for dewatering activities (if necessary) as water features are outside of 30m setback. Residual Effects: With adherence to the 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to fish habitat.
Operation of Turbine and associated Access Roads and Underground Collection (where underground collection coincides with access roads)				
W22	80m from	1. Soil / water contamination by	1. Control soil / water contamination	1. Conduct regular site inspections and

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
	Turbine 7	oils, gasoline, grease and other materials (e.g., turbine lubricant oil from maintenance vehicles) resulting from turbine operation and maintenance.	through Best Management Practices. Ensure machinery arrives on site in a clean, washed condition and is maintained free of fluid leaks. Develop a spill response plan outlining steps to contain any spills during maintenance activities to avoid contamination of water body features. Train staff on associated procedures and maintain emergency spill kits on site. Dispose of any waste material from maintenance activities by authorized and approved off-site vendors. Site maintenance, vehicle washing and refuelling stations where contaminants are handled at least 30 m away from natural features including water bodies and significant woodlands, wetlands, and wildlife habitat. Implement vehicle and equipment cleaning procedures and practices to minimize or eliminate the discharge of pollutants from vehicle /equipment cleaning operations to watercourses or natural areas. Store any stockpiled materials away from natural features to prevent deleterious substances from inadvertently	monitoring of turbines by a designated on-site Environmental Monitor(s). Contingency Measures: Notify MOE's Spills Action Centre of any spills. Assess and remediate affected soils and water. In the event that a spill occurs, the details of the spill will be reported back to MOE, including a description of any assessment and remediation undertaken. Residual Effects: With a minimum 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to the water feature or surrounding 30m of land.
W25	71m from Turbine 8			
W36	57m from Turbine 8			
W18	57m from Turbine 10			
W43	45m from Turbine 14			
W6	79m from access road & electrical collection to Turbine 13			
W46	86m from access road & electrical collection to Turbine 13			
W49	33m from access road & electrical collection to Turbine 17			

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			discharging to the environment.	
		2. Changes to surface water drainage patterns resulting from turbine and access road construction causing change in overland drainage.	2. Minimize land contour changes. No watercourses within 30m of turbines and associated underground collection and access roads; therefore, impacts/mitigation/ monitoring will occur as part of the prescriptions for the significant natural features as identified in the Natural Heritage Assessment prepared for the East Durham Wind Energy Centre (LGL, 2012).	2. No additional monitoring of contingency measures proposed beyond what is prescribed in the Natural Heritage Assessment prepared for the East Durham Wind Energy Centre (LGL, 2012). Residual Effects: With a minimum 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to the water feature or surrounding 30m of land.
		3. Increase in impervious surfaces from presence of turbine foundation and access roads, resulting in increased water temperatures, increased surface runoff and stream peak flows, and reduced infiltration, base flows and upwelling.	3. A minimum setback of 30m is adhered to for all water bodies. Control quantity and quality of stormwater discharge using best management practices, and implement infiltration techniques to the extent possible (e.g. use of a permeable surface for access roads). Direct runoff from the constructed impervious surfaces to ground surface to prevent any decrease in infiltration and recharge.	3. No additional monitoring or contingency measures required beyond those stated above. Residual Effects: With a minimum 30m setback and effective implementation of the prescribed mitigation, no residual effects are anticipated to the water feature or surrounding 30m of land.
Construction/Decommissioning of Underground/Overhead Electrical Collection Lines (not associated with turbines or access roads) All proposed water body crossings for installation of electrical collection line will be installed through the use of directional drilling within road right of way, with the exception of the Saugeen River crossing (W5). At W5 construction methods include the option of attaching electrical collection to the existing bridge structure, or installation of an overhead line to span the watercourse. No in water works are proposed. All electrical collection addressed in this section is				

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
proposed within the existing maintained road right-of-way. W2, W5, W6, W9, W11, W16, W28, and W17 have existing road crossings where electrical collection lines are proposed, such that the distance to project component indicated below is 0m. W15 is 5m from the construction disturbance area of the underground electrical collection line proposed along County Road 4. The proponent has committed to installing the underground collection on the south side of the County Road 4 right-of-way to increase the setback to the feature to >5m. W21 is within 34m of the underground electrical collection line proposed along Concession 4 Road. W26 is within 112m of the underground electrical collection line proposed along County Road 4.				
W2 W5 W6 W9 W11 W16 W28 W17	0m	1. Increased erosion, sedimentation and turbidity from clearing and grubbing on adjacent lands for construction of electrical collection lines where a 30m setback from water bodies is not maintained and collection line is not installed through directional drilling. Increased nutrient and/or contaminant inputs to water bodies as a result of overland transport of sediment-laden runoff from the construction area.	1. Develop and implement an Erosion and Sediment Control Plan before commencement of construction as per Ontario Provincial Standard Specifications (OPSD 219.130). Utilize erosion blankets, erosion control fencing, straw bales, siltation bags, etc. For construction activities within 30 m of a water body, to mitigate potential excessive erosion and sedimentation. Additional erosion and sediment control materials to be kept on hand, (i.e., heavy duty silt fencing, straw bales). Maintain all sediment and erosion control measures until disturbed areas have been replanted and stabilized. Schedule grading to avoid times of high runoff volumes (spring and fall), wherever possible. Temporarily suspend work if excessive flow of sediment discharge occurs until additional mitigation measures are in place.	1. Monitoring: No additional monitoring or contingency is prescribed where water features are outside of 30m setback. Where water bodies are within 30m of electrical collection line to be installed through open trench, monitor on-site conditions (i.e., erosion and sediment control, spills, flooding, etc.) where construction occurs within 30 m of a feature on the following basis: • Weekly during active construction periods; • Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); • Daily during extended rain or snowmelt periods; • Monthly during inactive construction periods, where the site is left alone for 30 days or longer. In the event that excessive discharge of sediment occurs, the details of the event will be reported back to MOE, including a
W15	5m			
W21	34m			
W26	112m			

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			Re-vegetate disturbed areas to pre-construction conditions as soon as possible after construction activities are complete using species native to Ontario in naturally vegetated areas.	description of any assessment and remediation undertaken. Contingency Measures: Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place. Water samples will be analyzed for general chemistry (e.g., temperature, pH, dissolved oxygen, and conductivity), suspended solids, turbidity, nutrients and total metals (e.g., copper, iron, zinc and aluminum) during and after construction. Residual Effects: With effective implementation of the Erosion and Sediment Control Plan and construction monitoring no residual effects are anticipated.
		2. Degradation of fish habitat as a result of reduced water quality (e.g. increased erosion, introduction of sediments and associated contaminants and/or nutrients to water body) where electrical collection line is not installed through directional drilling.	2. Where works are not proposed within 30m of a water body no impacts to fish habitat are anticipated. Where works are proposed within 30m of a water body that functions as fish habitat, periods of habitat use should be avoided to the extent possible. Construction timing windows are based on site specific criteria such as type of fish species present, thermal regime and fish spawning times (spring or fall) and are applied to protect fish from any works in and around water during	2. Where works are not proposed within 30m of a water body that provides fish habitat no monitoring is required above and beyond what is prescribed for erosion and sedimentation control. Monitoring: Monitor fish habitat throughout duration construction to identify any minor or major disturbances caused by construction activities. In the event that excessive discharge of sediment occurs, the details of the event

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			spawning, migration and other critical life history stages. General restricted in-water work timing windows established by DFO are: • Fall Spawning Period – October 1st to May 31st • Spring Spawning Period – May 1st to July 15th Timing windows specific to the watercourses within the study area will be determined through consultation with SVCA.	will be reported back to MOE, including a description of any assessment and remediation undertaken. Document changes to aquatic habitat as a result of construction activities and obtain photographic documentation. Contingency Measures: Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place. Mitigate or compensate for any harmful alteration, disruption or destruction (HADD) of fish habitat according to Department of Fisheries and Oceans Canada (DFO) authorization and in consultation with SVCA and MNR. Residual Effects: Through effective implementation of prescribed mitigation, residual effects are avoided.
		3. Damage to riparian vegetation within 30m of a water body while operating construction equipment.	3. For roadside collection line routes, vegetation removal (if any) will be kept to a minimum and will be limited to within the existing maintained road right-of-way. Where construction is to occur within 30 m of natural features, install and maintain protective fencing to clearly define the construction area and prevent	3. Monitoring: Undertake monthly site inspections to ensure that only specified trees are removed, protective fencing is intact and that there is no damage caused to the remaining trees during construction. Contingency Measures: • In the event that trees are damaged during construction, damaged trees should be pruned through

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			accidental damage to vegetation. Trees at risk of being damaged during construction should be pruned through implementation of proper arboricultural techniques. Where excavation for construction of access roads or collection lines is conducted within the rooting zone of trees (e.g., within 5 m of the dripline), proper root pruning measures should be implemented to protect tree roots.	implementation of proper arboricultural techniques, under supervision of an Arborist or Forester. • Consultation with MNR to determine additional contingency measures if necessary. Residual Effects: Through installation of cable within existing road right of way and effective implementation of prescribed mitigation, no residual effects are anticipated to the water features or surrounding 30m of land.
		4. Increased erosion and sedimentation resulting from directional drilling activities.	4. Conduct all drilling by licensed drillers in accordance with Regulation 903 under Ontario Water Resources Act, R.S.O. 1990. Set back drill entry and exit pits at least 30 m wherever feasible from natural features (i.e., woodlands, wetlands) or water bodies. Develop and implement an Erosion and Sediment Control Plan before commencement of construction as per Ontario Provincial Standard Specifications (OPSD 219.130). Maintain all sediment and erosion control measures around entry and exit pits until disturbed areas have been replanted and stabilized.	4. Monitoring: Monitoring of on-site conditions (i.e., erosion and sediment control measures) where construction occurs within 30 m of a water body on the following basis: • Weekly during active construction periods; • Prior to, during and post forecasted large rainfall events (>20 millimetres in 24 hours) or significant snowmelt events (i.e., spring freshet); • Daily during extended rain or snowmelt periods; • Monthly during inactive construction periods, where the site is left alone for 30 days or longer. In the event that excessive discharge of sediment occurs, the details of the event will be reported back to MOE, including a description of any assessment and

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
			Install protective fencing around vegetation to prevent accidental damage. Re-vegetate disturbed areas to pre-construction conditions as soon as possible after construction activities are complete using species native to Ontario in naturally vegetated areas. Monitor natural features for signs of surface disturbance.	remediation undertaken. Pass groundwater from dewatering activities (if required) through a sediment filtration system prior to being discharged to a watercourse. Control soil / water contamination through best management practices. Contingency Measures: Suspend work if excessive flows of sediment discharges occur until additional mitigation measures are in place. Water samples will be analyzed for general chemistry (e.g., temperature, pH, dissolved oxygen, and conductivity), suspended solids, turbidity, nutrients and total metals (e.g., copper, iron, zinc and aluminum) during and after construction. Residual Effects: Through installation of cable within existing road right of way and effective implementation of prescribed mitigation, no residual effects are anticipated to the water features or surrounding 30m of land.
		5. Soil / water contamination by oils, gasoline, grease and other materials from spills during directional drilling. Fractures in substrate releasing	5. Conduct all drilling by licensed drillers in accordance with Regulation 903 under Ontario Water Resources Act, R.S.O. 1990. Develop and implement emergency spills plan outlining steps to contain any	5. Monitoring: Monitor directional drilling for the duration of such activities to ensure that “frac-out” or accidental intrusion does not occur, and if it does, to ensure that there are no effects on surface or groundwater.

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
		pressurized drilling fluids into watercourse and causing potential change to groundwater flow patterns due to directional drilling.	chemicals or to avoid contamination of adjacent features. • Collect drill cuttings as they are generated and place in a soil bin or bag for off-site disposal. • Ensure drill depth is at an appropriate depth below feature to reduce the risk of a "frac-out".	• Monitoring should occur daily for time of active drilling beneath watercourses. Construction monitors should be trained and experienced in detecting "frac-outs". • Contingency Measures: • In the event of a "frac-out", immediately stop all work, including the recycling of drilling mud / lubricant. • Monitor "frac-out" for 4 hours to determine if the drilling mud congeals. If drilling mud congeals, take no other action that would potentially suspend sediments in the water column. If drilling mud does not congeal, erect isolation/containment environment (underwater boom and curtain). • If the fracture becomes excessively large, engage a spill response team to contain and clean up excess drilling mud in the water. • If the spill affects an area that is vegetated, the area will be seeded and/or replanted using species similar to those in the adjacent area, or allowed to re-grow from existing vegetation. Revegetated areas will be monitored twice per year for two years subsequent to "frac-out" to confirm revegetation is successful. • Document post-cleanup conditions with photographs and prepare "frac-out" incident report describing time, 5place, actions taken to remediate "frac-out" and measures implemented to prevent recurrence. Provide incident report to

Feature ID	Distance to Project Component	Potential Negative Effects to the Feature	Mitigation Measures	Performance Objectives, Monitoring and Contingency Plans
				MNR and MOE forthwith. Residual Effects: Through installation of cable within existing road right of way and effective implementation of prescribed mitigation, no residual effects are anticipated to the water features or surrounding 30m of land.
n/a	n/a	Operation of Underground/Overhead Electrical Collection Lines No negative impacts to water bodies and 30m of surrounding land are anticipated through the operational phase of electrical collection lines.		

Note: no water bodies are located within 120m of the proposed transformer substation or construction laydown area.

4.8 SUMMARY OF ENVIRONMENTAL EFFECTS

Sensitive water features in the form of coldwater streams (e.g. Saugeen River and Durham Creek) and seepage areas exist within 120m of the project location. The project team has committed to minimize potential effects to sensitive water features by:

- Applying a minimum setback of 30m for construction of turbines, access roads and associated underground electrical collection;
- Restricting all electrical collection (outside of that associated with access roads) to areas within existing road right of ways;
- Installing underground electrical collection through directional drilling where seepage areas have been identified adjacent to the road right of way (a similar commitment was included as part of the NHA as these areas are within wetlands treated as significant); and,
- Attaching electrical collection lines to an existing bridge structure or use of overhead line where a crossing of the Saugeen River is proposed.

With the exception of electrical collection lines proposed within existing road right of ways a minimum setback of 30m from all water bodies has been applied to project components; and, for that reason impacts as they relate to Project construction, operation and decommissioning are of a scale that can be confidently addressed through mitigation.

4.9 CUMULATIVE EFFECTS

Considering the design features and mitigation measures proposed throughout this report, no residual effects are anticipated at any individual water feature described in this report. Cumulative effects, defined as those effects that remain after implementation of mitigation (residual effects) combined with environmental effects of past, present or future projects or activities, were also considered in the preparation of the WBR. This analysis of cumulative effects was prepared with the understanding that proposed infrastructure for the Project is to be installed on privately owned, leased land for the purpose of the project only; and, is slated for decommissioning and removal once the Project reaches its operational limit. At that time infrastructure will be removed, and the land restored and returned to its previous state. For this reason, cumulative effects as they related to succeeding development within the footprint of the proposed project components are not expected.

In determining cumulative effects, other known development in the area was considered. A web based search of proposed development in the County of Grey indicated that the two other wind energy projects (in Dundalk and Meaford) proposed within the County are not in close proximity to the Project subject to this report. Development applications for the County of Grey were reviewed to determine where additional development is planned within the area. The search revealed that application for development within the study area included Aggregate Extraction Applications and a Zoning Bylaw Amendment Application to allow for a gathering of motorcycle enthusiasts. Further details regarding these developments are described below.

4.9.1 Aggregate Extraction Applications

An application for sand and gravel extraction initiated by Cedarwell Excavating Ltd. for Lots 43-45, CON 1 S of Durham Rd, Glenelg Twp. on the same property where Turbines 16 and 17 are proposed. This site is referred to as the Priceville Pit. The report states that a minimum setback of the proposed extraction pit of 30m from the pond feature (W49) identified in the WBR will be applied and that no existing or proposed surface water is on site within the area to be extracted. In addition no diversion, storage or discharge of water on site is planned (AWS, 2011; Drysdale Aggregate Consulting, 2011). Given this information and review of the mitigation measures proposed for W49 as part of the aggregate extraction application, cumulative effects are anticipated to be avoided through implementation of the prescribed mitigation measures for the two projects.

A second Aggregate Extraction Application has been filed with the County in the area of Baptist Church Road and County Road 4, referred to as Durham Pit. The most easterly boundary of the proposed site is adjacent to Baptist Church Road where an underground electrical collection line is proposed for the current Project; however, a setback of 100m has been applied between the aggregate extraction pit and the highly sensitive water feature (W17) identified along the route of proposed collection. The Natural Environment Technical Report: Level II (AWS, 2007) submitted as part of the Aggregate Extraction Application states that "extraction [is] to remain above groundwater and licensed boundary setback distances from the stream course and .... it can be safely concluded that no negative impacts are anticipated from the proposed pit applications to Fish Habitat." Mitigation measures for the proposed aggregate pit include the commitment that in order to maintain groundwater percolation, no off site water pumping is to occur. A review of the available information for Durham Pit and the mitigation measures therein has led to the conclusion that overall cumulative effects will be avoided through effective implementation of mitigation for the two projects.

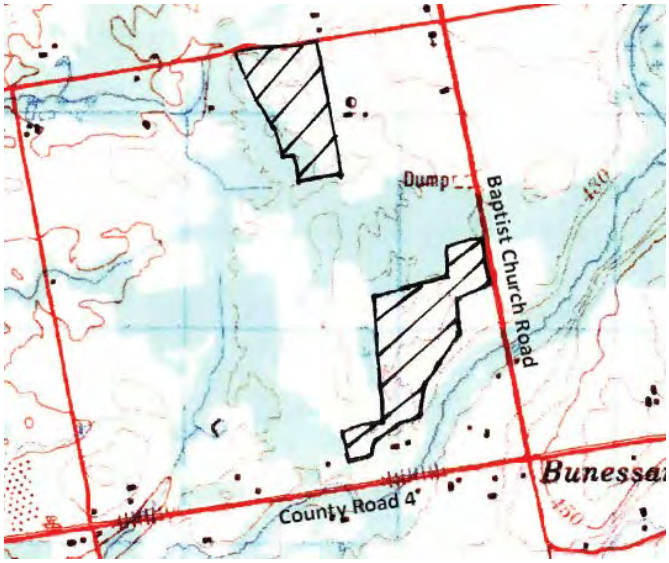


Figure 9. A view of the proposed Durham Pit extraction areas.

4.9.2 Zoning By-lay Amendment

An application to amend a zoning by-law has been put forward by the Association of Bikers for Awareness Training (ABATE) for a property described as Lot 45, Concession 3SDR in Glenelg Township. This property is located on Southline Road, 3 lots west of the property proposed to host Turbine 13 and adjacent to the underground electrical collection line proposed along Southline. The purpose of the application is to allow for 500-600 motorcycle enthusiasts associated with the above named group to gather over the period of one weekend once per year to attend a fundraising event. No permanent infrastructure is proposed as part of this application; and, given the duration and once yearly timing of the event, this is not anticipated to result in any cumulative effects to the water body identified as W9.

4.9.3 Cumulative Effects Related to Multiple Project Components

In the case where several project components are proposed for the current Project within 120m of the same water body potential for cumulative effects was also considered. A description of instances where multiple components were proposed for installation within 120m of the same watercourse is included below with the associated rationale of where cumulative effects might result.

Saugeen River (W5, W21 and W22)

The Saugeen River lies within 120m of three project components at W5, W21 and W22. A crossing of the river with an electrical collection line is proposed at W5 and this same line passes within 34m of the river at W21. The crossing of the Saugeen River at W5 is proposed to occur through attachment to the existing bridge structure or installation of an overhead line; such that no in-water works will occur. The water body at W21 is buffered by a white cedar coniferous forest and installation of the collection line is restricted to the existing road right of way. In the case of W22, it is located 80m from the edge of construction disturbance for a turbine. The distance between areas of the Saugeen that occur within 120m of proposed project components (from W5 to W22) is approximately 5km. Within the NHA process all 3 locations along the river were identified as within significant valleyland, and W5 and W22 also qualified as significant wildlife habitat; therefore additional mitigation measures as they apply to those features are prescribed within the NHA. Given the buffering capacity of the woodland features that exist as riparian vegetation, the location and distance of components from water features, the methods of installation proposed for project components, and the mitigation measures prescribed, no cumulative effects as a result of project activities are expected.

Unnamed Tributary of the Saugeen River (W15, W16, W26, W28 and W18)

Locations identified as W15, W16, W26 and W28 along this tributary are within 120m of the same underground electrical collection line along County Road 4. Where the tributary will be crossed is within existing road right of way at existing crossings and installation will entail directional drilling such that no in-water works are proposed. W15 this is a straightened channel along the north side of the road and if construction of the underground line were to occur on the north side of the road it would fall within 5m of the feature. The project team has committed to installing the underground collection line along the south side of the road in order to provide an additional setback and further protection (above what is proposed for erosion and sediment control) for this feature. In the case of W18 this location is 57m from a proposed turbine location. The area between the construction disturbance of the turbine and W18 is comprised of coniferous cultural woodland, a Norway spruce plantation and sugar maple deciduous forest. This area was also identified as a significant valleyland, therefore additional mitigation measures are prescribed within the NHA for this feature. W18 is located approximately 2km downstream of the areas in proximity to the underground electrical collection and additional inputs to the stream occur along this reach. Given the buffering capacity of the woodland features (in the case of W18), the distance of components from water features, the methods of installation proposed for project components, the structure of the watercourse, and effective implementation of mitigation measures as outlined in the previous section, no cumulative effects as a result of project activities are expected.

4.10 ENVIRONMENTAL EFFECTS MONITORING PLAN

The Environmental Effects Monitoring Plan is included as part of the Draft Design and Operations Report: East Durham Wind Energy Centre (Genivar, 2012b) and represents an adaptive management approach to water body protection whereby results of regular site inspection and monitoring will be used to determine how construction methods and measures outlined for environmental protection might be altered to best protect water bodies and other natural ecosystems. As no new crossings of water bodies or in-water works are proposed for the project the greatest potential for negative effects to water features relates to control of erosion through implementation of best management practices, and maintenance of water quality and quantity in streams impacted by dewatering and directional drilling activities. Prior to construction an erosion and sedimentation control plan will be established and an on-site inspection will be conducted to ensure best management practices are effectively employed. Active construction monitoring is prescribed for all locations where directional drilling or dewatering is utilized and where installation of project components is within 30m of a water body. Post construction monitoring will also be required to ensure that disturbed areas are restored and stabilized such that drainage patterns and runoff quality are restored to pre-construction condition. Components of the Environmental Effects Monitoring Plan relating to water bodies are contained within the mitigations measures and contingency plans outlined in Table 7.

4.11 REGULATORY FRAMEWORK

The purpose of this report is to address water bodies within the renewable energy framework in accordance with O.Reg. 350/09. In addition to this effort there are other regulation requirements to consider, including those outlined in the following subsections which may include associated permitting requirements. Site specific conditions will be addressed by the construction contractor during the permitting stage to determine what permits might be required and ensure conditions of project works are aligned with the regulatory framework that applies.

4.11.1 Conservation Authorities Act

Ontario Regulation 169/06 establishes Regulated Areas within the jurisdiction of the SVCA. Any proposed development, interference or alteration within these areas requires a permit from SVCA. Regulation limits include areas with hazard lands, watercourses, wetlands, valleys and steep slopes. Although no mapping was available for the study area showing Regulation Limits, SVCA staff did conduct a screening of the Project Location to identify several locations where construction may be proposed within a regulated area. In these cases SVCA staff has advised that a site specific inspection would be required to confirm whether a permit is required under the Conservation Authorities Regulation 169/09.

4.11.2 Fisheries Act

Fish habitat is afforded protection under the *Fisheries Act R.S.C., 1985, c. F-14*. General prohibitions as they relate to fish habitat protection and pollution prevention are outlined in sections 34 and 35 of the Act. Generally, the local conservation authority (SVCA) begins the review process to identify potential negative impacts related to fish and fish habitat as a result of the proposed project. The SVCA has a Level 2 Agreement with the Department of Fisheries and Oceans (DFO) such that the conservation authority can then authorize a Letter of Advice where mitigation has been determined to be an effective means for reducing impacts to fish habitat. Where this is not achievable, the DFO would then review the project as part of a HADD (harmful, alteration, disturbance and destruction of fish habitat) authorization.

4.11.3 Endangered Species Act

A species listed by the Committee on the Status of Species at Risk in Ontario (COSSARO) as an extirpated, endangered or threatened species, receives protection under section 9 of the *Endangered Species Act*, 2007 (ESA). If a species is listed as an endangered or threatened species, its habitat also receives protection under section 10 of the ESA. A permit is required where project works are identified to have an adverse effect on a protected species or its habitat. This process is completed in consultation with MNR and pertains to information collected for the Study Area and reported to MNR under separate cover.

4.11.4 The Migratory Birds Convention Act (MBCA)

The purpose of the MBCA is to protect and conserve migratory birds as both populations and individual birds, as well as their nests (MBCA 1994, c. 22, s. 4; 2005, c. 23, s. 3). This requires that work be conducted in a manner that does not interfere with the breeding activities of migratory birds.

As part of the permitting requirements for proposed development that has potential to impact natural features and associated wildlife, all of the above regulations must be considered in the context of the Project in addition to the REA regulation addressed through this report.

5.0 SUMMARY AND CONCLUSIONS

The Project Location occurs in an area of Southern Ontario dominated by natural features with interspersed agricultural land use. The intent of the project team was to minimize impacts to natural features as they relate to the Project, through identification of the most sensitive features early in the water assessment process in order to inform the Project design. This began in Records Review with the identification of potential water bodies and proceeded into field study whereby additional features were identified and assessed. Through field surveys it was determined that several sensitive coldwater streams and seepage areas occurred within the project area. In order to minimize impacts to the most sensitive of features information collected in the field was communicated to the Project Team on a regular basis and used to modify the Project Layout to achieve setbacks where possible. Areas where setbacks were not possible represent works proposed within existing road right of ways where crossing or alteration of the water feature has already occurred for the purpose of transportation and utilities. As a result, the Project Location represents a layout that avoids the need for new crossings of water bodies, proposes the construction of turbines and access roads outside of a 30m setback from water bodies, and uses construction design to mitigate impacts to sensitive coldwater streams. Through implementation of the proposed mitigation measures outlined in the report, it is anticipated that residual effects to water bodies will be avoided.

6.0 REFERENCES

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APPENDIX A
RECORDS REVIEW

APPENDIX B
SITE INVESTIGATION

APPENDIX C
FIELD NOTES

APPENDIX D
QUALIFICATIONS