

# **EAST DURHAM WIND ENERGY CENTRE**

## **WATER ASSESSMENT AND WATER BODY REPORT ONTARIO REGULATION 359/09**

*prepared for*

**GENIVAR Inc.**

*on behalf of*

**NEXTERA ENERGY CANADA, ULC**



environmental research associates

**OCTOBER 2012**

**LGL PROJECT TA8119**

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**OCTOBER 2012**

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## **ABBREVIATIONS AND DEFINITIONS**

**NHA** – East Durham Wind Energy Centre Natural Heritage Assessment (LGL, 2012)

**NHIC** – Natural Heritage Information Centre (now referred to as the Biodiversity Database) as maintained by the Ministry of Natural Resources, available online on <http://nhic.mnr.gov.on.ca/>.

**O. Reg. 359/09** – Ontario Regulation 359/09

**Project** – East Durham Wind Energy Centre

**Project Location** – part of a land and all or part of any building or structure in, or, over which a person is engaging in or proposed to engage in the project and includes air space. The location includes all components of the renewable energy facility such as wind turbines, lay down areas, access roads, crane assembly areas, walking paths, hydro lines/corridors, transformer stations, fencing, lighting, and construction yards.

**Study Area** – general location of the wind energy project, is bounded by Concession Road 6 to the north; Sideroad 50 and Artemesia-Glenelg Townline to the east; the West Grey-Southgate municipal boundary to the south (Stone Hill Road); and, Baseline to the west.

**WBR** –Water Body Report

## 1.0 INTRODUCTION

East Durham Wind, Inc. a wholly owned subsidiary of NextEra Energy Canada, ULC (NextEra), is proposing to construct a wind energy project in the Municipality of West Grey, Grey County, Ontario. The proposed project will be referred to as the East Durham Wind Energy Centre (the 'Project'). The Project will be owned and operated by East Durham Wind, Inc., a subsidiary of NextEra. NextEra's parent company is NextEra Energy Resources, LLC, a global leader in wind energy generation with a current operating portfolio of over 90 wind energy projects in North America.

This facility will convert wind energy into electricity to be fed into the Hydro One grid. The wind turbine technology proposed for this Project is the GE 1.6-100 model wind turbine. With a total maximum nameplate capacity of up to 23 MW, the Project is categorized as a Class 4 facility.

As the proponent, NextEra is required to follow the provincial policies and standards outlined in The Renewable Energy Approvals (REA) process as prescribed in *Ontario Regulation 359/09* (O. Reg. 359/09) under the *Environmental Protection Act* as they pertain to wind energy projects. LGL Limited has been retained as a sub-consultant to Genivar Inc. to conduct a Water Assessment (Sections 29, 30 and 31 of O.Reg. 359/09) and Water Body Report (Sections 39(2), and 40(2) of O.Reg. 359/09) for the Project.

Under the REA process the proponent is required to provide the following in order to address water features within the Study Area:

- A Water Assessment (Sections 29, 30 and 31 of O. Reg. 359/09) which includes:
  - A Records Review to determine whether the Project Location is:
    - in a water body;
    - within 120 metres of the average annual high water mark of a lake, other than a lake trout lake that is at or above development capacity,
    - within 300 metres of the average annual high water mark of a lake trout lake that is at or above development capacity,
    - within 120 metres of the average annual high water mark of a permanent or intermittent stream, or,
    - within 120 metres of a seepage area.
- A Water Body Report (WBR) is required where the proposed project location is within 120 m of a lake, intermittent or permanent stream or seepage area; or, within 300m of a lake trout lake. The purpose of the WBR is to address any potential negative environmental effects on water bodies and 30m of land surrounding them, and to propose mitigation measures to minimize impacts.

This document has been prepared in accordance with O. Reg. 359/09 as part of the larger REA submission to the Ministry of Environment for the East Durham Wind Energy Centre. Natural features, as defined in the Regulation, have been addressed under separate cover in the East Durham Wind Energy Centre Natural Heritage Assessment submitted to the Ministry of Natural Resources for review (LGL, 2012).

## 1.1 PROJECT DESCRIPTION

The East Durham Wind Energy Centre is a Class 4 Wind Facility, with a total nameplate capacity of up to 23 MW. Although the proponent has identified 16 potential locations for wind turbine siting, a total of up to 14 turbines are proposed for construction. The defined study area for the Project, as displayed in Figure 1, covers approximately 10,050 ha east of the Community of Durham and west of the Village of Priceville. Project components will be located within privately owned agricultural land with lease arrangements, or within municipal road right of ways.

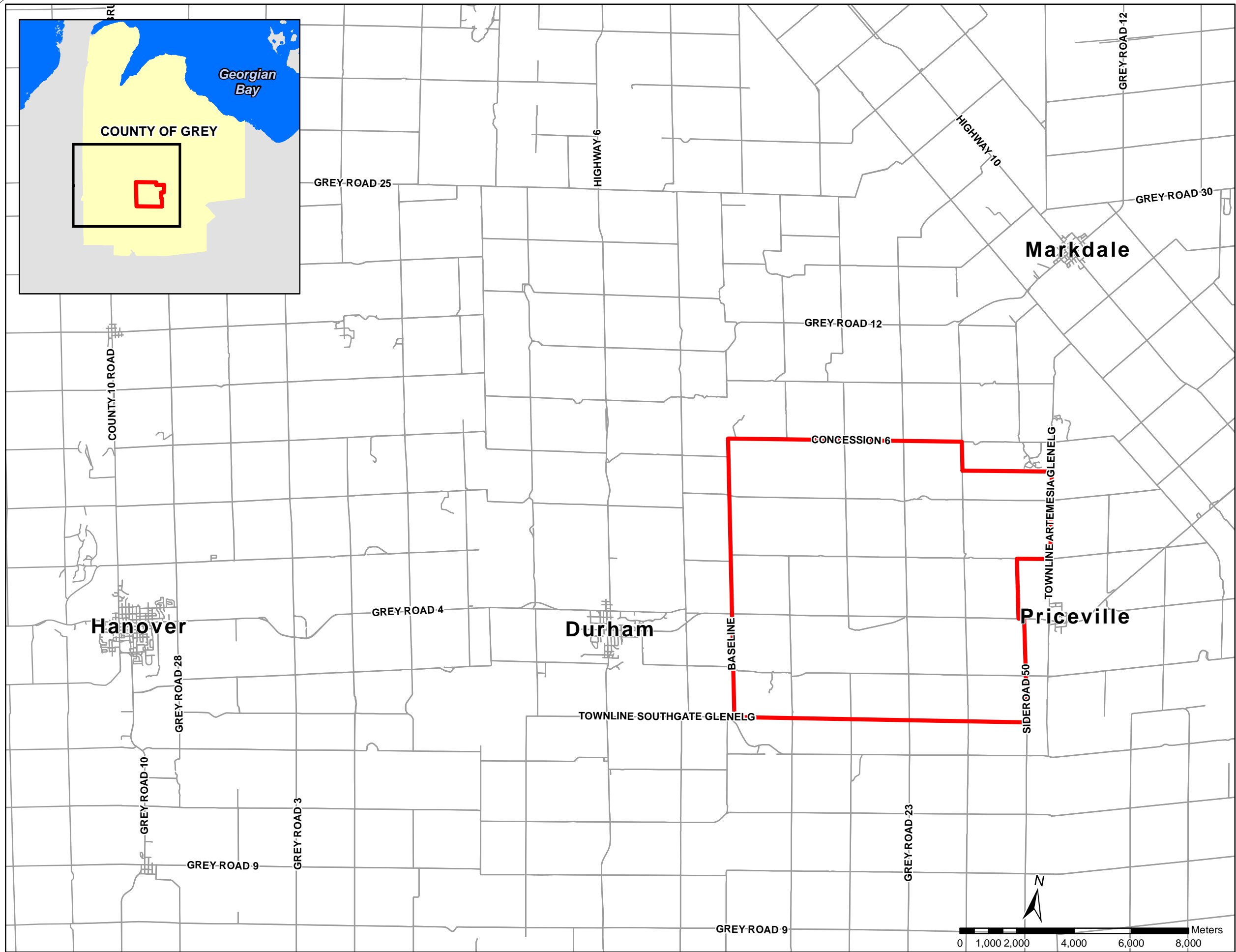
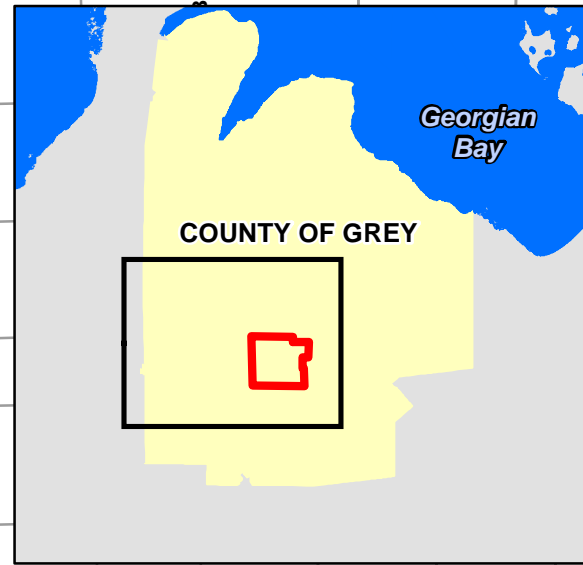
The study area for the Project is located within the Municipality of West Grey, the County of Grey. The study area is generally bounded by: Concession Road 6 to the north; Sideroad 40, Townline Artemesia-Glenelg and Sideroad 50 to the east; the West Grey-Southgate municipal boundary to the south; and, Baseline to the west (Figure 1). The study area is located south of the Canadian Shield and outside of the Greenbelt and Oak Ridges Moraine Plan Areas. The area is generally comprised of a mix of naturalized areas interspersed with active agriculture and aggregate extraction areas. The natural features identified within the study area include hedgerows, forest, and wetland units, as well as reaches of the Upper Saugeen River.

Major project components for the East Durham Wind Energy Centre are proposed as follows:

- Up to 16 GE model wind turbine (with 14 turbines that are 1.6-100 (1.62 MW), Turbine 6 as a 1.34-100 (1.34 MW) and Turbine 2 as a 1.39-100 (1.39 MW)) generator locations and pad mounted step-up transformers are proposed for permitting (a maximum of 14 turbines will ultimately be constructed);
- Turbine laydown and storage areas (including temporary staging areas, crane pads and turnaround areas surrounding each wind turbine);
- Construction laydown area (including staging areas for construction materials, construction trailers and associated facilities and a temporary electrical service line to provide power to the construction trailers);
- Approximately 28.3 km of 34.5 kV underground electrical collection lines and ancillary equipment (e.g., above ground electrical junction boxes) to connect the turbines to the proposed transformer substation;

- Pad mounted 690 V/ 34.5 kV step up transformers located at or near the base of each turbine;
- A transformer substation to connect to the Hydro One distribution system;
- Overhead 44 kV line to connect the transformer substation to the Hydro One electrical grid and as a possible means of crossing the Saugeen River with collection;
- Approximately 13.8 km of turbine access roads;
- An operations and maintenance building (located outside the project location (building for Conestogo Wind Energy Centre will be used); and,
- 2 meteorological towers.





**LEGEND**

Study Area (Dec 2011)

**East Durham  
Wind Energy Centre:  
Study Area**



Project	TA8119	Figure	1
Date	September, 2012	Prepared By:	KC
Scale	1:130,000	Verified By:	LKR

## 2.0 RECORDS REVIEW

As a first step in the preparation of the Water Assessment Report for a renewable energy project O. Reg. 359/09 requires that the proponent determine the location of water features through a Records Review process. Records Review for the Study Area was conducted between May 2011 and July 2012. As part of this process the MNR Renewable Energy Operations Team (REOT) provided The Midhurst District Water Assessment and Water Body Records Review for RE Projects (MNR, 2012) on July 17, 2012. Methods followed during the records review process and results obtained for the Study Area are described in the following subsections.

### 2.1 METHODS

During the Records Review process for a Water Assessment, Section 30 of O. Reg. 359/09 requires applicants to search records related to water features maintained by the following sources as they relate to the project study area:

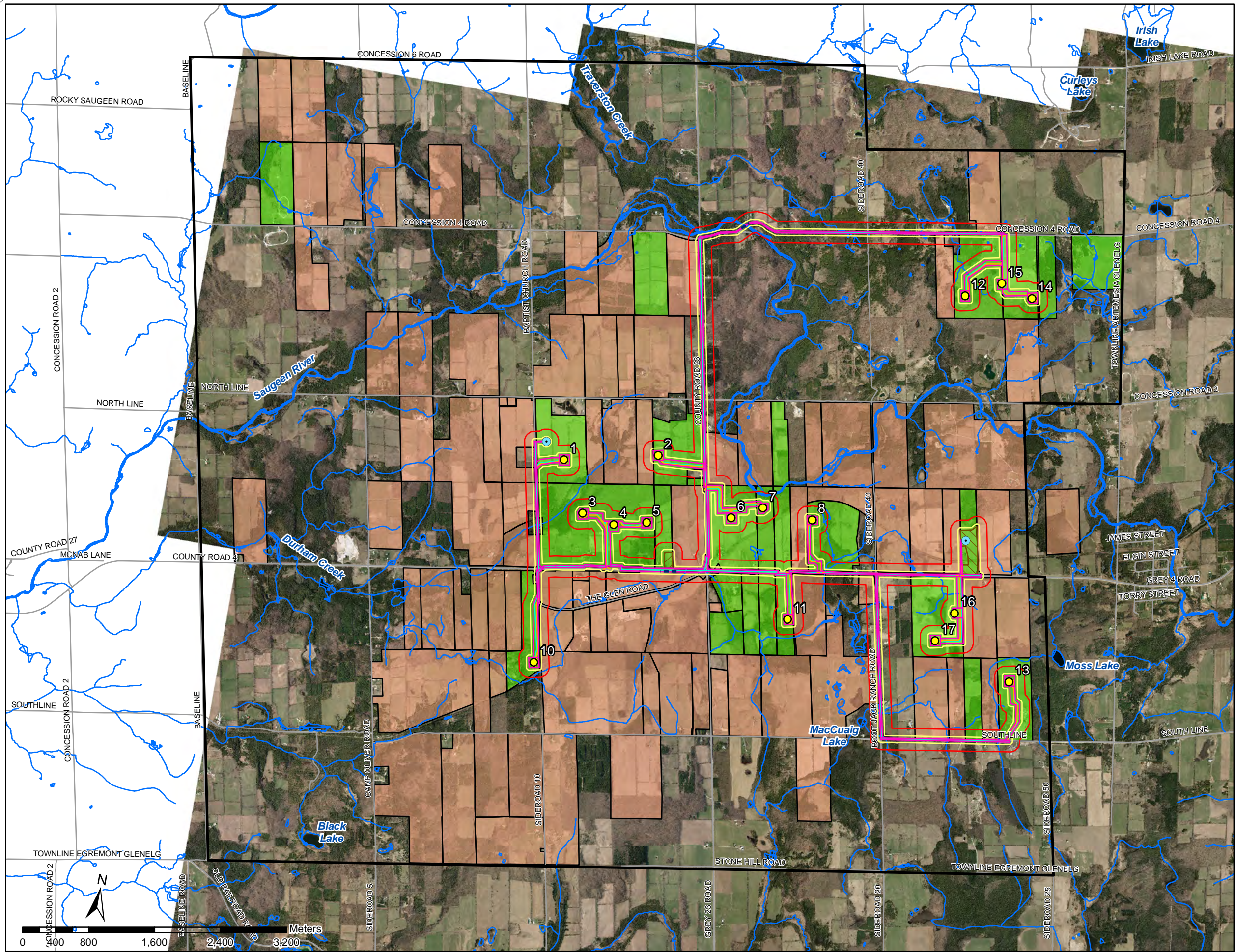
- the Ministry of Natural Resources
- the Crown in the right of Canada
- a conservation authority
- each local and upper-tier municipality
- the planning board
- the municipal planning authority
- the local roads board
- the Local Services Board
- the Niagara Escarpment Commission

The Study Area for the East Durham Wind Energy Centre, as defined in Figure 1, was used for the purpose of data collection during the Records Review process. During Records Review a Project Location was defined within the Study Area to represent “*a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project*” as outlined in O.Reg. 359/09. The Project Location was delineated by the edge of construction disturbance as displayed in Figure 2. Construction disturbance areas shown in Figure 2 (and subsequent mapping) represent areas where temporary disturbance is anticipated as a result of construction activities (e.g. laydown and storage areas, crane pad construction, etc.). Following construction, areas within the construction disturbance boundary that do not host permanent infrastructure are to be returned to pre-construction condition. The area outlined as construction disturbance represents the limits of the Project Location. Water features within 120m of the Project Location/Disturbance Area boundary were the focus of the results of Records Review presented in Section 2.2 and subsequent Site Investigations conducted for the East Durham Wind Energy Centre Water Assessment.

Records Review began with a review of background data available for the Study Area. The following resources were accessed for the purpose of background data collection in order to identify water features within the Study Area:

- Assessment Report: Saugeen Valley Source Protection Area, November 2011 (SSWPC, 2011)
- Sampling of the Fish Communities in the Saugeen Watershed, 2005-2006 (Marson et. al. 2009)
- MNR Natural Heritage Information Centre (Biodiversity Explorer) database;
- MNR Natural Resources and Values Information System (NRVIS);
- Land Information Ontario (LIO) data layers;
- MNR Wetland Evaluations (from Owen Sound Area Office);
- MNR ANSI Reports (from Owen Sound Area Office);
- County of Grey Official Plan;
- County of Grey interactive GIS mapping;
- Provincial Water Quality Network (PWQN) data;
- Saugeen Valley Conservation Area published reports;
- Provincial Parks website;
- The Crown Land Use Policy Atlas; and,
- The Ontario Renewable Energy Atlas.

As well, the organizations listed in Table 1 were consulted for additional data that was available for the project study area. Some of the information that appears in Table 1 references requests that were made for the purpose of the NHA as Records Review for the Water Assessment and NHA were conducted in tandem.



### LEGEND

**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)
- Watercourse (LIO, 2012-06-19)
- Waterbody (LIO, 2012-06-19)
- Parcel Boundary

**Property Access**

- Access Provided
- Access Denied

## Project Location, Property Access & Key Map



Project	TA8119	Figure	2
Date	Dec, 2012	Prepared By:	KC
Scale	1:45,000	Verified By:	LKR

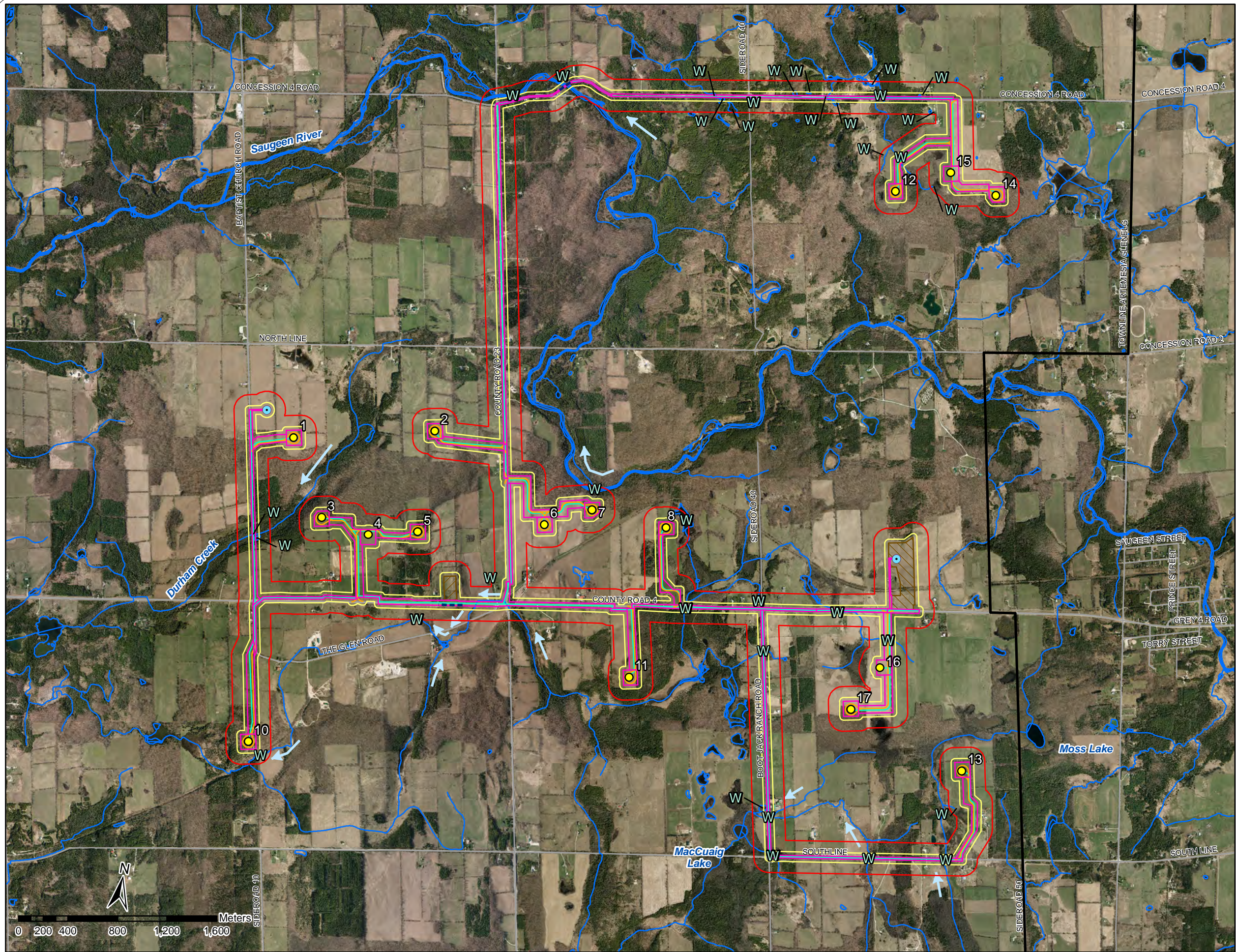
**Table 1: Summary of Agency Consultation**

Source	Records Requested	Records Received
Ministry of Natural Resources – Renewable Energy Operations Team	<p>September 20, 2011: a request for information within the study area was sent to the Renewable Energy Operations Team (REOT)</p> <p>May 4, 2012: MNR REOT was notified that a change to the study area (expansion in a north-east direction) was being proposed by the proponent and a request for information within the revised study area was initiated.</p>	<p>October 4, 2011: MNR REOT provided information on parks and conservation reserves, wetlands, woodlands, valleylands, ANSIs, and significant wildlife habitat within the original project study area (smaller area than what is shown in Figure 1).</p> <p>June 12, 2012: MNR REOT provided information on parks and conservation reserves, wetlands, woodlands, valleylands, ANSIs, and significant wildlife habitat within the revised project study area (as displayed in Figure 1).</p> <p>July 17, 2012: MNR REOT provided The Midhurst District Water Assessment and Water Body Records Review for RE Projects.</p>
Ministry of Natural Resources – Owen Sound Area Office	<p>July 22, 2011: a request for background information pertaining to wetlands, fisheries inventories and other available data for natural features within the project study area was sent to the MNR area office.</p>	<p>July 28, 2012: a visit was made to the Owen Sound area office to make copies of wetland evaluations, the fisheries management plan as it pertains to the project study area; and, a dropped ANSI that had not yet been removed from NRVIS.</p>
Ministry of Environment	<p>June 21, 2012 - July 3, 2012: contact was made with the Southwestern office of the MOE (Ian Kerr, Manager, Technical Support Southwest Region and Dan Dobrin, Water Resources Supervisor) to determine if any additional data with respect to water quality was available for the study area.</p>	<p>July 3, 2012: Hugh Geurts (Surface Water Specialist) checked MOE records for available publications that might pertain to the Study Area; however, information was limited to a study of Huron beaches (CURB program) and PWQMN stations. PWQMN data was obtained from the MOE website.</p>
Saugeen Valley Conservation Authority	<p>May 24, 2011: a request for natural heritage information relevant to the project study area, including species inventories, locations of valleylands, water bodies, woodlands, wetlands and known wildlife habitat was made to the Resource Information department.</p> <p>August 2, 2011: Follow up email to determine if SVCA had any GIS available for mapped flood and regulation lines.</p>	<p>May 27, 2011: SVCA provided information regarding ESAs in the County and suggested contacting MNR for information pertaining to fisheries and wetlands.</p> <p>August 8, 2011: SVCA confirmed that no digital data was available, a screening procedure by SVCA staff would be necessary once project components were determined to identify where components may be encroaching on regulation limits. Nathan Garland provided that service on July 12, 2012.</p>

Source	Records Requested	Records Received
County of Grey	<p>May 25, 2011: After review of the Official Plan the County was contacted to determine if any additional information was available with regard to water bodies and natural heritage information.</p> <p>August 15, 2012: Contacted Mr. Taylor for information regarding the percent woodland cover established for the area.</p>	<p>May 27, 2011: Scott Taylor confirmed that the Official plan was the only mapping of features available through the County and also informed LGL that the OPA80 amendment to the Official Plan had been passed.</p> <p>August 15, 2012: Mr. Taylor declared a conflict on the file based on the revised study area and referred LGL to Sarah Morrison (intermediate Planner).</p> <p>August 21, 2012: Ms. Morrison confirmed by phone that the County did not have information on woodland cover for the area.</p>
Municipality of West Grey	<p>May 24, 2011: Contacted the Municipality to determine whether the municipality had completed its own Official Plan.</p> <p>August 15, 2012: Contacted the Municipality for information regarding the percent woodland cover established for the area.</p>	<p>May 24, 2011: The Municipality confirmed that its Official Plan only relates to the urban centres of the Town of Durham and Village of Neustadt, and that the rural areas of West Grey are governed by the County of Grey Official Plan.</p> <p>August 15, 2012: Mr. Turner confirmed by email that the Municipality did not have information on woodland cover for the area.</p>

Details including dates and times of contact, as well as specific contact information for those agencies consulted during Records Review and throughout the NHA for the East Durham Wind Energy Centre are included in Appendix A. Those agencies whose records the proponent is obligated to search (as outlined in Section 30 of O. Reg. 359/09) only appear in Appendix A if they were found to apply to the project study area; for example, because the Project is not located within the planning area of the Niagara Escarpment Commission, that agency was not contacted.

Water features identified through the records review process are displayed in Figure 3. Additional information obtained for water bodies is further described in the following subsection.



**LEGEND**

- Water Feature
- 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)
- Watercourse (LIO, 2012-06-19)
- Waterbody (LIO, 2012-06-19)

**Records Review:  
Water Features**



Project	TA8119	Figure	3
Date	Dec, 2012	Prepared By:	KC
Scale	1:30,000	Verified By:	LKR