NIAGARA REGION WIND FARM
PROJECT SUMMARY REPORT

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Prepared for:

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Executive Summary

Niagara Region Wind Corporation (NRWC) is proposing to develop, construct, and operate the 230 Megawatt (MW) Niagara Region Wind Farm (the Project) within the Townships of West Lincoln and Wainfleet and the Town of Lincoln within the Niagara Region and within Haldimand County in Southern Ontario, in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province. Project infrastructure such as collector lines and transmission lines will be sited along the boundaries of the Township of Pelham and Town of Grimsby, but will be sited outside of these municipalities on the opposite side of the road.

NRWC has retained Stantec Consulting Ltd. (Stantec) to prepare the REA application in accordance with Ontario Regulation 359/09 (O. Reg. 359/09). According to subsection 6(3) of O. Reg. 359/09, the proposed Project is classified as a Class 4 Wind Facility.

This Project Summary Report provides a summary of the proposed Project components and information contained in the various REA documents. A draft version of this report was prepared in November 2012 in accordance with Section 17(1)(3) of O. Reg. 359/09 to summarize each document made available to the public and aboriginal communities at least 60 days before the Project's final Public Meeting. This report includes an outline of the following reports, as presented in **Section 3.0**:

- Project Description Report;
- Construction Plan Report;
- Design and Operations Report
- Decommissioning Plan Report;
- Wind Turbine Specifications Report;
- Natural Heritage Assessment and Environmental Impact Study;
- Water Body and Water Assessment Report;
- Stage 1 Archaeological Assessment;
- Stage 2 Archaeological Assessment;
- Protected Properties Assessment;
- Heritage Assessment; and,
- Consultation Report.

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1.0 Introduction

The purpose of this Project Summary Report is to summarize the proposed Project components and information contained in each Renewable Energy Approval (REA) document prepared for the Niagara Region Wind Farm included as part of the REA application. Specifically, this report is intended to:

a) provide an overview of the contents and findings of each of the documents in accordance with Section 17(1)(3) of O. Reg. 359/09; and,

b) update the draft Project Summary Report (Stantec, November 2012) based on the final REA documents.

1.1 PROJECT OVERVIEW

Niagara Region Wind Corporation (NRWC) is proposing to develop, construct, and operate the 230 Megawatt (MW) Niagara Region Wind Farm (the Project) within the Townships of West Lincoln and Wainfleet and the Town of Lincoln within the Niagara Region and within Haldimand County in Southern Ontario, in response to the Government of Ontario's initiative to promote the development of renewable electricity in the province. The Project Study Area is shown in **Appendix A**.

The basic components of the Project include 77 wind turbine generators (80 potential locations identified) each with a rated capacity ranging from approximately 2.3 MW to 3.0 MW for a maximum installed nameplate capacity of 230 MW. An overhead and/or underground collection system connects each turbine to one of two transformer substations along a series of 34.5 kilovolt (kV) lines. Turbines are grouped into nine collector circuits that bring power (and data via fibre optic lines) to one of the transformer substations. Voltage is stepped up from 34.5kV to 115kV at each transformer substation by means of a 100 MVA base rated transformer with two stages of cooling (via fans). A 115kV transmission line transports power from each of the two transformer substations north to the tap-in location where the Project is connected to the Hydro One Networks Inc. (HONI) owned transmission line, south of the Queen Elizabeth Way (QEW) in the Town of Lincoln. Power generated from this Project will be conveyed along the existing HONI transmission line to the Beach Transformer Station in Hamilton.

Alternate transmission and collector lines routes have been identified and assessed to provide options during detailed design, the final selection of which route to follow will be confirmed following the consultation process with local distribution companies, agency review and detailed design.

Other Project components include access roads, junction boxes (or pad-mounted disconnect switches) and associated culverts at swales and waterbody crossings. Temporary components during construction may include temporary laydown areas (for storage and staging areas at each turbine location), crane pads or mats, staging areas along access roads, delivery truck

turnaround areas, central construction laydown areas and crane paths. All project components are illustrated in **Appendix A, Figures 2.1 to 2.58**.

NRWC has retained Stantec Consulting Ltd. (Stantec) to prepare the REA application in accordance with Ontario Regulation 359/09 (O. Reg. 359/09). According to subsection 6(3) of O. Reg. 359/09, the proposed Project is classified as a Class 4 Wind Facility.

1.2 PROJECT LOCATION

In accordance with O. Reg. 359/09, the "Project Location" includes all land and buildings/structures associated with the Project and any air space in which the Project will occupy. This includes structures such as turbines, access roads and power lines as well as any temporary work areas (the 'constructible area' for the Project) which are required to be utilized during the construction of the Project.

The Project site plan which depicts the Project Location during operation is provided in **Appendix A** (**Figure 1**). Detailed site plans, including natural and cultural heritage features, are also provided in **Appendix A** (**Figures 2.1** to **2.58**).

The "Project Study Area" was established to scope the siting of the proposed wind turbines, collector lines, access roads and temporary work areas. Similarly, the "Interconnector Study Area" was established to scope the location of the proposed 115kV transmission line, transformer substations and tap-in location. These two terms are intended to assist with background data collection and consultation, however have no formal definition or application under O. Reg. 359/09. **Appendix A** identifies both Study Areas, which include portions of the Townships of West Lincoln and Wainfleet and the Towns of Grimsby and Lincoln within the Niagara Region and within Haldimand County in Southern Ontario. Project infrastructure such as collector lines and transmission lines will be sited along the boundaries of the Township of Pelham and Town of Grimsby, but will be sited outside of these municipalities on the opposite side of the road.

For the purposes of the REA reports, the "Zone of Investigation" includes all land, air and water within 120 metres of the "Project Location" where site investigations are required and were completed in accordance with O. Reg. 359/09.

1.3 REPORT REQUIREMENTS

This Project Summary Report provides a summary of each REA report included as part of the REA application.

This report includes a summary of the following reports:

- Project Description Report;
- Construction Plan Report;

- Design and Operations Report;
- Decommissioning Plan Report;
- Wind Turbine Specifications Report;
- Natural Heritage Assessment and Environmental Impact Study Report;
- Water Assessment and Water Body Report
- Heritage Assessment Report;
- Protected Properties Assessment Report;
- Stage 1 Archaeological Assessment Report;
- Stage 2 Archaeological Assessment Report; and,
- Consultation Report.

2.0 General Information

This section of the report provides an overview of the Project, project components, land uses and project schedule.

2.1 KEY FACTS

Key facts of the Project are provided in **Table 2.1** below.

Table 2.1: Key Project Facts

Fact	Project Info	
Name of the Project	Niagara Region Wind Farm	
Proponent	Niagara Region Wind Corporation	
Project Location	Project is located within the Townships of West Lincoln and Wainfleet and the Town of Lincoln within the Niagara Region and within Haldimand County in Southern Ontario. See **Appendix A**.	
Land Ownership	Project components will be primarily on privately owned lands and within municipal right of ways through agreements with local landowners and municipalities. A section of access road and collector line is also on land owned by the Niagara Peninsula Conservation Authority. Lease agreements are in place for all lands hosting wind turbines, construction laydown areas and the transformer substations. Negotiations are still ongoing between NRWC and some municipalities and the NPCA for lease agreements to secure the location of some ancillary uses including access roads and collector line. All lease and road-use agreements will be in place prior to the start of construction.	
Energy Sources	Wind energy – no supplementary fuel sources will be used	
Class of Facility	Class 4 Wind Facility	
Nameplate Capacity	230 MW	
Contact Information	Contact information for the proponent and consultant is as follows:	
	Darren Croghan Niagara Region Wind Corporation Vice President, Project Development 277 Lakeshore Road East, Suite 211 Oakville, ON L6J 6J3	J.A. (Al) Leggett, BA, MCIP, RPP Stantec Consulting Ltd. Project Manager 300-675 Cochrane Drive Markham, ON L3R 0B8
	Project Website: www.nrwc.ca Project Email: info@nrwc.ca Project Telephone: 905-390-3306 or 1-855-720-2892 (toll free)	

2.2 PROJECT COMPONENTS

This section provides a description of the major equipment and infrastructure associated with operation of the Project including:

- Wind turbine generators;
- Electrical interconnection components, including:
  - Collector Lines;
  - Junction Boxes / Pad-mounted Disconnect Switches;
  - Fibre-optic cables;
  - Transformer Substations; and,
  - Transmission Line and Tap-in Location;
- Access roads;
- Operations and Maintenance Building;
- Meteorological Towers;
- Water Crossings; and,
- Temporary Work Areas.

The locations of these components are shown in **Figures 1** and **2.1 to 2.58** in **Appendix A**.

2.2.1 Wind Turbine Generators

The Project will include 77 ENERCON wind turbine generators (80 potential locations identified) each with a rated capacity ranging from approximately 2.3 MW to 3.0 MW with a maximum installed nameplate capacity of 230 MW.

The selected wind turbine models for the Project are the ENERCON E101 and either the ENERCON E82 or a de-rated ENERCON E101 to achieve the contract capacity of 230 MW. Specifications of the E101 and E82 turbines are summarized below in **Table 2.2** and provided in detail in the **Wind Turbine Specifications Report** provided under separate cover.

Both wind turbine models have been assessed with two hub height options (124m and 135m) in the REA application to provide operational flexibility. Final selection between the turbine models and hub heights will be determined during detailed design. The E101 turbine has higher sound emissions and a larger blade length than the E82. As a result, for the Technical Studies such as the **Natural Heritage Assessment / Environmental Impact Study**, **Water Body and Water Body Assessment Report**, **Stage 1 and 2 Archaeological Assessments**, **Protected Properties Assessment** and **Heritage Impact Assessment**, all turbines are assumed to be E101 turbines when defining the Project Location to account for the worst case scenario for feature setbacks and identification of potential negative impacts.

Some specific wind turbine model and hub height constraints have been identified through the Noise Assessment Report. Operational flexibility will not be provided for nine turbines which will have a hub height of 135m (T18, T36, T45, T46, T47, T53, T55, T60 and T74). Three of these nine turbines (T36, T46 and T53) will also be either E82 turbines or de-rated E101 turbines, the selection of which will be determined during detailed design on condition that the final selection meets the noise emission limits highlighted in the Noise Assessment Report. Additional information with respect to the sound power level for the ENERCON E101 and E82 turbines are provided in the **Noise Assessment Report** (**Appendix C** of the **Design and Operations Report** provided under separate cover).

Table 2.2: Basic Wind Turbine Specifications

Manufacturer	ENERCON	ENERCON
Model	E101	E82
Name plate capacity (MW)	3.0 MW	2.3 MW
Hub height above grade	124 m or 135 m	135m
Blade length	48.6m	38.8m
Rotor diameter	101 m	82m
Blade sweep area	8,012 m^2	5,281 m^2
Rotational Speed	Variable, 4 – 14.5 rpm	variable, 6 - 18 rpm
Noise Level	104.8 dBA	103.3 dBA
Frequency spectrum	50 Hz or 60 Hz	50 Hz or 60 Hz

2.2.2 Electrical Interconnection Components

Collector Lines

From the turbine switchgear, underground 34.5 kV collector lines carry the power to the municipal road allowances along the turbine access roads or other defined routes. Along the municipal road allowances, underground and/or overhead collector lines on new poles organized into several circuits will transport the power to one of the transformer substations.

Overhead lines will be installed on poles that will be designed to meet the requirements of the local distribution companies, and in some cases, the assets of the local distribution companies may share the poles with the project assets or be buried underground. Wood monopoles will be used where feasible, but some concrete or steel monopoles may be required to avoid guy wires spanning outside of municipal road allowances (to be confirmed during detailed design).

The monopoles carrying the collector lines will vary in height depending on the number of circuits installed. A minimum pole height of approximately 19 m and maximum pole height of approximately 25 m is expected with varied pole spacing up to 60 m (subject to detailed design).

Collector lines are proposed to be installed overhead or underground at two of the wetland crossings, specifically over the Welland River and Welland Feeder Canal (construction method

subject to confirmation during detailed design). All other collector lines on private properties will be installed underground, including where they are proposed to cross wetland or woodland features. Both installation options have been considered in the **Natural Heritage Assessment and Environmental Impact Study**. Details on the method of installation are provided in the **Construction Plan Report**.

Junction Boxes / Pad-Mounted Disconnect Switches

Where two or more collector lines connect and continue as one collector line, a junction box or pad-mounted disconnect switch will be installed. The unit is an enclosed metal box approximately 2m high, 3m long and 2m wide. The unit is safe to touch and locked to prevent unauthorized entry. The units are brought to site by truck and lowered onto cast-in place concrete pads. Collector lines are fed into the box from underground.

All junction boxes / pad-mounted disconnect switches are located within road right-of-ways along the same route as the collector lines, typically where an access road enters a municipal road.

Fibre Optic Cables

Fibre optic cables will be installed along similar routes as the collector and transmission lines to provide a communication connection for each turbine to monitor individual performance and control the turbine as required. These cables will be installed underground and/or overhead along the same alignments as the power collection lines, with the exception of some minor deviations.

Transformer Substations

There are two transformer substations (TS) located on private land each centralized in the north half and south half of the Project Study Area.

At each TS, voltage is stepped up from 34.5 kV to 115 kV via a main step-up transformer. These transformers will be located at the following UTM coordinates (see **Figures 2.39** and **Figure 2.47**):

- North Transformer (621937, 4761727)
- South Transformer (622837, 4754679)

These transformers will each be rated 100 MVA as a base rating, with two stages of cooling (via fan). The TS will each be enclosed with fencing and warning signage to alert the public. An area approximately 100 m x 100 m will be graded and laid with granular material. The electrical equipment within the substations will include the transformer, cooling fans and switchgear, which will be supported by concrete foundations, either cast-in place or pre-cast slabs.

The two power transformers will be mounted on concrete foundations. The north transformer will have a sound barrier on all four sides approximately 5 metres in height. The south transformer will have a sound barrier on the south and west sides approximately 5 metres in height. The foundations will have a secondary liquid containment storage area designed to capture the insulating fluid in the unlikely event of a leak. The liquid containment system is designed to hold all of the liquid from the transformers as well as any precipitation that may accumulate.

The transformer substations will be operated in accordance with all applicable codes and standards including the Canadian Electrical Code and the Ontario Electrical Safety Code.

Operation, monitoring and control of the transformer substation will be conducted 24-hours a day via a telecommunication system.

Transmission Line and Tap-in Location

To facilitate the Project's connection to the provincial grid, a new 115 kV transmission line approximately 44 km in length will be constructed as part of the Project. A preferred transmission line route has been identified in the REA, as well as some alternate transmission line routes where further consultation with municipalities and local distribution companies will help to select the most ideal route. The routes for the preferred and alternate transmission lines have all been assessed and are shown in **Appendix A**.

The poles of the transmission line will be approximately 23 m in height and vary in spacing from approximately 60m to 100m as required (subject to detailed design). Smaller spans or taller poles may be required (subject to detailed design), including in some areas where narrow rights of way, angles or unforeseen problems or unforeseen obstructions necessitate. Wood, steel or concrete monopoles will be used.

The transmission line will be installed overhead along municipal road right of ways, and either overhead or underground where it is proposed to cross the Welland River and associated wetland. Through the approval of a Development Permit from the Niagara Escarpment Commission, the transmission line will be buried within the municipal right of way along Mountainview Road where it crosses the Niagara Escarpment Plan Area. The transmission line will also continue underground to the tap-in location, and may be buried along other sections of the transmission line route as required or determined through detailed design (i.e. clearance beneath existing HONI transmission lines). Both underground and overhead options have been considered in the **Natural Heritage Assessment and Environmental Impact Study.** Details on the methods of installation are provided in the **Construction Plan Report**.

Underground sections of the transmission line would be installed in PVC conduits in a steel-reinforced concrete-encased ductbank with a cross-section approximately 2m x 2m. The ductbank would be installed at least 1m deep but potentially deeper when intersecting existing infrastructure or natural features (i.e., water crossings). Concrete cable chambers approximately

4m x 3m x 3m would be installed approximately every 750m along the underground transmission line route.

The transmission line will connect to the existing Hydro One Networks Inc. 115 kV transmission line (Q5G), which runs parallel to the south side of the QEW and intersects Mountainview Road in Lincoln. This connection occurs at the tap-in location, also known as the Interconnector Station and Point of Common Coupling. At this tap-in location, the Interconnector Station will receive the underground 115 kV transmission line and connect to the overhead HONI 115 kV transmission line. The tap-in location will also include the necessary equipment for power isolation, main circuit protection, communication with HONI and revenue metering. The tap-in location will include pad-mounted equipment on a graded surface surrounded by a chain link fence and accessed via a private access road with warning signage. The size of the station will be approximately 40m by 50m.

2.2.3 Access Roads

Existing provincial and municipal roads will be used to transport project-related components, equipment and personnel to the Project Study Area. The Project will be installed on private land and within municipal road right of ways. Access to these lands will be required for installation and operation of the project components including wind turbines and the transformer substations.

Existing agricultural laneways have been utilized for the routing of new or upgraded access roads, where possible. New access roads will be constructed as required to provide access to the individual turbine sites. During construction, these roads will be up to 15 m wide to be traversable by crawler cranes as crane paths. Along the roads will also be another temporary 5 m used for access road staging for a total width of 20m during construction. Access roads will be generally reduced after construction to a permanent width of approximately 6m but may vary in size or location based on landowner preference. Access roads will be constructed of gravel, native materials, and/or engineered fill, with the base of the access roads stabilized using cement/soil stabilizing agent. In some instances, a woven geotextile may also be utilized with a reduced granular material depth.

Access roads will require entrances off of municipal, county and provincial roads. Entrances will be approximately 15m wide during construction and reduced to 6m wide for the lifetime of the Project. The entrance additionally requires an obstruction-free area approximately 60m wide to facilitate the turning radius of the large components (i.e., blades). Detailed design will confirm whether the temporary relocation of existing hydro poles, sign posts or other obstructions will be required.

Turbine siting in some locations requires the use of unopened road allowances to access otherwise land-locked properties or properties where access is restricted due to existing natural features. Unopened road allowances are also proposed as a means to avoid disturbance to area residences during construction (i.e. cottage development along North Shore Drive in Wainfleet). In some cases, the unopened road allowances are proposed to be used during

construction only, whereas in other cases the unopened road allowances are proposed to be used for the lifetime of the project as they host access roads. Upgrades and maintenance of the access roads within these unopened road allowances will be the responsibility of NRWC during construction (where unopened road allowances are used for construction only) and during operation (where unopened road allowances are used for operation/maintenance), unless otherwise determined in the executed Road Use Agreements between NRWC and the affected municipalities.

2.2.4 Operations and Maintenance Building

A facility is required to provide warehouse and workshop spaces, administrative offices, telecommunications areas, outdoor and indoor equipment storage and security facilities, as required for operations and maintenance. An existing building in proximity to the Project will be used by ENERCON as the operations and maintenance building. However, no new facilities are required for this purpose.

2.2.5 Meteorological Towers

Meteorological (met) towers and Sonic Detection and Ranging devices (SODAR) are used to monitor environmental conditions such as wind speed, air pressure and temperature. These features help in the efficient planning and operation of wind farms.

A met tower is a latticed tower structure up to 135m tall (depending on selected turbine tower height), which hosts measuring devices along the outside of the tower to record environmental conditions (i.e. wind speed, wind direction) at different heights. The existing lattice met towers currently installed on private land across the Project Study Area will be used as permanent met towers to comply with the requirements of the Independent Electricity System Operator (IESO). No new met towers will be installed.

A SODAR device is a mobile trailer approximately 3 m high, 4 m wide and 4 m deep, depending on the model selected. The device emits a short sound pulse to measure the attributes of the wind. The sound pulse is changed by the motion and turbulence of the atmosphere and some sound is reflected back to the device. The changes are interpreted by the device to determine qualities such as wind speed, wind direction, and turbulent character. Approximately four SODAR units will be utilized throughout the Project Study Area on private land and outside of significant natural features. The exact locations of the SODAR units will vary as these mobile devices will be relocated at different times. The SODAR units are likely only to be used in the early years of operation.

The existing met towers and portable SODAR units are not part of the REA application and do not require approval under O. Reg. 359/09. This information has been provided for reference only.

2.2.6 Water Crossings

Access roads, including underground collector lines and fibre optic cables, will require crossing of permanent and intermittently flowing watercourses, as well as small surface drainage features (e.g., swales). To avoid flooding and to maintain pre-construction flow patterns, flow conveyance will be accommodated at these crossings through the installation of culverts beneath the proposed access roads, the size and location of which will be confirmed during detailed design. The proposed location of culverts at watercourse crossings are illustrated on **Figures 2.1** to **2.58** (**Appendix A)**, while the exact location of the swale culverts will be determined during detailed design and field fit on site during construction.

All regulatory watercourse crossings associated with access roads will require approval from the Niagara Peninsula Conservation Authority (NPCA) or Grand River Conservation Authority (GRCA) prior to construction. The design of these structures will account for the policies of these agencies, as well as potential impacts on fish and fish habitat. All temporary crossings would comply with the DFO's Ontario Operation Statement '*Temporary Stream Crossings*', where possible.

2.2.7 Temporary Work Areas

All temporary work areas are illustrated on **Figures 2.1** to **2.58** (**Appendix A**) as being within the constructible area for this Project. "Constructible Areas" have been identified surrounding the various Project components, which include temporary work areas, laydown/staging areas or areas within which some disturbance may occur during construction. No permanent structures are proposed within these areas, with the exception of the Project components noted above.

Turbine Laydown/Staging Area and Crane Pad

A temporary turbine laydown/staging area and crane pad will be located at the base of each turbine. The temporary turbine laydown/staging area will be approximately 100m x 120m and will be graded and laid with granular material. The temporary crane pad will be located within the turbine laydown/staging area but will be approximately 25 m x 60m laid with additional granular material to provide sufficient support to the crane during construction. Crane mats may also be used within the turbine laydown/staging area.

After construction both areas will be returned to their original land use at conditions that are either the same or better than original conditions.

Temporary Central Construction Laydown Areas

Two potential construction staging areas have been identified: (a) adjacent to the north transformer substation on Canborough Road (**Figure 2.39**) and (b) east of Turbine 31 on the north side of Vaughn Road (**Figure 2.28**). Both potential areas are centrally located in the Township of West Lincoln. These areas will be graded and laid with granular material for storage of various project components throughout the construction phase. A site trailer will be

located on one of these areas as well for the duration of the construction phase. These areas will be returned to their original land use after construction (agricultural) to conditions that are either the same or better than original condition.

Temporary Access Road Features

Temporary access road features include delivery truck turnaround areas, for-construction access roads and access road staging areas. Turnaround areas have been shown as access roads on the Site Plan (**Figures 2.1** to **2.58**) whereas the for-construction access roads and staging areas have been shown together as the "access road 20m construction area" on the Site Plan.

Turnaround areas are provided to allow large delivery trucks enough space to pull in and out of turbine laydown areas so as to avoid the unsafe practice of reversing out onto municipal roads. These turnarounds will be the same width as access roads and may be removed after construction.

Access road staging areas will host equipment, materials and construction vehicles during the construction of the access roads. These staging areas will be 5m wide immediately adjacent to the 15m wide for-construction access roads for a total disturbed area of 20m along the access roads during construction.

2.3 TIMING AND CONSTRUCTION PLANS

During the construction phase of the Project, NRWC will provide updates of construction activities to the County, Region and Townships to ensure they are aware of daily construction activities. **Table 2.3** provides an overview of key project milestones anticipated during the construction phase of the Project.

Table 2.2: Construction Activities – Projection and Schedule

Phase Details	Schedule
• Surveying	August 2013 – July 2014
• Delivery of construction materials, site preparation, construction of access roads and crane pads	September 2013 – September 2014
• Installation of wind turbine foundations	September 2013 – September 2014
• Wind turbine erection	November 2013 – December 2014
• Installation of electrical components	September 2013 –September 2014
• Reclamation of temporary work areas, final grading, topsoil replacement	June 2014 – December 2014
• Project Testing	July 2014 – December 2014
• Operation	December 2014

Note: Construction activities will take place during normal construction hours. When construction is anticipated to be required outside of normal construction hours, the timing will be discussed in advance with the County and/or Township. In the event changes are required to the proposed construction schedule, updated construction

Table 2.2: Construction Activities – Projection and Schedule

Phase Details	Schedule
schedules can be provided to the public through postings on the Project website (www.nrwc.ca). The construction schedule is based on current knowledge of process and timelines at the date of writing this report.	

3.0 Project Activities

A general overview of the activities during construction, operation, and decommissioning phases of the Project are provided in **Table 3.1**.

Table 3.1: Key Project Activities

Project Phase	Activities
Construction	**Turbine Sites**
	Delineation of temporary work areas , including vegetation protection and erosion control
	Completion of necessary site grading
	Access road construction and culvert installation
	Construction of turbine laydown/staging areas and central laydown areas
	Installation of turbine foundations
	Installation of crane pads or mats
	Turbine erection
	Installation of collector lines, usually parallel to access roads
	Reclamation of temporary work areas
	Site landscaping (final grading, topsoil replacement, etc.)
	Transformer Substations Sites
	Preparation of laydown area , including vegetation protection and erosion control
	Installation of transformer and other substation components and connection with grid
	Reclamation of temporary work areas
	Off-Site Activities
	Installation of collector and transmission lines in municipal road right of way
	Additional Activities
	Component transportation to Project Location
Operation	**Turbine Sites**
	Preventative maintenance
	Unplanned maintenance
	Meter calibrations
	Grounds keeping
	Substation Sites
	Preventative maintenance for substations
	Unplanned maintenance for substations
	Off-Site Activities
	Collector and transmission line maintenance
Decommissioning	**Turbine Sites**
	Removal of turbine and infrastructure
	Site grading (dependent upon new proposed use)
	Possible removal of access roads dependent upon agreement with property owner
	Possible excavation and removal of collector lines depending upon agreement with property owner
	Substation Sites
	Removal of substations
	Disconnection of transformer station from provincial grid
	Off-Site Activities
	Removal of collector and transmission lines in municipal right of way (remove wires and poles depending on agreement with municipality

4.0 Summary of REA Documents

The following sections provide a summary of each document that will be provided as part of the Project's REA application that will include comments and feedback from Aboriginal communities, municipalities, agencies and the public. Each document summarized below was prepared in accordance with O. Reg. 359/09, and in consideration of the MOE's *Technical Guide to Renewable Energy Approvals* (MOE, April 2012).

4.1 PROJECT DESCRIPTION REPORT

The Project Description Report provides an overview of the Project along with details regarding the type of energy, facilities, equipment, and technology to be used. This includes detailed descriptions of Project components such as the wind turbines, electrical components, access roads, water crossings, and temporary construction areas.

The activities to be engaged in, including an overall Project schedule along with the regulatory framework of the Project as well as the other permits and approvals that apply to the Project outside of the REA process are identified. It is anticipated that the wind farm would have a useful operating life of approximately 20 years prior to major component refurbishment or repowering.

A summarized description of the potential environmental effects during the construction, operation, and decommissioning phases of the Project is also included in the report.

4.2 CONSTRUCTION PLAN REPORT

The Construction Plan Report details the construction phase of the Project. This includes detailed descriptions of the construction and installation activities, the location, timing and duration of construction activities, the potential adverse effects as a result of constructing the Project, and the proposed mitigation and monitoring measures.

A description of the Project components along with a detailed description of the materials and construction equipment to be brought on site is provided. The process for constructing/installing facility infrastructure is also provided including any temporary uses of lands and waste management procedures.

4.3 DESIGN AND OPERATIONS REPORT

The Design and Operations Report provides a description of the design of the facility along with the operational/maintenance plans, the potential environmental effects of operating the facility, the environmental effects monitoring plan, and the communications and emergency response plan. A Site Plan that illustrates project components and natural features along with applicable setbacks to the features is included. In addition to the site plan, additional studies which are appended to the report related to the operation of the facility include:

- Noise Assessment Report

  - The Noise Assessment Report provides predicted noise levels that would be generated by the Project. The report compares the predicted noise levels to the appropriate guidelines demonstrating that sound produced by the Project will be within the acceptable limits established by the MOE at all noise receptors. This includes the noise contribution of the substations and wind turbines.

- Property Line Setback Assessment

  - The Property Line Setback Assessment summarizes the distance the Project turbines are from adjacent properties including private properties, municipal road rights-of-way, railways and easements. The assessment considers potential impacts of the Project turbines on land use for any properties within 124 m or 135 m of a turbine (hub height).

- Environmental Effects Monitoring Plan for Wildlife

  - An Environmental Effects Monitoring Plan for wildlife and wildlife habitats details the proposed mitigation, monitoring methods and contingency plans for the Project during operation.

The facility operations plan describes the various ongoing activities including daily operation of the Project. The final component of the Design and Operations Report identifies the preliminary emergency response and communications plans, including the complaint response protocol, to be followed to address concerns or questions from Project stakeholders. The communications plans would be implemented during all Project phases.

4.4 DECOMMISSIONING PLAN REPORT

The Decommissioning Plan Report provides a description of the plans for the decommissioning of the Project including:

- pre-dismantling procedures;
- procedures for equipment dismantling and removal;
- activities related to the restoration of land affected by the Project, procedures for managing excess materials and waste; and,
- the removal of components from the sites.

At the time of decommissioning, the restoration plan would be updated as necessary based on the standards and best practices at the time of decommissioning, and in consultation with the appropriate regulatory and government bodies. The decommissioning plan would involve site restoration, removal of permanent structures, emergency response and communications planning, contingency measures for potential contamination, and a monitoring period to determine if additional restoration is required.

4.5 WIND TURBINE SPECIFICATIONS REPORT

The Wind Turbine Specifications Report provides specific information on the ENERCON wind turbines to be used for the Project, including the make, model, name plate capacity, hub height above grade, rotational speeds, description of turbine components and acoustic emissions data. Information pertaining to both the E101 and E82 turbine models is provided.

4.6 NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

The Natural Heritage Assessment (NHA) identifies the existence and boundaries of all significant natural features in or within 120 m of the Project Location based on a review of background records and field investigations. If a portion of the Project Location is in or within 120 m of a natural feature, the NHA provides an evaluation of significance for each identified feature based on either an existing MNR designation of the feature, or by using evaluation criteria or procedures established or accepted by the MNR (such as the *Natural Heritage Reference Manual*). An Environmental Impact Study (EIS) is required for significant natural features that are found in or within 120 m of the Project Location. The EIS identifies and assesses potential adverse environmental effects and identifies mitigation measures in accordance with Section 38 of O. Reg. 359/09.

Natural heritage information collected from the records review, the site investigations and consultation activities, are analyzed to determine the significance and sensitivity of existing ecological features and functions. A summary of the results of this study is provided in **Section 5.0**.

4.7 WATER ASSESSMENT AND WATER BODY REPORT

The Water Assessment and Water Body Report provides the results of the records review, site investigations, and impact assessment, conducted in accordance with Sections 29-31, 39 and 40 of O. Reg. 359/09, on watercourses and water bodies located within the 120 m Zone of Investigation.

Site investigations carried out by Stantec locate and delineate, within the 120 m Zone of Investigation, water bodies as defined in O. Reg. 359/09. Known fish species are identified at these locations and a general habitat assessment is conducted to identify areas of direct and indirect fish habitat. A summary of the results of this study is provided in **Section 5.0**.

Department of Fisheries and Oceans (DFO) Authorization may be required for access road culvert crossings and underground collector line installation through consultation with local Conservation Authorities.

4.8 ARCHAEOLOGICAL AND HERITAGE REPORT

The Archaeological, Heritage and Protected Properties Reports (listed below) identify and assess potential impacts to protected properties, built heritage features and cultural heritage landscapes, and archaeological resources near the Project Location:

- Stage I Archaeological Assessment;
- Stage II Archaeological Assessment;
- Protected Properties Assessment; and,
- Heritage Impact Assessment.

A summary of the results of these studies are provided in **Section 5.0**.

5.0 Summary of Potential Environmental Effects

The effects of constructing, operating, and maintaining a wind energy facility such as the Niagara Region Wind Farm is well understood and can be typically mitigated through well-known and accepted techniques and practices. For example, siting infrastructure outside of wetlands and away from residential (sound) receptors reduces the potential for negative environmental effects.

This section provides a summary of the potential effects, mitigation measures, monitoring plans, and contingency plans that have been identified which may result from the Project within the zone of investigation (see **Tables 5.1** and **5.2** below). As noted in Section 2.2.1, all turbines are conservatively assumed to be E101 turbines at a tower height of 135 m to account for the worst case scenario for defining project related setbacks and identifying potential negative impacts, except where specified for the Noise Assessment Report.

5.1 CONSTRUCTION AND DECOMMISSIONING

The following table (**Table 5.1**) identifies potential effects, mitigation measures, monitoring plans, and contingency plans that been identified which may result from the construction and decommissioning of the Project within the zone of investigation.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Heritage and Archaeological Resources[1]					
Protected Properties	• 12 features were identified in the Protected Properties Assessment. • Construction will affect the property on which the Comfort Barn (**Figure 2.16)** is located through the installation of collector lines, access roads and two wind turbines. • No potential for alteration to the Comfort Barn itself. • Township of West Lincoln Heritage Committee reviewed the proposal and determined that the cultural heritage values of the Comfort Barn would not be negatively affected (See **Consultation Report**).	• Avoid alteration to the Comfort Barn structure.	• Closest turbines to the Comfort Barn are at a distance of 665m and 1000m. Closest access roads and collector lines are 150m from the Comfort Barn.	• N/A	• With mitigation measures, no direct or indirect impacts are anticipated.
Heritage Resources	• Although 119 cultural heritage resources were identified within the Project Study Area in the Heritage Impact Assessment, the only potential direct construction-related impact was the damage or removal of heritage attributes along cultural heritage landscapes (i.e. fencing, trees, etc.) • Potential indirect construction-related negative impacts were identified for 52 cultural heritage resources, including: o Construction vibrations have potential to indirectly impact structural integrity of the built heritage resources. o Transportation of over-sized loads has potential to cause accidental or indirect damage to high concentration of narrowly setback cultural heritage resources and landscapes in Smithville, St. Ann's, Bismark, Elcho, Wellandport and Stromness.	• Minimize removal of heritage attributes along cultural heritage landscapes. • Reduce vibrations at built heritage resources. • Minimize impacts to built heritage resources and cultural heritage landscapes.	• Avoid, where possible, removal or damage to identified heritage attributes (i.e., fencing, trees, etc). • A 50 m no-construction buffer is recommended around the 52 identified heritage resources or else monitoring/contingency measures must be enforced. • Avoid, where possible, transportation of over-sized equipment from the listed areas. Where avoidance is not possible, ensure that transportation through these areas avoids any removal or damage to identified heritage attributes (i.e., root systems and above ground vegetation of cultivated plants, canal infrastructure, landscape features, and built components of rail landscapes). • Junction box at the intersection of Hutchinson Road and Highway 3 will be located on the northwest corner of the intersection to minimize visual impacts on the Mount Carmel Cemetery. • Install transmission line poles on east side of Port Davidson Road (opposite side of road from the West Lincoln McCaffrey Cemetery).	• If construction will be within 50 m of the 52 built heritage resources, the maximum acceptable vibration or peak particle velocity levels will be monitored by a qualified engineer with experience with built heritage resources in a similar circumstance to ensure that maximum levels are not exceeded as coordinated by the Construction Contractor. • Where damage to heritage attributes is unavoidable, plantings and built features should be restored to their pre-construction state immediately following construction. • A construction monitor will confirm whether any removal or damage of character-defining attributes occurs along Hutchinson Road.	• Indirect effects to cultural heritage landscapes will be spatially and temporally limited. • No significant effects are anticipated to built heritage resources.

[1] Niagara Region Wind Farm – Stage 1 and 2 Archaeological Assessments, Protected Properties Assessment Report and Heritage Assessment Report (Stantec, 2013)

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Archaeological Resources	• Encounter non-documented archaeological resources.	• Document and/or remove (as appropriate) archaeological resources from the Project Location prior to construction.	• If a new archaeological resource was discovered, work within the vicinity of the archaeological find would be suspended and a Ministry of Tourism, Culture and Sport archaeologist and aboriginal communities would be contacted. • For construction works within 50 m from an identified resource that has not completed a Stage 3 AA, an archaeological monitor will be on site to supervise construction works. • No construction works permitted within 20 m of an identified archaeological resource that has not completed a Stage 3 AA.	• In the event that human remains are encountered or suspected of being encountered before or during construction, all work would stop immediately. Notification would then be made to the Ontario Provincial Police or local police.	• No anticipated significant effects to known archaeological resources during the construction.
Natural Heritage Resources[2]					
Wetlands	• Degradation of wetland through changes in water flow, surface water contamination or sedimentation. • Wetland desiccation or drying from removal of riparian or buffering vegetation. • Contamination through accidental spills.	• Prevent contamination through surface flow during construction and spills. • Maintain existing surface water flow patterns. • Minimize removal of riparian and buffering vegetation. • Prevent contamination by sediment and erosion.	• No project development within significant wetlands. • Boundaries of wetlands within 30m of the proposed construction area will be flagged/staked by a qualified ecologist. • Silt barriers will be erected along the edge of all wetland boundaries within 30m of construction areas. • All refueling activities or fuel storage will occur greater than 30m from all wetlands. • Maintain surface flow patterns to wetlands by installing properly designed and sited culverts under access roads including at swales. • Stake limits of vegetation clearing. • All disturbed areas will be re-vegetated as soon as possible. • Construction contractor to ensure no work occurs outside of the limits of construction envelope. • Minimal alteration to surface water drainage patterns and installation of culverts as required to maintain flows. • Stockpiling of materials will not occur within 30m of wetland boundary. • Stockpiles left for longer than 30 days will be covered or stabilized by seeding, sodding, mulching or equivalent. • Horizontal directional drill (HDD) under the wetland boundaries for installation of collector lines. • Erosion control devices will be installed at the HDD location and drill cuttings will be	• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of wetlands. • Inspection of the erosion and sediment controls. • Inspection of culvert installations to ensure flow conveyance with no restrictions or ponding. • See “Spills” • Ensure that seed establishes in areas of disturbance within one growing season (once after seeding and once in late spring the year after seeding). Reseed if seed does not stabilize. • Inspect all erosion and sedimentation control measures regularly and after extreme weather events. • If siltation of surface water is identified, the source of siltation will be isolated, contained, and controlled and sediment control measures increased as required to prevent additional sedimentation. • Stockpile covers to be regularly monitored and if covers are found not to be effectively preventing sediment transport, additional E&S control measures employed as necessary. • Disturbance monitoring will be conducted weekly in and adjacent to work areas to visually assess hydrological conditions. • Hydrological conditions will be monitored once seasonally in each of	• No direct loss of wetland habitat. • No anticipated disruption of wetland function.

[2] A more detailed assessment of potential effects, mitigation and monitoring is provided in “Niagara Region Wind Farm – Natural Heritage Assessment / Environmental Impact Study” (Stantec, 2013).

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			collected and removed from the site for disposal in an approved and appropriate manner • No clearing of trees in or near any of wetlands that could result in wetland desiccation or drying.	spring and summer during the first year of post-construction.	
Areas of Natural and Scientific Interest (ANSI's)	• No impacts to Life Science ANSIs (St. Ann's Slough Forest) as no components are located in the feature. • Potential erosion, alteration, destruction or loss of part of an Earth Science ANSI. 2.43 ha of the Winger Earth Science ANSI will be disrupted by construction. No loss of the feature or loss of function of the feature are expected.	• Minimize impacts to the Earth Science ANSI.	• No significant grading, cutting or filling will occur within the ANSI. • The width of the access road and limits of construction in proximity to the sand dune formations within the Earth Science ANSI will be minimized beyond the typical 20 m constructible area. • The limit of construction within the ANSI will be staked or fenced (i.e. silt fence) prior to construction to assist with the demarcation of the construction area, to ensure construction activities minimize disturbance to the ANSI and to assist with the proper field installation of erosion and sediment control measures. • Any material excavated during the construction of the turbine will be disposed of off-site, while topsoil removed to accommodate the construction of the access road will be stabilized and stored on-site until the site is restored following completion of construction; • Prior to construction of the access road, the existing topsoil will be removed and a layer of geotextile fabric installed beneath the access road to assist in removal of the access roads during decommissioning. Topsoil will be replaced at grade for all access roads and constructible areas • No blasting will occur within the ANSI. • Standard mitigation measures for vegetation removal, sedimentation and erosion control and dewatering will be applied.	• A topographic survey of existing elevations within the ANSI will be completed prior to construction activities to document the shape of the sand dunes. • The project components within the ANSI will be identified on the topographic plan and provided to the MNR prior to construction: • Photographs taken during construction of the access road, buried collector lines, fibre optic lines and temporary construction area associated with Turbine 89 will be submitted to the MNR following construction to illustrate compliance with the proposed mitigation measures and pre-construction survey information. • Upon completion of construction, the topographic survey will be used to assist in restoring any disturbed areas to restore existing topography.	• The significant features for which the Winger Earth Science ANSI has been identified are being protected. • While disturbance to existing conditions will occur during construction, appropriate mitigation measures have been employed to protect existing topography and soil conditions, limit the extent of disturbance within the ANSI boundaries and to avoid the more pronounced sand dune formations on site. • As a result, the significant features and provincially significant earth science values associated with the Winger Earth Science ANSI would be protected.
Significant Woodlands	• Potential damage to root zones and limbs during construction or loss of trees to accommodate delivery of project components. • Contamination through accidental spills.	• Prevent damage to critical root zones and prevent accidental loss of trees or limbs. • Minimize accidental spills.	• No project development within significant woodlands. • Clearly delineate work area using a barrier such as a silt fence to avoid accidental encroachment on the feature that would lead to damage of trees or root zones. • Workers will be advised not to trespass beyond the boundary of the marked area.	• Inspectors will ensure construction vehicles and personnel stay within the construction envelope, thereby limiting the disturbance of woodland vegetation. • Inspection of the erosion and sediment controls, including silt fencing regularly and daily during inclement weather. Any build up of sediment beyond the silt fence will be cleaned up and removed	• No direct loss of woodlands. • Minimal if any anticipated negative impacts to woodlands.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			• Erect silt fencing to prevent sedimentation within critical root zones. Fencing should be located no closer than the drip-line. • Implement standard erosion and control measures. • Stockpile materials greater than 30m from woodland edge. • Stockpiles left for longer than 30 days will be covered or stabilized by seeding, sodding, mulching or equivalent. • Re-vegetate disturbed areas with fast growing native species as soon as construction activity is complete. • All maintenance activities, vehicle refueling or washing and chemical storage will be located more than 30m from significant woodlands. • See “Spills”	to avoid risk of further spread of sediment. • Disturbance monitoring of woodlands will be conducted weekly in and adjacent to work areas to visually assess hydrological conditionss • All covers on stockpiles to be put in place and inspected when inclement weather is anticipated. • Any tree limbs or root zones that are accidentally damaged will be pruned using proper aboricultural techniques. • Inspection of reseeded areas within one growing season to confirm that seed is growing. Replant areas where seed has not grown. • Accidental damage to trees, or unexpected tree removal, may require replanting of similar native species. • A Certified Arborist will undertake an evaluation of health of pruned trees within one year of pruning. • Hydrological conditions will be monitored once seasonally in each of spring and summer during the first year of post-construction. • See “Spills”	
Provincial Parks and Conservation Reserves	• As no Provincial Parks and Conservation Reserves were identified, there are no anticipated impacts.	• N/A	• N/A	• N/A	• None
Significant Wildlife and Wildlife Habitat (includes birds, bats, amphibians and other wildlife)	• Disturbance to species during construction from traffic, noise and dust. • Habitat removal (0.33 ha of grassland temporarily removed and 0.18 ha of grassland permanently removed). • Degradation of habitat through erosion and sedimentation. • Contamination through accidental spills. • Shifts in species abundance, avoidance and behavior during construction. • Degradation of habitat through changes in water flow, surface water drainage patterns or surface flow contamination. • Direct mortality of snakes from construction vehicles.	• Avoid and minimize removal of habitat. • Prevent contamination. • Prevent habitat avoidance and disturbance. • Prevent vehicle strikes. • Maintain existing surface water flow patterns.	• Only scattered trees and grassland habitat are to be removed for the Project. • Minimize construction disturbance during sensitive migratory periods (April/May and Sept/Oct). • Implement standard vegetation removal measures. • Implement standard sedimentation and erosion control measures. • Implement a Replanting and Restoration Plan as per **NHA/EIS**. • Construction activities within 120m of any Raptor Wintering Areas will be avoided during Dec, Jan and Feb. • No development is permitted within identified significant turtle overwintering habitat, turtle nesting habitat, snake hibernacula and amphibian breeding habitat. • Avoid construction within 120m of turtle	• Environmental Effects Monitoring Plan outlines disturbance and mortality monitoring requirements and adaptive management plan for birds, bats, wintering raptors and migratory birds. • If clearing of vegetation occurs beyond defined limits, the area should be rehabilitated to pre-disturbance conditions. • Any build-up of sediment beyond the erosion and sedimentation control points will be cleaned up and removed. • See “Spills” • Construction Supervisor to regularly visually monitor culvert installations to ensure flow conveyance, with no restrictions or ponding. • Should a turtle nest be encountered during construction, a buffer will be	• No significant effects are anticipated. • No loss of habitat or alteration of groundwater or surface water flow is anticipated from the Project. • No fragmentation of habitat is anticipated.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			overwintering habitat and snake hibernacula during sensitive periods for turtles (April/May and Late September to early October). • Barrier fencing will be installed around all construction zones within 120m of turtle nesting habitat. • Construction works will be made aware of potential occurrence of turtles and will avoid interactions with turtles. • If turtles are found within the construction area, the use of standard care protocols for the removal of the species will be used. • Silt barriers will be erected along the edge of amphibian breeding habitat. • Construction vehicles and personnel will stay within the construction envelope. • Horizontal direction drill entry/exit pits will be located at least 30m from any significant natural feature and a frac-out plan will be in place prior to directional drilling. • All refueling activities should occur more than 30m from any identified habitats. • Install properly designed and sited culverts in water crossings. • Any vegetation clearing to occur outside breeding bird window, if possible, otherwise a bird nest survey to be completed immediately prior to vegetation clearing. • See “Wetlands”, “Woodlands” and “Spills”.	established and the rest will be protected from construction activities (i.e, via a wire cage or similar). The nest will be monitoring until the nest is no longer active. • Silt barriers will be monitored, especially after a rain event and until vegetation has become re-established. • Water levels within significant amphibian habitat will be monitored during active dewatering to ensure there are no decreases or temporary loss of habitat.	
Other Wildlife and Wildlife Habitat	• Degradation of habitat through erosion and sedimentation. • Contamination through accidental spills. • Shifts in species abundance, avoidance and behavior during construction. • Degradation of habitat through changes in water flow, surface water drainage patterns or surface flow contamination.	• Avoid and minimize removal of habitat. • Prevent contamination. • Prevent habitat avoidance and disturbance. • Prevent vehicle strikes. • Maintain existing surface water flow patterns.	• All new access road in previously cleared agricultural lands. • Minimal alteration to surface water drainage patterns and installation of culverts as required to maintain flows. • Restriction of construction activities primarily to daytime hours when breeding amphibian movement is less likely. • Vehicle speeds should be restricted to 30 km/h or less on access roads. • Any vegetation clearing to occur outside breeding bird window, if possible, otherwise a bird nest survey to be completed immediately prior to vegetation clearing.	• See ‘Local Traffic’. • See ‘Environmental Noise’.	• No significant net effects are anticipated.
Significant Flora and Vegetation Communities	• Degradation of habitat through erosion and sedimentation. • Accidental damage to vegetation. • Contamination through accidental spills. • Changes in soil moisture and compaction.	• Prevent contamination from erosion, sedimentation or accidental spills. • Prevent accidental	• No development will occur within rare vegetation communities. • Construction vehicles and personnel will stay within the construction envelope. • Refueling activities will occur far from	• See “Spills” • Daily monitoring of erosion and sedimentation control measures during when inclement weather is anticipated. • All covers on stockpiles to be put in	• No significant net effects are anticipated.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
		damage to vegetation.	woodland features. • See “Spills”. • Tree pruning will be minimized to the greatest extent possible and any tree limbs or roots that are accidentally damaged will be pruned using proper arboricultural techniques. • Accidental damage to trees, or unexpected vegetation removal, may require replanting of similar native species. • Pruning will be avoided during leaf fall (approx. September to November). • As appropriate, the limits of tree pruning will be marked in the field prior to construction. • Horizontal direction drill entry/exit pits will be located at least 30m from any significant natural feature and a frac-out plan will be in place prior to directional drilling. • Clearly delineate the work area using silt fencing to avoid accidental damage to vegetation. • Implement standard erosion and control measures (see “Wetland”, “Woodland” and “Surface Water, Fish and Fish Habitat”. • Stockpile material greater than 30 m from the edge of rare vegetation communities or, where not possible, cover the piles when not in use. • Stockpiles left for longer than 30 days will be covered or stabilized by seeding, sodding, mulching or equivalent. • Re-vegetate disturbed areas with fast growing native species as soon as construction activity within the disturbed area is complete. • Any vegetation clearing to occur outside migratory breeding bird window (May 1 to July 31), to the extent practical, otherwise a bird nest survey to be completed immediately prior to vegetation clearing. If a nest is located, a designated buffer will be marked off within which no construction activity will be allowed while the nest is active.	place and checked when inclement weather is anticipated. • Inspection of reseeded areas within one growing season to confirm that seed is growing. Replant areas where seed has not grown. • Any tree limbs or root zones that are accidentally damaged by construction activities will be pruned using proper arboricultural techniques. • A Certified Arborist will undertake an evaluation of the health of the pruned trees within one year after pruning. Trees that die or are in poor health as a result of tree pruning will be replaced and the survivability of the trees monitored for a minimum of one year after planting.	
Other Flora and Vegetation Communities	• Indirect effect from dust emissions.	• Minimize dust emissions.	• See “Dust and Odour Emissions”	• See “Dust and Odour Emissions”	• No net effects are anticipated.
Water Bodies and Aquatic Resources					
Groundwater	• Encounter groundwater during excavations. • Potential groundwater seepage.	• No impacts to private residential wells.	• Site-specific geotechnical investigations will be completed prior to constructin.	• Adherence to Complaint Response Protocol.	• It is anticipated any potential

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	• Potential for accidental spills infiltrating groundwater supplies. • Based on MOE water well data, there are 24 domestic and livestock water wells within 500m of a turbine. The closest well is approximately 92 m (from T01) (See **Figure 2.1 to 2.58**). • Based on MOE water well data, there are 56 domestic and livestock water wells within 120m of the preferred transmission line route at both underground and overhead sections. The closest well is approximately 9m from the preferred transmission line route (see **Figure 2.1 to 2.58**).	• No effects on groundwater quality.	• Seepage is anticipated to be nominal and controllable with standard sump pumps. • Any water pumped from excavated areas will be directed away from natural features, including wetlands. • Withdrawal amounts are anticipated to be below the threshold of 50,000 L/day. • If groundwater is encountered during excavations, good construction practices will be used such as minimizing the length of time that the excavation is open and monitoring seepage into the excavation. • Discharge piping will be free of leaks and will be properly anchored. • The area to be used for dewatering will be clearly marked with flagging, snow fencing or equivalent.	• All dewatering sediment control structures will be inspected immediately prior to and following commencement of pumping activities. • NRWC will undertake a pre- and post-groundwater monitoring program at any residential well within 120m of a buried transmission line and any residential well of a home within 500m of a wind turbine (with landowner permission). Additional monitoring may be required if complaints are received from surrounding landowners regarding water well quality during construction. In the event of a well interference complaint, NRWC will: o resample groundwater quality and document groundwater levels at monitoring well; o collect a water quality sample from private well(s), as applicable; and o Retain a third party consultant to review available data and determine if adverse effects have occurred as a result of construction activity. • If Private water quality or quantity is disturbed as result of construction, NRWC will provide a temporary potable water supply until corrective measures are taken and will comply with MOE Guideline B-9: Resolution of Groundwater Interference Problems.	effects would be short term in nature and have little to no effect on groundwater quality and adjacent private water wells.
Surface Water, Fish, and Fish Habitat[3]	General construction-related potential impacts: • Short-term increase in turbidity from run-off and soil erosion. • Loss of shade. • Reduced bank stability. • Reduced allochthonous inputs. • Water quality and habitat disturbance to aquatic habitat. Culvert and access road potential construction-related impacts: • Disturbance to aquatic biota and habitat during installation. • Permanent enclosure of portions of a	• No impediment. • No spills. • No erosion, sediment transport or surface water turbidity. • Vegetation removal on the slopes of watercourses to be minimized to the extent possible. • Minimize the risk of slope failure and siltation. • Minimize impacts to	• No wind turbines have been located within 30 m of the average annual high water mark of a lake or a permanent or intermittent watercourse • All in-water work would be completed within MNR timing windows. • All materials and equipment used shall be operated and stored in a manner that prevents any deleterious substance (e.g., petroleum products, silt, etc.) from entering the water: • Any stockpiled materials should be stored and stabilized away from the water; • Stockpiles left for longer than 30 days will be	• All sediment and erosion control measures should be inspected at least weekly and during and immediately following rainfall events to ensure that they are functioning properly and are maintained. • If the sediment and erosion control measures are not functioning properly, no further work should occur until the sediment and/or erosion problem is addressed; • Sediment and erosion control measures should be left in place until all areas of the construction site have been stabilized.	• Effects to surface water and water bodies would be both spatially and temporally limited. • No significant negative construction effects are anticipated to surface water, water bodies and fish and fish habitat.

[3] A more detailed assessment of potential effects, mitigation and monitoring is provided in "Niagara Region Wind Farm – Water Assessment and Water Body Report" (Stantec, 2013).

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	watercourse. • Changes to riparian vegetation within road allowance. • Barrier to fish passage to upstream. • Erosion at inlets and outlets. • Overhead lines potential construction-related impacts: • Loss of riparian vegetation and resulting increased turbidity • Removal of shade, cover and food production. Underground collector lines potential construction-related impacts: • Erosion and sedimentation from site disturbance and dewatering. • Collapse of the punch or bore hole under the stream. • Disturbing riparian vegetation and reducing shoreline cover, shade and food production areas. • Disturbance to bottom of bank substrates, sensitive fish stages and introduction of deleterious substances. • Transformer substation construction-related potential impacts: • Soil erosion resulting from removal of stabilizing vegetation cover which can cause sediment transport, increase in turbidity. • Release of fuel, lubricating oils and other fluids associated with electrical equipment.	fish and fish habitat. • Minimize amount of in-water work.	covered or stabilized by seeding, sodding, mulching or equivalent; • Refuelling and maintenance of construction equipment should occur a minimum of 100 m from a water body; • As appropriate, spills should be reported to the MOE Spills Action Centre; • Any part of equipment entering the water should be free of fluid leaks and externally cleaned/degreased to prevent any deleterious substance from entering the water; • Only clean material, free of fine particulate matter should be placed in the water. • Sediment and erosion control measures should be implemented prior to construction and maintained during the construction phase to prevent entry of sediment into the water: • Silt fencing and/or barriers should be used along all construction areas adjacent to natural areas; • No equipment should be permitted to enter any natural areas beyond the silt fencing during construction; • No more than 50,000 L/day will be extracted from surface water resources. • See ‘Spills’.	• Develop a response plan that is to be implemented immediately in the event of a sediment release or spill of a deleterious substance. • The Construction Contractor will: • Perform routine checks of all erosion and sediment control measures • Monitor flow conveyance during in-water works where culvert replacements are required • Visually inspect access/exit pits and directional drill line for frac-outs • Inspect drilling equipment and materials for spills/leaks • Ensure that bank, bed and floodplain conditions are restored to pre-construction conditions after construction. • Additional monitoring requirements as may be identified in Conservation Authority permits. • Compensation strategies and/or permits from Fisheries and Oceans Canada and/or conservation authorities, as applicable, would likely include conditions of approval such as construction and post-construction monitoring.	
Air Quality and Environmental Noise					
Dust & Odour Emissions	• Emissions from construction equipment. • Short-term nuisance dust effects	• Minimize duration and magnitude of emissions.	• Operate vehicles in a manner that reduces air emissions to the extent practical, including: o Using multi-passenger vehicles as possible; and o Avoid idling vehicles. o Equipment and vehicles would be maintained in a manner that reduces air emissions. o Protect stockpiles of friable material with a barrier or windscreen and in the event of dry conditions and excessive dust. o Dust suppression (e.g. water).	• Adherence to Complaint Response Protocol. • All vehicles identified through the monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced as soon as practical.	• Any net effects are expected to be short-term in duration and highly localized.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Environmental Noise	• There are 2,667 receptors within 1.5 km of any turbine. • Noise emitted from construction equipment.	• Minimize noise emissions to a reasonable extent • Noise levels arising from equipment to be compliant with sound levels established by the MOE and County/Township guidelines (if applicable).	• All engines associated with maintenance equipment would be equipped with mufflers and/or silencers in accordance with MOE and/or MTO guidelines and regulations. • Routine maintenance to ensure equipment is operating properly and efficiently. • To the greatest extent possible, activities that could create excessive noise would be restricted to normal construction hours, when residents are less sensitive to noise, and adhere to any local noise by-laws.	• Adherence to Complaint Response Protocol. • If construction activities that cause excessive noise must be completed outside of normal time frames, adjacent residents will be notified in advance and by-law conformity will occur, as required.	• Any net effects are expected to be limited to short-term, intermittent noise increases during daylight hours at the work areas and/or along the haul routes.
Land Use and Socio-Economic Resources					
Agricultural Lands	• Change in use from agricultural to renewable energy development on lands used during construction. • Adverse effects to artificial drainage. • Soil erosion or crop loss on adjacent lands due to flooding as a result of temporary or permanent disruption to water flow. • Encounter and disruption of contaminated soils.	• Minimize disturbance to agricultural lands and operations. • Minimize land required for the Project. • Avoid impacting artificial tile drains. • Minimize disturbance to drainage patterns. • Properly manage contaminated soils if encountered.	• Landowners are being financially compensated for the lease of the private lands and thus offset the effect of removing the land from agricultural production. • Efforts have been made to site the turbines, access roads and collector lines in such a way as to minimize disturbances to existing agricultural lands and operations. • The location of artificial tile drainage and associated drains would be confirmed with each landowner on a site-specific basis prior to construction activities. • Should tile drains be damaged, locations should be recorded and flagged and repaired. If a main drain, header tile, or large diameter tile is severed, a temporary repair should be made to maintain field drainage and prevent flooding of the work area and adjacent lands. • If contaminated soil is encountered, the contaminated material will be disposed of in accordance with the current appropriate provincial legislation, such as Ontario Regulation 347, the General – Waste Management Regulation.	• Following the completion of construction, as appropriate, temporary workspaces would be graded and de-compacted (if required), the topsoil replaced, and the area left as close to pre-existing condition as possible.. • An agricultural tile drainage contractor would carry out any re-alignment works as well as repair tiles and/or drains that may experience construction related damage.	• No anticipated significant net effects. Any net effects are expected to be short-term until mitigation and corrective actions are completed. • The Project provides positive income to participating landowners through land lease agreements for agricultural lands.
Mineral, Aggregate, and Petroleum Resources	• Impacts to petroleum resources operations. • The transmission line crosses three different	• Project construction does not require the creation of a new pit	• The source of the required aggregate will be determined prior to construction, however it is planned that local sources will be used to	• An Engineer's Report will be prepared for all petroleum resources operations within 75 m of the Project Location. The	• No anticipated significant net

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	pipelines owned by Enbridge and TransCanada. • Collector lines and fibre optic lines cross three different pipelines. • Nearest pipeline to a turbine is 654m.	or quarry to provide the required aggregate materials for construction. • No impacts to petroleum resources operations.	the greatest extent possible. • On-site surveying will take place prior to construction to identify petroleum resources operations within 75 m of the Project Location. • MNR will be consulted through the Approvals and Permitting Requirements Document (APRD) to confirm if any permits are required relating to petroleum resources. • Locate all pipelines prior to construction. • Consult with Enbridge and TransCanada prior to construction of transmission line and collector line at pipeline crossings.	purpose of the Engineer's Report will be to demonstrate that there are no effects to the petroleum resources operations as a result of the construction of the Project. • If a potential effect to the petroleum resources operations is identified, construction methods may be altered (staying within the Project Location) to minimize or eliminate any potential effects.	effects. • Project will not require the creation of a new pit or quarry to provide the required aggregate materials and as such a licence of permit under the *Aggregate Resources Act* will not be sought for the Project.
Game And Fishery Resources	• Disturbance to game species from construction activities. • Limiting access to lands for hunting and fishing. • Individuals who previously used the lands for hunting and fishing purposes are likely to relocate to a new area during construction.	• Minimize disturbance to game and fishery resources. • Minimize length of time that lands are inaccessible.	• Routine maintenance to ensure equipment is operating properly and efficiently, thus limiting noise and potential disturbance to game resources. • Hunting and other recreational uses will not be permitted on lands required during construction (unless permitted by NRWC and/or the construction contractor) as it would be unsafe due to the large construction equipment on-site.	• N/A	• The net effect of limiting access to land due to safety concerns and potential disturbance to game resources will be temporary.
Areas Protected Under Provincial Plans and Policies	• No project components within the Oak Ridges Moraine Conservation Plan or the Lake Simcoe watershed.	• N/A	• N/A	• N/A	• N/A
	• A portion of the transmission line is located within existing road rights-of-way within the Protected Countryside of the Greenbelt Area Plan • Long term tree trimming and vegetation removal adjacent to the transmission line for lifetime of the project.	• Avoid and/or minimize negative impacts to key natural heritage features and key hydrologic features. • Optimize coordination with different infrastructure services.	• Transmission line is located outside of all natural features and habitats. • Design the transmission line with monopole structures, minimize pole structure height and maximize pole structure spacing. • Follow existing municipal road right of way to avoid cross-country routes and minimize disturbance to natural features. • Route alignment through Greenbelt Area minimizes length traversed by the transmission line.	• See 'Natural Heritage Resources'	• No anticipated significant net effects.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	• A portion of the transmission line is located within the Niagara Escarpment Plan Area within existing road rights-of-way. • Underground transmission line construction has potential to: o Impact contours or create steep grades. o Negatively impact water quality from erosion and sedimentation. o Some tree and vegetation removal during construction and site clearing. o Negatively impact quality or quantity of top soils. o Disturb wildlife. o Disruption to public enjoyment of the Mountainview Conservation Area and Bruce Trail. o Temporary lane closures and traffic slowdowns during construction. o Dust generation and noise emissions during construction.	• Minimize impacts on natural heritage features. • Minimize visual impacts. • Ensure no impacts to contours or creation of steep grades. • Minimize impacts to water quality. • Minimize vegetation removal. • Minimize disturbance to wildlife. • Minimize disruption to recreational areas. • Minimize dust generation.	• Compliance with Development Permit (N/S/2012-2013/191) obtained from the NEC prior to REA submission to the MOE. • Transmission line is located outside of all natural features and habitats. • Follow existing municipal road right of way to avoid cross-country routes and minimize disturbance to natural features • The transmission line within the Niagara Escarpment Plan Area will be installed underground within an existing right of way. • The transmission line trench will be located within the travelled portion of Mountainview Road, or as close as possible to the pavement or roadside to minimize vegetation removal. • No blasting during installation will ensure grades are maintained. • Erosion and sedimentation controls to be installed and maintained during construction and disturbed areas to be stabilized and revegetated immediately after construction. • Design transmission line to minimize tree and vegetation removal (avoid new crossings through woodlands and maintain line entirely within the road right of way). • Tree trimming will be undertaken at the direction of a qualified arborist, using tree-cutting methods that minimize environmental impacts, protects tree health and minimizes disruption to plant and animal species. • Construction timing planned to minimize impact on local wineries. • See ‘Other Wildlife and Wildlife Habitat’. • See ‘Natural Heritage Features’. • See ‘Dust & Odour Emissions’ • See ‘Surface Water, Fish and Fish Habitat” • See ‘Other Flora and Vegetation Communities’. • See ‘Agricultural Lands’. • See ‘Recreation Areas and Features’. • See ‘Local Traffic’. • See ‘Spills’.	• Adherence to Complaints Monitoring Protocol. • Continued consultation with the Niagara Escarpment Commission and neighbouring landowners. • Pre- and post-construction monitoring of the water quality and availability in existing residential wells within 120 m of the proposed transmission line will be completed (where access is permitted by landowners) • See ‘Groundwater’ • See ‘Other Wildlife and Wildlife Habitat’. • See ‘Natural Heritage Features’. • See ‘Dust & Odour Emissions’ • See ‘Surface Water, Fish and Fish Habitat” • See ‘Other Flora and Vegetation Communities’. • See ‘Agricultural Lands’. • See ‘Recreation Areas and Features’. • See ‘Local Traffic’.	• No anticipated significant net effects.
Recreation Areas and Features	• Land within 120 m of the Project Location is used for recreation purposes such as hunting, fishing, hiking and off-roading including the Mountainview Conservation Area, Wainfleet Rail Trail (Gord Harry Trail) and Bruce Trail. Consultation with the	• Minimize impacts to access and enjoyment of Bruce Trail, Wainfleet Rail Trail and	• Notify the Bruce Trail Conservancy in advance of any construction within 300 m of the Bruce Trail. • Notify the Niagara Peninsula Conservation	• Follow-up with Bruce Trail Conservancy and Niagara Peninsula Conservation Authority of any project changes, schedule changes and recommendations for minimizing	• Net effects are short term and spatially limited.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	NPCA confirmed that the portion of the Wainfleet Rail Trail which is proposed to host access roads is not currently maintained as part of the active trail, but that future expansion of the trail is possible. • Potential disruption to visitors to the Mountainview Conservation Area. • Construction works along the Wainfleet Rail Trail will require temporary closure of the west end of the trail from Elgin Road to Townline Road due to the presence of construction equipment, vehicles and disturbed land. Potential impacts to the trail east of Elgin Road are disturbance from dust and noise. • Disruption to Bruce Trail access points due to visual and physical obstacles.	Mountainview Conservation Area.	Authority in advance of any construction within 300 m of the Mountainview Conservation Area and Wainfleet Rail Trail. • Ensure that access to the Bruce Trail is not obstructed by construction equipment or works, where possible – in extreme cases, provide signage for hikers to access the trail via safe alternate route. • Coordinate with NPCA to identify preferred dates/times for Wainfleet Rail Trail closure. • Minimize time of Wainfleet Rail Trail closure by focusing construction resources within the area and completing all works before moving resources to the next site. • Ensure that walking and car entry into the Mountainview Conservation Area is not obstructed by any construction equipment or works. Provide traffic control guidance so access is never limited. • See “Dust & Odour Emissions” and “Environmental Noise”	impacts.	
Local Traffic	• Increase in traffic. • Temporary road/lane closures.	• Minimize disturbance to local traffic.	• There may be instances where excess loads (e.g. turbine components) will require special traffic planning. • Construction Contractor will implement a Transportation and Traffic Management Plan. • Understanding local school bus routes and timing to avoid traffic congestion.	• Permits will be obtained from the County/Township and/or MTO to implement road work activities once final transportation routes and requirements have been finalized. • Community Liaison Committee will have ability to comment on the Transportation and Traffic Management Plan.	• A limited, short term effect on local traffic, but will be managed through the implementation of a Transportation and Traffic Management Plan.
Local Economy	• Increase in direct, indirect and induced employment. • Local economic benefits from land lease payments, local expenditures, municipal taxes, etc. • Disruptions to local businesses.	• Create positive effects on local economy. • Minimize disruptions to local businesses.	• To the extent possible, NRWC would source required goods and services from qualified local suppliers. • ENERCON has announced that it will build two new manufacturing facilities in the region to support the Project including a tower manufacturing facility and a converter and control panel manufacturing facility. One facility is already operational. • NRWC will be contributing over $20million to local communities through community vibrancy funds. • Disruptions in the vicinity of local businesses would be largely due to an increase in traffic, and would be short term and are not expected to affect use of these businesses.	• None required.	• A positive net effect is anticipated on the local economy during construction of the Project. • The new ENERCON Facilities are expected to create over 50 new jobs. • Community vibrancy fund will support local projects and will be managed by local citizens. • Construction and planning phases

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
					of the Project are expected to create 770 jobs annually over the four years of development and construction. • A Niagara Community employment and contractors seminar is being discussed for Spring 2013. • NRWC has engaged several Aboriginal communities to identify employment opportunities.
Viewscape	• Viewscape from areas surrounding the Project Location will be altered due to the presence of construction equipment and personnel along with changes to the physical landscape.	• Minimize potential for visual disturbance.	• Minimal mitigation measures are available to address concerns related to visual changes to the area during the construction of the Project.	• Adherence to Complaint Response Protocol.	• Will be a net effect (either positive or negative based on perceptions) due to the change in viewscape of the surrounding area.
Existing Infrastructure					
Provincial, municipal, and other major infrastructure	• The proposed transmission line crosses several HONI transmission line corridors and will be installed either underground or overhead as determined during detailed design. • Transmission line and collector line infrastructure cross three railways (CP and CN owned) and will be installed either underground or overhead as determined through detailed design. • Abnormal wear and/or road upgrades on local roads. • Damage to municipal drains. • Temporary impacts to existing utilities.	• Minimize impacts to local roads. • Minimize impacts to municipal drains. • Minimize disruptions/impacts to other existing utilities.	• Consultation with MTO regarding any necessary agreements related to use of roads for transportation of Project materials in addition to obtaining the required permits for use of provincial highways. • Detailed plans or agreements regarding maintenance and/or repairs of the local roads and road rights-of-way damaged during construction will be developed with the County/Township. • Agreements would be developed for use of the municipal road allowance for routing of the collector lines. • Where there are existing distribution lines within the municipal road allowance, NRWC will work with the Local Distribution Company to develop shared pole user agreements (if reasonable to do so). • Drains superintendents from the County/Township will be requested to attend site visits and be part of the discussions with	• Pre and post construction road surveys will be conducted and NRWC will be responsible for any required upgrades/repairs directly associated with Project construction as per agreements with the Township/County. • Local roads would be restored to their pre-construction conditions to the satisfaction of local authorities as applicable to the agreements with County/Township. Some municipal roads requiring structural enhancement/upgrades may be left in their upgraded form if requested. • Permits and approvals will be obtained from the County/Township and/or MTO to implement road work activities once final transportation routes and requirements have been finalized. • Approvals will be obtained from HONI, CN Rail and CP Rail for installation of	• Abnormal wear on local roads may be unavoidable. However, the effect of constructing the various Project components is anticipated to have a limited, short term effect on local roads given NRWC's commitment to developing maintenance and/or repair plans or agreements with the County/Township. • No effects on railway or HONI

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			the Conservation Authorities during the *Fisheries Act* permitting process for the Project. • Locate all utilities within municipal road allowances prior to construction • Pre and post construction photos will be completed prior to any works starting. • Consultation with HONI during construction of transmission line crossings. • Consultation with CP Rail and CN Rail during construction of transmission line and collector line crossings.	transmission line and collector line crossings. • In the event that utilities within municipal road allowances are damaged as a result of the construction of the Project, NRWC would rectify damages. • Affected roadside ditches and drains would be repaired if required and monitored to ensure that they are functioning properly.	transmission lines are expected.
Navigable Waters	• Temporary barrier due to crossings.	• Avoid navigable waterways. • Minimize length of disturbance to navigable waterways.	• Confirmation of the presence of these waters will be obtained from Transport Canada and permits (if required) will be obtained prior to construction.	• To be identified as part of any permits (if required).	• None
Telecommunication and Radar Systems	• Potential to interfere with telecommunication and radar systems	• Minimize interference with telecommunication and radar systems	• NRWC has consulted with relevant agencies and licensed providers to identify any likely effects to telecommunication and radar systems. • In the unlikely event that signal disruption is experienced, NRWC will meet with owner of system to discuss potential options for mitigation.	• Adherence to Complaint Response Protocol. • NRWC would review potential incidents of telecommunications interference on a case by case basis. •	• No anticipated significant effects to telecommunication / radar systems.
Aeronautical Systems	• Aeronautical obstruction.	• Minimize potential hazard to low flying aircraft.	• Once the turbines are erected (and prior to operation), turbine lighting will conform to Transport Canada standards. • Nav Canada would be responsible for updating all aeronautical charts with the turbine locations. • Nav Canada will be informed of the start date for construction.	• None	• No anticipated significant effects to aeronautical systems.
Public Health and Safety					
Public Health and Safety	• Potential traffic safety hazards. • Accidents and malfunctions.	• Minimize traffic safety hazards. • Minimize potential for accidents or malfunctions.	• As appropriate, for public safety all non-conventional loads would have front and rear escort or “pilot” vehicles accompany the truck movement on public roads. May provide notification of non-conventional load movements. • Implementation of a Transportation and Traffic Management Plan and a detailed Health and Safety/Emergency Response Plan.	• Design and approval of the Emergency Response Plan with local emergency services personnel. • If required, NRWC would participate in a training session for these workers.	• With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety.

Table 5.1: Potential Environmental Effects and the Environmental Effects Monitoring Plan during Construction

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			• The Construction Contractor to employ good site safety practices.		
Waste Management and Contaminated Lands					
Waste Generation	• Improper disposal of waste material may result in contamination to soil, groundwater, and/or surface water resources on and off the Project sites. • Litter may become a nuisance to nearby residences if not appropriately contained and allowed to blow off the site.	• Ensure proper disposal of waste.	• Implementation of a site-specific waste collection and disposal management plan, which may include good site practices such as: o Contractors will be required to remove all waste materials from the Project sites after construction; o All waste materials and recycling would be transported off-site by private waste material collection contractors licensed with a Certificate of Approval – Waste Management System; and, o Labeling and proper storage of liquid waste. • As appropriate, spill kits will be provided on-site. • Dumping or burying wastes within the Project sites will be prohibited. • Disposal of non-hazardous waste at a registered waste disposal site(s). • Implementation of an on-going waste management program consisting of reduction, reuse, and recycling of materials. • See ‘Spills’	• See ‘Spills’.	No anticipated significant effects.
Spills	• Potential contamination from accidental spills.	• No spills. • Minimize impacts from accidental spills.	• Refueling, equipment maintenance, and other potentially contaminating activities would occur in designated areas. • Spills will be reported immediately to the MOE Spills Action Centre, as applicable. • Development of Emergency Response Plan. • Construction Contractor will develop a Frac-Out Response Plan which outlines required actions in the case of inadvertent return of drilling lubricant (i.e., a “frac-out”) during directional drilling.	• Monitoring would be required following the unlikely event of contamination from an accidental spill or leak (method for monitoring may be developed in consultation with the Spills Action Centre of the MOE). • Contaminated soils would be removed and replaced as appropriate. • Emergency Response Plan will address procedures for response to spills including containment and clean-up materials and their storage locations. • Internal audits will be completed to confirm compliance with Monitoring and Emergency Response Plans.	No anticipated significant effects.

5.2 OPERATION

The following table (**Table 5.2**) identifies potential effects, mitigation measures, monitoring plans, and contingency plans that been identified which may result from the operation of the Project within the zone of investigation.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Heritage and Archaeological Resources					
Protected Properties	• Although 12 protected properties were identified in the Protected Properties Assessment no direct or indirect operation-related impacts were identified.	• N/A	• N/A	• N/A.	No net effects.
Heritage Resources	• Although 119 cultural heritage resources were identified in the Project Study Area in the Heritage Impact Assessment, no direct operation-related impacts were identified. • The assessment identified four heritage resources, the Elcho United Church Cemetery, Mount Carmel Cemetery, Mount Carmel United Brethren Church and West Lincoln McCaffrey Cemetery, which have potential for operation-related indirect effects from visual impacts.	• Minimize visual impacts	• Work directly with Elcho Cemetery Board to design and install an appropriate visual barrier around the cemetery to protect views. • Install transmission line poles on east side of Port Davidson Road (opposite side of road from the West Lincoln McCaffrey Cemetery). • Work directly with the municipality and cemetery board to design and erect appropriate visual barrier (i.e., tree plantings, fencing) on the northern, western and southern boundaries of the Mount Carmel cemetery. • Junction box at the intersection of Hutchinson Road and Highway 3 should be located at the northwest corner of the intersection away from Mount Carmel United Brethren Church.	• N/A	Minimal indirect visual impacts anticipated.
Archaeological Resources	• There are no areas that would be excavated during the operation phase that would not have been previously assessed prior to construction; therefore no effects are anticipated to archaeological resources during operation.	• None required.	• In the event that archaeological resources are encountered during operations, o all work within the vicinity of an archaeological find will be suspended; o the Ministry of Tourism, Culture and Sport archaeologist would be contacted; and o Aboriginal communities would be contacted.	• In the event that human remains are encountered or suspected of being encountered before or during construction, all work would stop immediately. Notification would then be made to the Ontario Provincial Police or local police.	• No net effects to archaeological resources during operations are anticipated.
Natural Heritage Resources					
Wetlands	• Contamination through accidental spills.	• No spills.	• See ‘Spills‘. • All maintenance activities, vehicle refueling or washing and chemical storage will be conducted at the operations and maintenance facility (off site) or, if necessary, located more than 30m from wetlands.	• Hydrological conditions will be monitored once in the spring and once in the summer during the first year of post-construction.	None.
Areas of Natural and Scientific Interest (ANSI’s)	• No potential effects to Life Science ANSI (St. Ann’s Slough Forest) as no components are located in the feature. • No operation-related potential effects to the Winger Earth Science ANSI which hosts project components. • Contamination through accidental spills.	• No spills.	• See ‘Spills‘. • See ‘Woodlands’.	• N/A	None.
Valleylands and Hazard Lands	• The Project Location encounters one valleyland, the Welland River. Collector lines and transmission lines are proposed to cross the Welland River. The option of overhead lines or underground lines will	• See “Wetlands”, “Woodlands” and “Surface Water, Fish and Fish Habitat”	• See “Wetlands”, “Woodlands” and “Surface Water, Fish and Fish Habitat”	• See “Wetlands”, “Woodlands” and “Surface Water, Fish and Fish Habitat”	See “Wetlands”, “Woodlands” and “Surface Water, Fish and Fish Habitat”

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	be confirmed during detailed design but both options have been assessed for potential impacts. Potential impacts to woodlands, wetlands, watercourses and fish habitat within the valleyland during regular maintenance.				
Woodlands	• Contamination through accidental spills.	• No spills.	• See 'Spills'.	• See "spills".	None.
Provincial Parks and Conservation Reserves	• As no Provincial Parks and Conservation Reserves were identified within the Project Location, there are no anticipated impacts.	• N/A	• N/A	• N/A	N/A
Significant Wildlife and Wildlife Habitat	• Shifts in species abundance, avoidance and behavior during operation. • Direct mortality of birds and bats from collisions. • Turbine lighting has potential to impact migratory birds and cause collisions. • Disturbance to species during maintenance activities from traffic, noise and dust. • Direct mortality of turtles, amphibians and snakes due to collision with maintenance vehicles.	• Minimize mortality of significant wildlife. • Minimize disturbances to significant wildlife.	• Turbine lights with the shortest allowable flash durations and longest allowable pause between flashes are preferred. To the extent possible, no steady burning lights/floodlights will be used at the facility. • Principles of avoidance and minimization, as discussed in section 5.1, were applied during layout design to mitigate potential effects during operation. • Setbacks between project components and significant wildlife habitat were considered during layout design to mitigate potential effects during operation. • Maintenance vehicle speeds will be limited to 30 km/h or less on access roads and traffic will be limited primarily to daytime hours. Signs will be erected to communicate the speed limit. • No herbicide will be used within significant features or wildlife habitats.	• Mortality monitoring for birds will be conducted twice weekly (3-4 day intervals) at ten turbines from May 1 - October 31 for 3 years post construction (see **NHA/EIS** and EEMP in **Appendix E**). • Raptor monitoring will be conducted monthly from May 1 – October 31 and weekly from November 1 – April 30 for 3 years post construction (see **NHA/EIS** and EEMP in **Appendix E**). • Disturbance monitoring for wintering Short-eared Owls will occur for 3 years post-construction (see **NHA/EIS** and EEMP in **Appendix E**). • Disturbance monitoring for migratory birds at significant migratory bird stopover areas will occur for 3 years post-construction (see **NHA/EIS** and EEMP in **Appendix E**). • Disturbance monitoring will be conducted at all significant raptor wintering areas for 3 years post-construction (see **NHA/EIS** and EEMP in **Appendix E**). • Post-construction mitigation, including operational controls, will be considered if annual mortality of birds exceeds the MNR thresholds (14 birds/turbine/year at individual turbine or turbine groups, 0.2 raptors/turbine/year, 0.1 raptors of provincial conservation concern/turbine/year OR 10 or more birds at any one turbine or 33 or more birds at multiple turbines). Mitigation includes: o Consultation with MNR. o Increased monitoring and analyses of monitoring. o Periodic shut-down of selected turbines at specific times of year	No significant net effects are anticipated given the required implementation of contingency measures and adaptive management plan associated with the EEMP (**Appendix E**).

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
				o Blade feathering at specific times of year. (See EEMP in **Appendix E**) • In the case of a mass bird mortality event (more than 10 bird fatalities at any one turbine or more than 33 bird fatalities at multiple turbines on a single survey) the following steps will be implemented: o Notify MNR o Emergency carcass search of all turbines in the project. o Analysis of the results of the emergency carcass search. o Based on the risk factors identified, additional mitigation and scoped monitoring recommendations will be developed in conjunction with MNR with goal of avoiding future mortality events. (See EEMP in **Appendix E**) • Mortality Monitoring for bats will be conducted twice weekly (3 – 4 day intervals) at 30% of the wind turbines from May 1 to October 3 for 3 years. • Disturbance monitoring will be conducted at identified at significant bat maternity colonies within 120m of any turbine for 3 years including Exit Surveys in June. • In the event of significant bat mortality (more than 10 bats/turbine/year) increasing cut-in speed to 5.5 m/s or feathering wind turbine blades when wind speeds are below 5.5 m/s between sunset and sunrise from July 15 to September 30. (See EEMP in **Appendix E**) • In the event of continued significant bat mortality, MNR will be notified and consulted to determine additional mitigation and scoped monitoring requirements. (See EEMP in **Appendix E**) • Disturbance monitoring will be conducted for 1 year within significant turtle nesting features within 30m or proposed access roads (June and July). • Disturbance monitoring will be conducted for 1 year within significant amphibian breeding habitat within 30m of proposed access roads (April to	

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
				June). • NRWC and the MNR will review the post-construction monitoring results to determine if an ecologically significant effect on migratory birds, winter raptors, turtle nesting habitat, bat maternity colonies or breeding amphibians is occurring. Contingency measures identified in the EEMP in **Appendix E** may be implemented if performance objectives are not met. • A Vegetation Monitoring Plan will be developed to monitor the success of the Replanting and Restoration Plan.	
Other Wildlife and Wildlife Habitat	• Increased noise and disruption from operations and maintenance activities. • Limited mortality due to potential bird and bat collisions with turbines. • Potential impacts to deer and mammal movements.	• Minimize disturbance to wildlife and wildlife habitat.	• See 'Local Traffic' • See 'Environmental Noise'	• See 'Local Traffic'. • See 'Environmental Noise'. • See 'Significant Wildlife and Wildlife Habitat' • NRWC committed to work with the Six Nations to develop and participate in a winter mammal movement study to track deer proximity to turbines post-construction.	No significant net effects are anticipated given the required implementation of contingency measures associated with the EEMP (**Appendix E**). Adverse impacts are not expected on deer's land use in proximity to turbines.
Significant Flora and Vegetation Communities	• Indirect effects to flora and vegetation from dust emissions. • Contamination through accidental spills.	• Minimize disturbance to flora and vegetation communities.	• All maintenance activities, vehicle refueling or washing or chemical storage will be located at the operations and maintenance facility of site, or where necessary, more than 30m from features. • See 'Dust and Odour Emissions'. • Minimize required tree trimming and coordinate maintenance work with different infrastructure services. • Where practical, locate pole line away from mature trees.	• See 'Dust and Odour Emissions'	None.
Other Flora and Vegetation Communities	• Indirect effects to other flora and vegetation from dust emissions. • Long term tree trimming along aboveground collector lines and transmission lines.	• Minimize disturbance to other flora and vegetation communities.	• All maintenance activities, vehicle refueling or washing or chemical storage will be located at the operations and maintenance facility of site, or where necessary, more than 30m from features. • See 'Dust and Odour Emissions'. • Minimize required tree trimming and coordinate maintenance work with different infrastructure services. • Where practical, locate pole line away from mature trees.	• See 'Dust and Odour Emissions'.	None.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
Water Bodies and Aquatic Resources					
Groundwater	• Potential contamination from accidental spills.	• No spills.	• See 'Spills'.	• See 'Spills'.	See 'Spills'.
Surface Water, Fish, and Fish Habitat	No potential impacts are anticipated with the proper installation of Project components and appropriate use of maintenance equipment. There is potential for some impacts where improper installation of Project components or inappropriate use of maintenance equipment results in: • Impediment of fish movement or water passage due to inappropriate sizing or installation of culverts. • Potential contamination from accidental spills. • Erosion, sedimentation, and surface water turbidity during maintenance activities.	• No impediment. • No spills. • No erosion, sediment transport or surface water turbidity.	• No additional mitigation measures are required for correctly installed culverts. Culvert will be appropriately sized and field fit on site. • See 'Spills'. • Vegetation removal on the slopes of watercourses will be minimized to the extent possible • Stream banks will not be disturbed until necessary for maintenance activities. • Materials removed or stockpiled deposited and contained in a manner to ensure sediment does not enter a watercourse. • Seeding completed where possible. • If siltation to a watercourse occurs, activities will cease immediately until the situation is rectified.	• See 'Spills'. • NRWC will ensure monitoring during the following spring run-off one year after construction to review effectiveness of the bank and slope re-vegetation, to check bank and bank stability and to ensure surface drainage has been maintained.	None.
Air Quality and Environmental Noise					
Air Quality	• Emissions from maintenance equipment and vehicles.	• Minimize duration and magnitude of emissions.	• Operation staff would operate vehicles in a manner that reduces air emissions to the extent practical, including: o Using multi-passenger vehicles to the extent practical o Avoid idling vehicles o Equipment and vehicles would be maintained in a manner that reduces air emissions, including: o Using mufflers and emission control systems as available; o Using catalytic converters as required; and, o Monitor vehicles and ensure compliance with the emissions requirements of the MOE and/or MTO; • As appropriate, records of vehicle maintenance will be retained and made available for periodic review by NRWC and/or the Operation and Maintenance Contractor.	• Adherence to Complaint Response Protocol • All vehicles identified through the monitoring program that fail to meet the minimum emission standards will be repaired immediately or replaced as soon as practicable.	• Any net effects are expected to be short-term in duration and highly localized.
Dust & Odour Emissions	• Dust emissions from operation and maintenance vehicles. • No potential for odour emissions.	• Minimize duration and magnitude of dust emissions. • Minimize disturbance to existing land uses.	• Maintaining equipment in good running condition and in compliance with regulatory requirements. • Dust suppression (e.g. water and/or calcium chloride) of source areas as necessary. • Covering loads of friable materials during transport.	• Adherence to Complaint Response Protocol.	• Any net effects are expected to be short-term in duration and highly localized.
Environmental Noise	• There are 2667 receptors within 1.5km of any turbine including 2032 non-participating occupied receptors, 539 non-participating vacant lot receptors and 96 participating receptors. • All non-participating receptors are greater than 550m from the centre point of any	• Ensure noise at all non-participating receptors meets MOE Guidelines. • Minimize duration and magnitude of noise emitted from maintenance	• Adherence to all noise setback requirements for both 124m hub height and 135m hub height tower. • Transformer substations are equipped with a noise attenuating barriers (4-sided noise wall at north transformer substation and 2-sided noise wall at south transformer substation, as per **Noise Assessment Report.**)	• Noise monitoring or acoustic auditing (if required) of all noise emissions, would be conducted in accordance with the REA for the Project including auditing of noise emissions at various times of year, wind speeds and locations in the Project Study Area.	• Net effects will be some noise emissions from the turbines and transformer but in compliance with the required MOE limits.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	turbine and show noise emissions less than 40 dBA in the **Noise Assessment** (**Appendix C**). • Noise emitted from a turbine and/or transformer substation during operation. • Noise emitted from maintenance equipment during operations and maintenance.	equipment.	• All engines associated with maintenance equipment would be equipped with mufflers and/or silencers in accordance with MOE and/or MTO guidelines and regulations. • Noise levels arising from maintenance equipment would also be compliant with sound levels established by the MOE. • Routine Project maintenance to ensure infrastructure is operating properly and efficiently. • To the greatest extent possible, operation activities that could create excessive noise would be restricted to regular business hours, when residents are less sensitive to noise, and adhere to any local noise by-laws and any requirements of the Occupational Health and Safety Act. • If maintenance activities that cause excessive noise must be completed outside of normal time frames, adjacent residents will be notified in advance and by-law conformity will occur, as required.	• Turbine shutdown in the event of a malfunctioning turbine or extreme weather event. • Turbine maintenance to ensure turbines are running properly and efficiently. • Adherence to Complaint Response Protocol. • In the event of a malfunctioning turbine which is resulting in noise emissions that are above MOE requirements, the problematic turbine(s) would be shut down until corrective measures are taken.	
Land Use and Socio-Economic Resources					
Areas Protected Under Provincial Plans and Policies	• No project components within the Oak Ridges Moraine Conservation Plan or the Lake Simcoe watershed.	• N/A	• N/A	• N/A	• N/A
	• A portion of the transmission line is located within existing road rights-of-way in the Protected Countryside of the Greenbelt Area Plan • Long term tree trimming and vegetation removal adjacent to the transmission line for lifetime of the project.	• Avoid and/or minimize negative impacts to key natural heritage features and key hydrologic features. • Optimize coordination with different infrastructure services.	• Design the transmission line with monopole structures, minimize pole structure height and maximize pole structure spacing. • Design the transmission line to minimize vegetation removal. • Follow existing municipal road right of way to avoid cross-country routes and minimize disturbance to natural features. • Route alignment through Greenbelt Area minimizes length traversed by the transmission line.	• See ‘Significant Flora and Vegetation Communities’ • See ‘Other Flora and Vegetation Communities	• No anticipated significant net effects.
	• A portion of the transmission line is located within the Niagara Escarpment Plan Area within existing road rights-of-way. The line will be installed underground through the NEP Area. • No potential impacts during operation.	• N/A	• Obtain a Development Permit from the NEC prior to receipt of REA.	• N/A	• No anticipated significant net effects.
Existing Land Uses	• Temporary / minor increase in noise and dust levels during maintenance activities. • Minor increase in traffic.	• Minimize disturbance to existing land uses, including local businesses.	• See ‘Environmental Noise’. • See ‘Dust and Odour Emissions’.	• See ‘Environmental Noise’. • See ‘Dust and Odour Emissions’.	• No anticipated significant net effects.
Recreation Areas and Features	• Much of the land within 120 m of the Project Location is used for recreation purposes such as hunting, fishing, hiking and off-roading. • Recreational areas include the Mountainview Conservation Area, Bruce Trail and Wainfleet Rail Trail (Gord Harry	• Minimize disturbances to public’s use of recreation areas (i.e., hikers, bicyclists).	• Enforce maintenance vehicle speed limits of 30 km/hr when along the Wainfleet Rail Trail or any access roads which connect to the trail. • Notify NPCA in advance of any maintenance in the area. • Continue consultation with NPCA. • See “Dust & Odour Emissions” and “Environmental	• Consult with NPCA to confirm whether additional mitigation measures are required based on hiker comments or feedback. • Adherence to Complaint Response Protocol.	• No anticipated significant net effects.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
	Trail). • The Lake Erie waterfront is approximately 600 m from the nearest project components. • There are no operation-related effects to the Bruce Trail and Mountainview Conservation Area recreation sites and the shores of Lake Erie. • There will be occasional maintenance vehicle access of the Wainfleet Rail Trail along the approximately 500m stretch between Elgin Road and Townline Road. Access would not require trail closure but has potential to cause disturbance to hikers through the generation of noise and dust. Consultation with the NPCA confirmed that the potentially affected portion of the Wainfleet Rail Trail is not currently open or maintained for public use. However, NPCA is considering opening this portion of the trail in the near future. • Temporary trail closure may be required in extreme cases where large equipment replacement is necessary.		Noise"		
Agricultural Lands and Operations	• Change in land use from agriculture to renewable energy development. • Noise and visual impacts to livestock. • Dust emissions associated with vehicular traffic during regular maintenance.	• Minimize disturbance to agricultural lands and operations.	• Landowners are financially compensated for the lease of private lands. • Change in land use in not permanent and will be returned to original land use at the end of the project life cycle. The condition of the land at the end of the project life cycle will be the same or better than original conditions. • Consultation was conducted with landowners to help minimize land disturbance when siting wind turbines and associated infrastructure. • Consultation with landowners will be continued during construction and post-construction to ensure that rehabilitation of temporary construction areas are adequately returned to their original land use to conditions that are the same or better than original conditions. • Communication with livestock owners. • Dust emissions are expected to be short-term in duration and highly localized; no mitigation measures required.	• Adherence to Complaint Response Protocol.	• No anticipated significant net effects.
Mineral, Aggregate, and Petroleum Resources	• No potential operation-related effects to mineral, aggregate and petroleum resources. • The nearest turbine to a pipeline is 654m.	• N/A	• Landowners are financially compensated for the land that would be taken out of production during the lifetime of the Project. • Additional studies to verify the location of known petroleum resources in proximity to Project components will be undertaken as part of the MNR's Approval, Permitting and Requirements Document	• None required.	• Primary and secondary aggregate deposits would be removed from future use where Project infrastructure overlays these deposits until the Project is

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			(APRD) process. • Companies operating oil and gas pipelines in the area have been consulted regarding the Project regarding location of infrastructure and will be continue to be consulted through the REA process and detailed design , as appropriate. • Underground locates in the road allowance will be completed as needed prior to construction.		decommissioned. However, wind turbines are not considered permanent structures on the landscape.
Game And Fishery Resources	• Sensory disturbance to game species from noise. • Impediment of fish movement or water passage due to improperly installed culverts.	• Minimize disturbance to game and fishery resources.	• See 'Environmental Noise'. • Culverts installed such that there is no restriction of flows.	• See 'Environmental Noise'. • None required.	• Temporary and intermittent net effects are anticipated.
Local Traffic	• Short-term, localized disturbance to traffic patterns, increases in traffic volume, and/or creation of potential traffic safety hazards during regular maintenance. • Traffic on previously unopened road allowances.	• Minimize disturbance to local traffic.	• There may be infrequent instances where excess loads (e.g. turbine and transformer components) would require special traffic planning, widening turning radiuses and road widths and the creation of new ingress/egress nodes. • NRWC may provide notification of non-conventional load movements that may interfere with local traffic. • NRWC to execute Road Use Agreement with affected municipalities including a definition of upgrades, maintenance and use of unopened road allowances and general liability.	• Adherence to Complaint Response Protocol.	• A limited short-term effect on traffic during regular maintenance.
Viewscape	• Viewscape from areas surrounding the Project Location will be altered due to the presence of wind turbines, transformer substations, tap-in location and aboveground collector and transmission pole lines.	• Minimize potential for visual disturbance.	• Minimal mitigation measures are available to address concerns related to visual changes in the area due to the physical size of the turbines and poles. • Turbines will be painted light grey and distributed over the Project Study Area. • Turbine lights with the shortest allowable flash durations and longest allowable pause between flashes are preferred. • To the extent possible, no steady burning lights/floodlights will be used at the facility, including at the transformer substations. • Where feasible, full cutoff fixtures (those that reduce up-lighting) will be used for outdoor lighting at the transformer substations to mitigate light trespass on neighbouring properties and potential impacts on the nighttime environment. • NRWC will consult with Transport Canada and Nav Canada to minimize the number of turbines which are lit, based on the relevant regulations at the time of construction. • Collector line poles and transmission line poles will be monopole structures and designed with maximum spacing and minimum height practical to minimize visual impacts • A Landscaping Plan developed by the Construction Contractor will include recommendations for natural	• None.	• Net effect, either positive or negative based on perceptions, due to the change in viewscape of the surrounding area.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			• landscaping around chainlink fences. • See 'Heritage Resources'.		
Local Economy	• Increase in employment over the operation period. • Local economic benefits from land lease payments, municipal taxes, etc.	• Create positive effects on local economy.	• To the extent possible local hiring will be maximized. • NRWC will be contributing over $20 million to local communities through community vibrancy funds.	• None required.	• A positive net effect is anticipated on the local economy during the operation of the Project through the creation of jobs and use of local labour and suppliers. Approximately 12 full-time operation and maintenance staff would be employed during the operation phase. • Community vibrancy fund will support local projects and will be managed by local citizens. • A Niagara Community employment and contractors seminar is being planned for Spring 2013. • NRWC has engaged several Aboriginal communities to identify employment opportunities.
Existing Infrastructure					
Provincial, municipal, and other major infrastructure	• Excess loads during maintenance of large components would require special traffic planning. • Maintenance of transmission lines and collector lines could disrupt existing infrastructure at crossings of HONI transmission lines and railways.	• Minimize disturbance to Provincial, municipal, and other major infrastructure.	• Necessary permits would be obtained. • As appropriate, "pilot" vehicles will accompany non-conventional loads. • Public notification of unconventional load movements may occur. • Consultation with HONI and railway owners as appropriate.	• See 'Local Traffic'	• Net effect will be short-term and spatially limited.
Telecommunications Networks	• Potential to interfere with radio, TV, or internet signals (static ghosting, signal blockage, dynamic interference/pulsing) (RABC, 2010). • Potential to interfere with cellular telephone networks.	• Minimize interference with radio, TV, or internet signals. • Minimize interference with cellular telephone networks.	• NRWC has consulted with relevant agencies and licensed providers to identify any likely effects to telecommunication and radar systems.	• Adherence to Complaint Response Protocol. • NRWC would review potential incidents of telecommunications interference on a case by case basis. • In the unlikely event that signal disruption is experienced, contingency measures (at the cost of NRWC) may include: o Replacing the receiving antenna with one that has a better discrimination to the unwanted signals o Relocating either the transmitter or receiver	• No anticipated significant effects.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
				o Switching to an alternate means of receiving the information. o Cellular coverage could be restored by installation of an additional cell tower or of one or more additional antennae on the existing cell tower.	
Aeronautical Systems	• Aeronautical obstruction. • Consultation with Nav Canada confirmed that the turbines will be visible to Hamilton and Toronto RADAR's at the Hamilton and Toronto with potential for the following impacts: - A large number of nuisance (false) primary radar targets; - A significant reduction in ability to identify and track primary surveillance targets; - Inability to provide full traffic information to aviation customers; - An increase in the controller's workload. - A decrease in flight safety for aircraft operation; and, - Increase to the Obstacle Clearance Circle (OCC) altitude at the Dunnville Airport.	• Minimize potential hazard to low flying aircraft. • Minimize impacts to Nav Canada RADAR's.	• Turbine lighting will conform to Transport Canada standards. In order to reduce rural light pollution, lights would be selected with the minimal allowable flash duration, narrow beam, and would be synchronized. • Consultation with Nav Canada and Transport Canada will confirm which turbines will require lighting – NRWC will aim to minimize the number of lit turbines. • Nav Canada confirmed that the potential effects on the RADAR systems can be mitigated with specific technical adjustments on a cost-recovery basis. NRWC and Nav Canada will enter into an agreement to ensure that all necessary technical adjustments are made to mitigate impacts. • Nav Canada would be responsible for updating all aeronautical charts with the turbine locations. • Low-level aircraft such as ultra-lights and crop dusters are to be familiar with the area they are flying over and are prohibited from night-time flights.	• Routine maintenance of the turbines and replacement of safety lighting in the event of malfunction. • Continued consultation with Nav Canada throughout the lifetime of the Project.	• No anticipated significant effects to aeronautical systems. • Low-level aircrafts such as crop dusters may need to re-route their paths or consult with NRWC when spraying is to occur.
Waste Management and Contaminated Lands					
Waste Generation	• Improper disposal of waste material may result in contamination to soil, groundwater, and/or surface water resources on and off the Project sites. • Litter may become a nuisance to nearby residences if not appropriately contained and allowed to blow off the site.	• Ensure proper disposal of waste.	• Implementation of a site-specific waste collection and disposal management plan, which may include good site practices such as: o Contractors will be required to remove all waste materials from the Project sites during maintenance activities; o All waste materials and recycling would be transported off-site by private waste material collection contractors licensed with a Certificate of Approval – Waste Management System; and, o Labeling and proper storage of liquid waste. • As appropriate, spill kits will be provided on-site. • Dumping or burying wastes within the Project sites will be prohibited. • Disposal of non-hazardous waste at a registered waste disposal site(s). • If waste is classified as waste other than solid non-hazardous, a Generator Registration Number is required from the MOE and the generator will have obligations regarding manifesting of waste. • Implementation of an on-going waste management program consisting of reduction, reuse, and recycling	• See 'Spills'.	No anticipated significant effects.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
			of materials. • See 'Spills'		
Spills	• Potential contamination from accidental spills.	• No spills.	• Refueling, equipment maintenance, and other potentially contaminating activities would occur in designated areas. • Spills will be reported immediately to the MOE Spills Action Centre, as applicable. • The two transformers will be mounted on foundations that have a secondary liquid containment storage area designed to capture the insulating fluid in the unlikely event of a leak. The liquid containment system is designed to hold all of the liquid from the transformers as well as any precipitation that may accumulate. • The TS will be operated in accordance with all applicable codes and standards including the Canadian Electrical Code and the Ontario Electrical Safety Code. • Development of Emergency Response Plan.	• Monitoring would be required following the unlikely event of contamination from an accidental spill or leak (method for monitoring may be developed in consultation with the Spills Action Centre of the MOE). • Contaminated soils would be removed and replaced as appropriate. • Emergency Response Plan will address procedures for response to spills including containment and clean-up materials and their storage locations. • Internal audits will be completed to confirm compliance with Monitoring and Emergency Response Plans.	No anticipated significant effects.
Public Health and Safety					
Turbine Blade and Structural Failure	• Potential risk to public health and safety from collision with failed components.	• No structural failure of the turbines or ancillary equipment.	• Adherence to required setbacks of turbines from homes, property lines and right of ways. • Design, install, operate, and maintain turbines according to applicable industry standards/certifications. • Use of lightning protection systems. • Training and education of staff operating the control system. • Familiarizing local municipal emergency response staff with Project facilities. • ENERCON Storm Control system recognizes high winds and controls wind turbine appropriately to reduce risk of damage.	• Inspections of turbines would occur after extreme events and contingency measures such as turbine shutdown would be implemented in the event of structural damage. • Turbine maintenance to ensure turbines are running properly and efficiently. • NRWC and/or the Operation and Maintenance Contractor would maintain a master Incident Report. Incident reporting would follow the requirements of the Occupational Health and Safety Act. • Emergency Response Plan will address procedures for response to incidents. • Internal audits will be completed to confirm compliance with Monitoring and Emergency Response Plans.	With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety.
Ice fall and shed	• Public Health and Safety from collision with ice.	• Limit potential for ice throw/shed to impact pedestrians.	• Adherence to required setbacks of turbines from homes, property lines and right of ways. • Design of turbine tower reduces ice accumulation (solid conical tower rather than latticed tower). • ENERCON blade de-icing system reduces chance of ice accumulation via an electric fan heater which maintains the surface of the blade to above 4°C. • If weather conditions cause ice formation on blades and de-icing system is not effective at removing the ice, the turbine controls detect ice formation and shut down the turbine until ice has gone.	• Inspections of turbines would occur after extreme events and contingency measures such as turbine shutdown would be implemented in the event of structural damage and/or icing to a turbine(s). • Turbine maintenance to ensure turbines are running properly and efficiently. • NRWC and/or the Operation and Maintenance Contractor would maintain a master Incident Report. Incident reporting would follow the requirements of the Occupational Health and Safety	With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety.

Table 5.2: Summary of the Potential Environmental Effects and the Environmental Effects Monitoring Plan during Operation

Environmental Feature	Potential Effect	Performance Objective	Mitigation Strategy	Monitoring Plan and Contingency Measures	Net Effects
				Act. • Emergency Response Plan will address procedures for response to incidents. • Internal audits will be completed to confirm compliance with Monitoring and Emergency Response Plans.	
Extreme Weather Events	• Potential damage to project infrastructure from extreme weather events.	• No structural failure of the turbines or Project equipment.	• Project components have been designed to withstand the effects from extreme events (turbine is designed for gusts up to 59.5 m/s or 214 km/h). • Use of lightning protection systems. • Design, install, operate, and maintain turbines according to applicable industry standards/certifications. • Failsafe devices are capable of shutting down the turbine blades in the event of excessive wind conditions, imbalance, or malfunction of other turbine components. • ENERCON Storm Control system recognizes high winds and controls wind turbine appropriately to reduce risk of damage.	• See ‘Turbine Blade and Structural Failure’.	With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety.
Third Party Damage	• Potential damage to towers from accidental collision from off-road and maintenance vehicles.	• No structural failure of the turbines or Project equipment.	• Access to the towers will be restricted to avoid potential accidents to unqualified persons.	• See ‘Turbine Blade and Structural Failure’.	With adherence to safety policies and procedures, there is minimal increased or new risk to public health and safety.

6.0 Conclusion and Signatures

This Project Summary Report for the Niagara Region Wind Farm has been prepared by Stantec for NRWC in accordance with O. Reg. 359/09, and the MOE's Technical Guide to REA.

This Report has been prepared by Stantec for the sole benefit of NRWC, and it may not be used by any third party without the express written consent of NRWC. The data presented in this Report are in accordance with Stantec's understanding of the Project as it was presented at the time of reporting.

Respectfully submitted,

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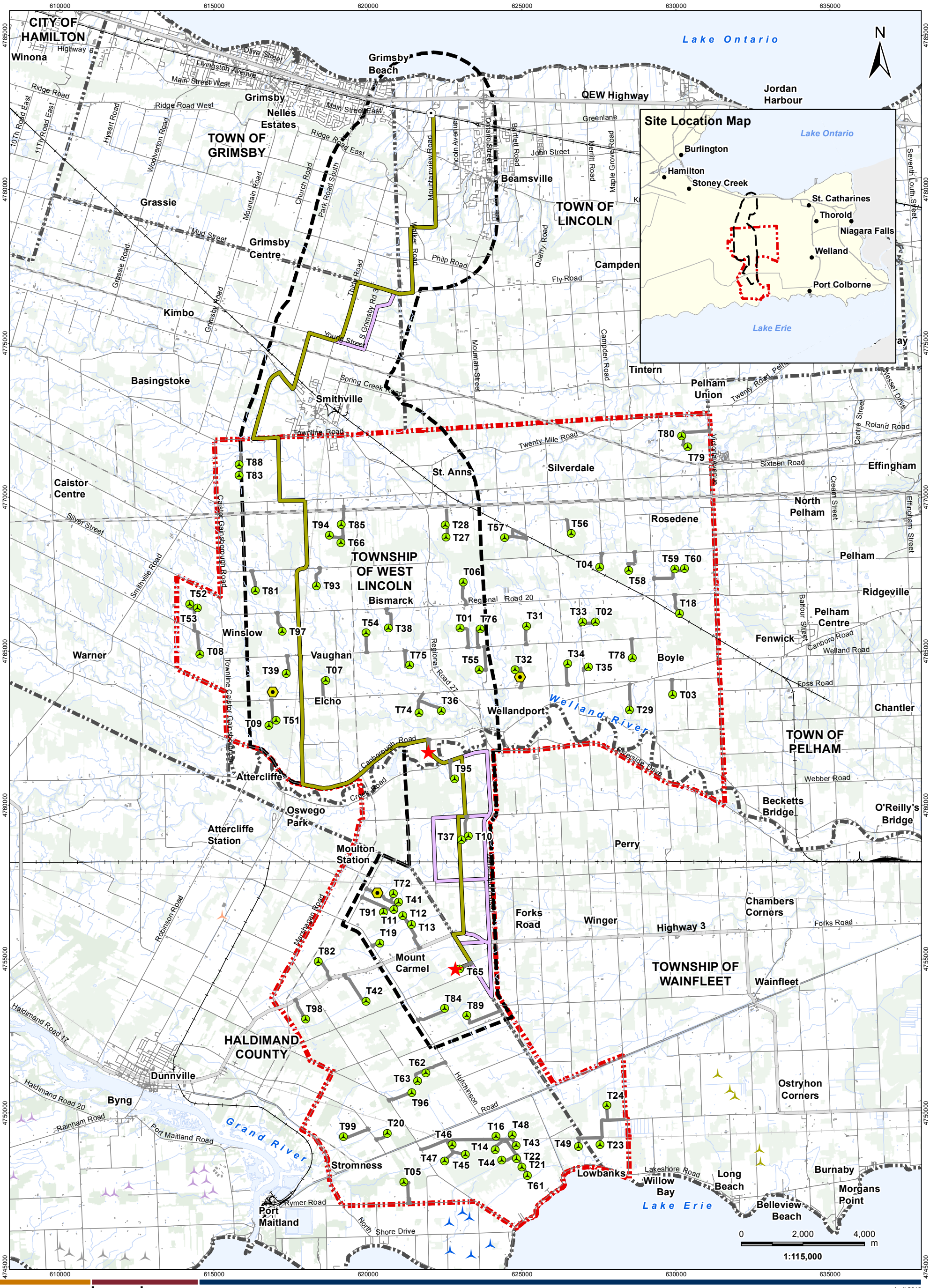
7.0 References

Ontario Ministry of the Environment. March 2012. Technical Guide to Renewable Energy Approvals.

O. Reg. 359/09. 2012. Ontario Regulation 359/09 made under the Environmental Protection Act, Renewable Energy Approvals Under Part V.0.1 of the Act, as amended by O. Reg. 333/12 on November 2, 2012.

Appendix A

Figures



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Revised: 2013-04-18 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Preferred Transmission Route
- Alternate Tranmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier

Other Wind Turbines

- Mohawk Wind Farm (Existing)
- Rosa Flora Turbine (Existing)
- Wainfleet Wind Energy Project (Proposed)
- HAF Wind Energy Project (Proposed)
- Grand Renewable Energy Project
- Other Wind Farm Projects

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

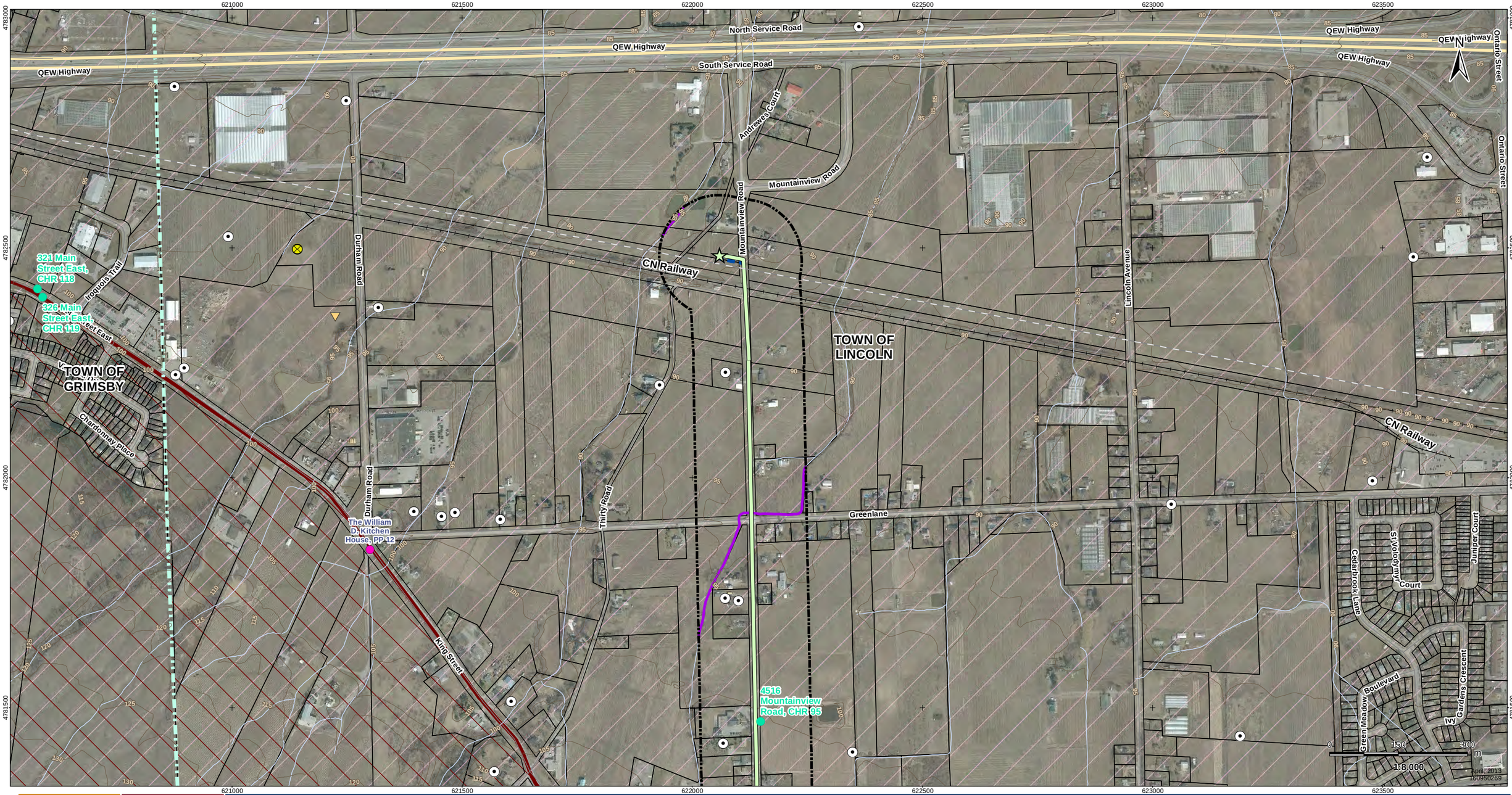
Stantec

April 2013
160950269

Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm

Figure No.
1

Title
Overview Site Plan



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Revised: 2013-04-02 By: bcowper

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Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

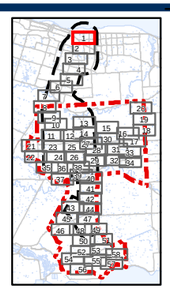
Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

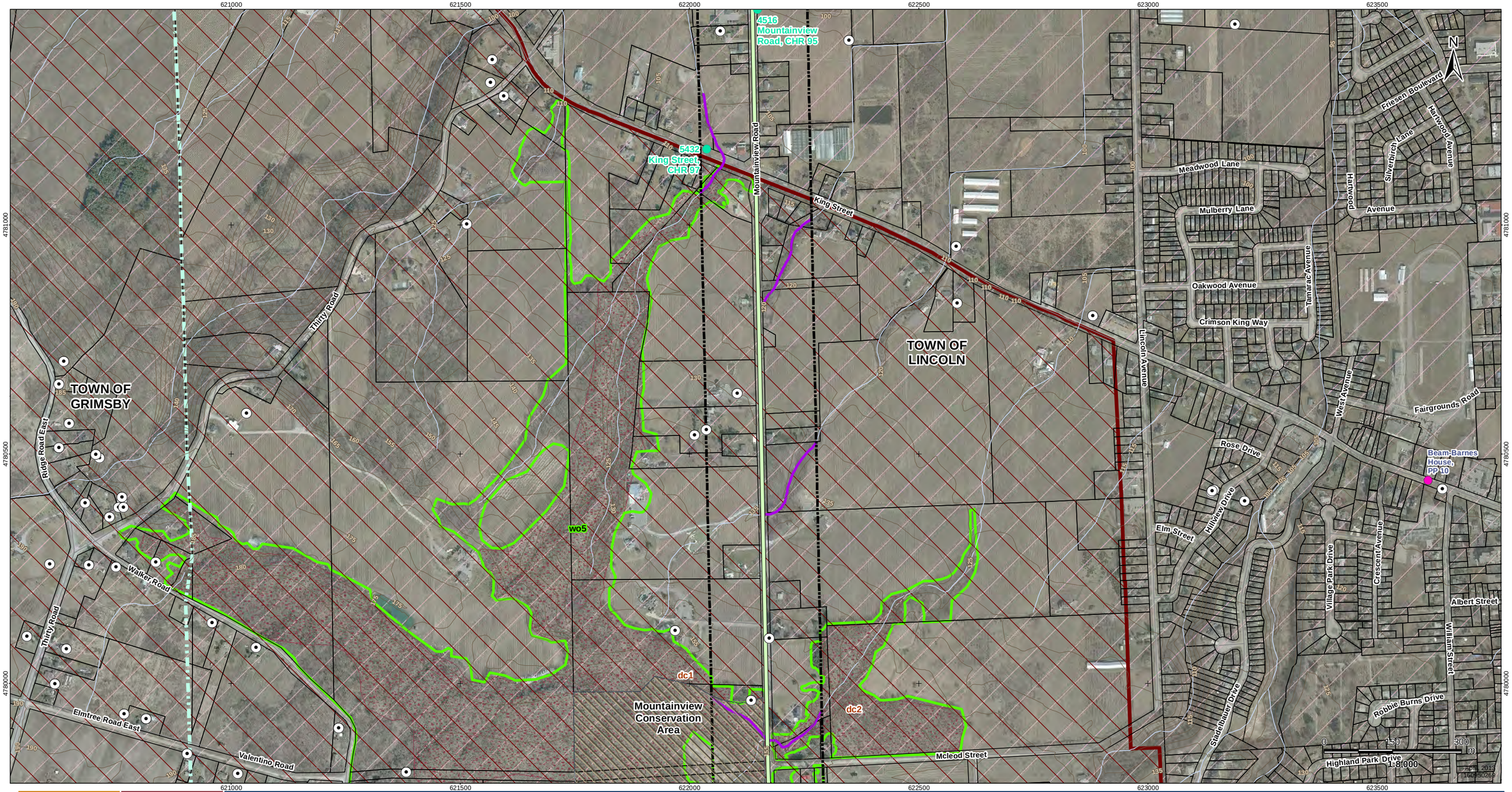
1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.1

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.1



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
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- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
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- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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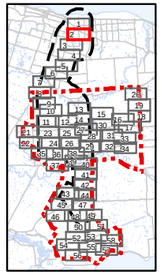
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.2

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.2

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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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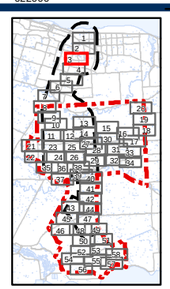
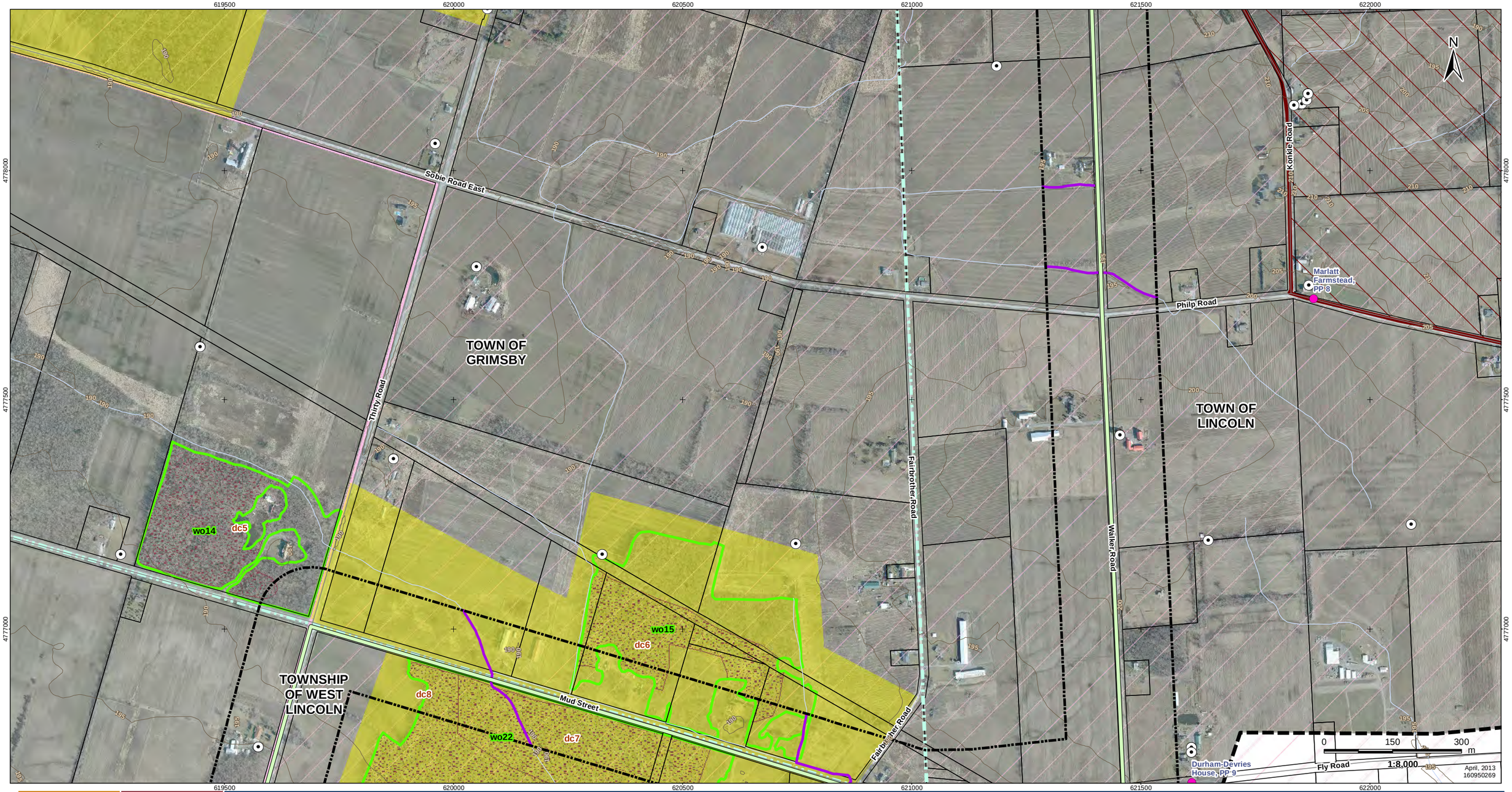
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.3

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.3



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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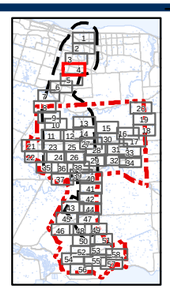
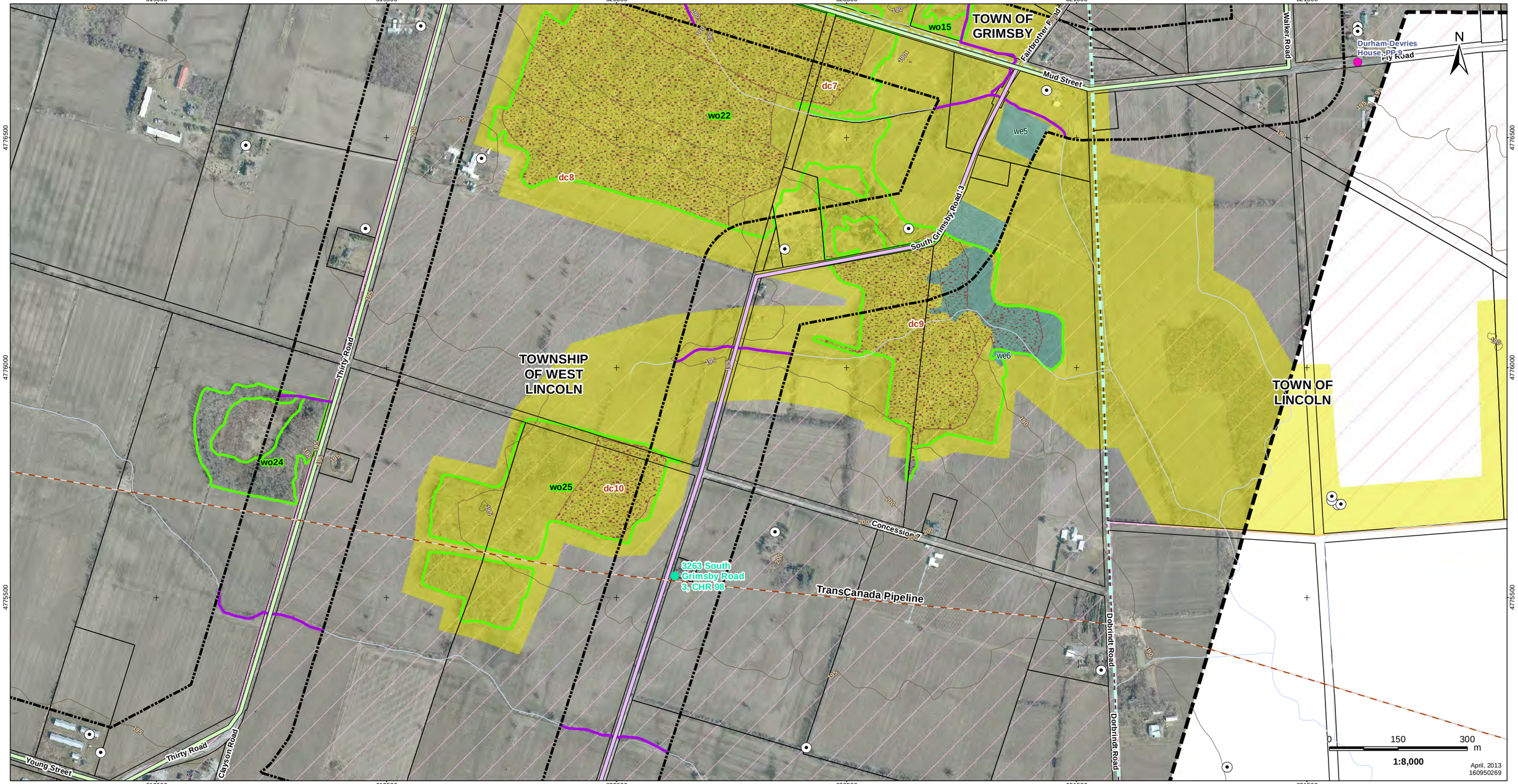


Client/Project
Niagara Region Wind Corporation

Figure No.
2.4

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.4



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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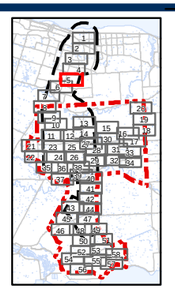
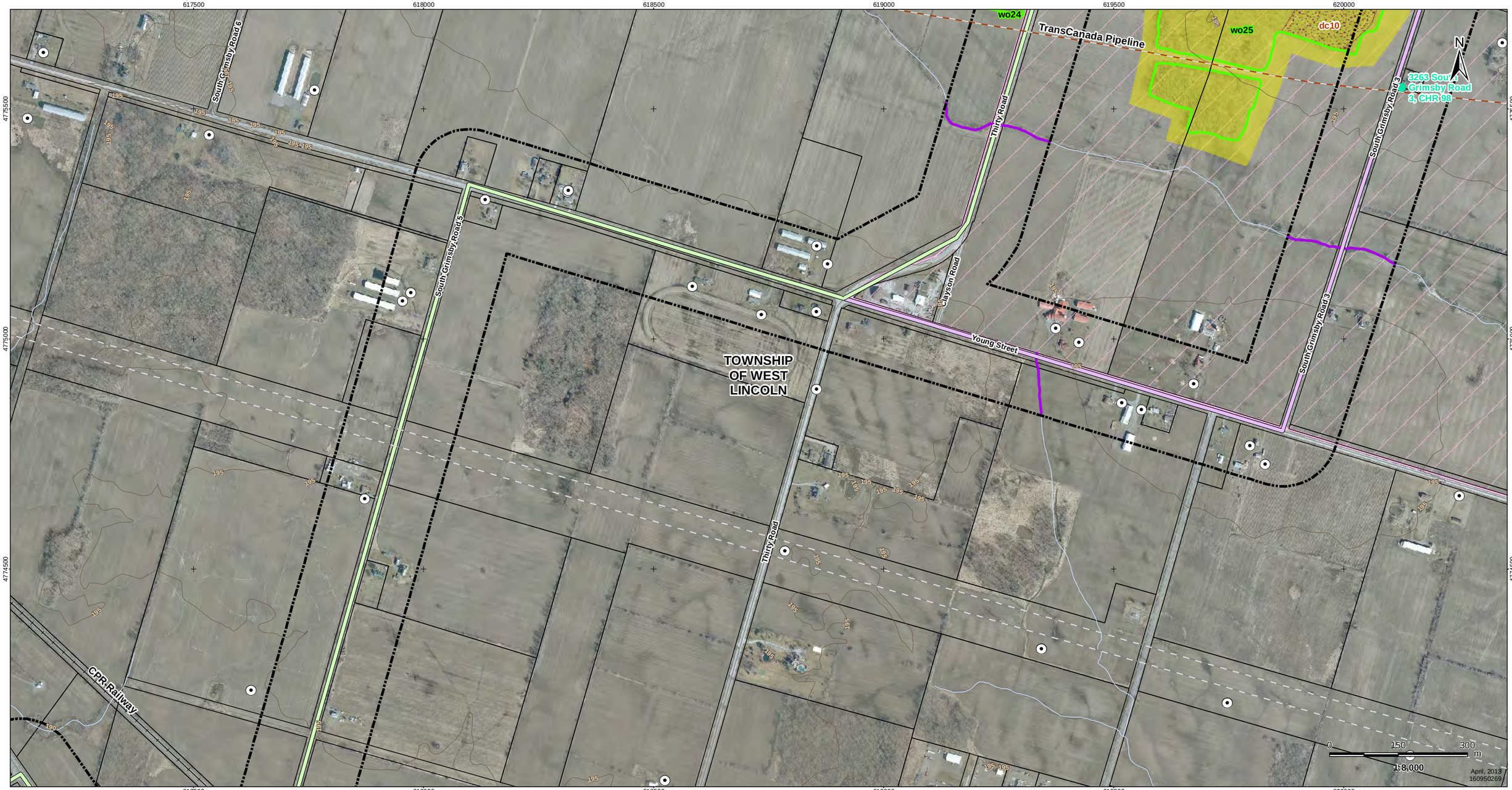


Client/Project
Niagara Region Wind Corporation

Figure No.
2.5

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.5



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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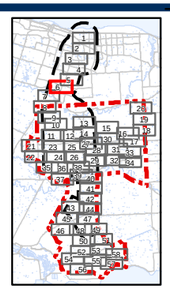
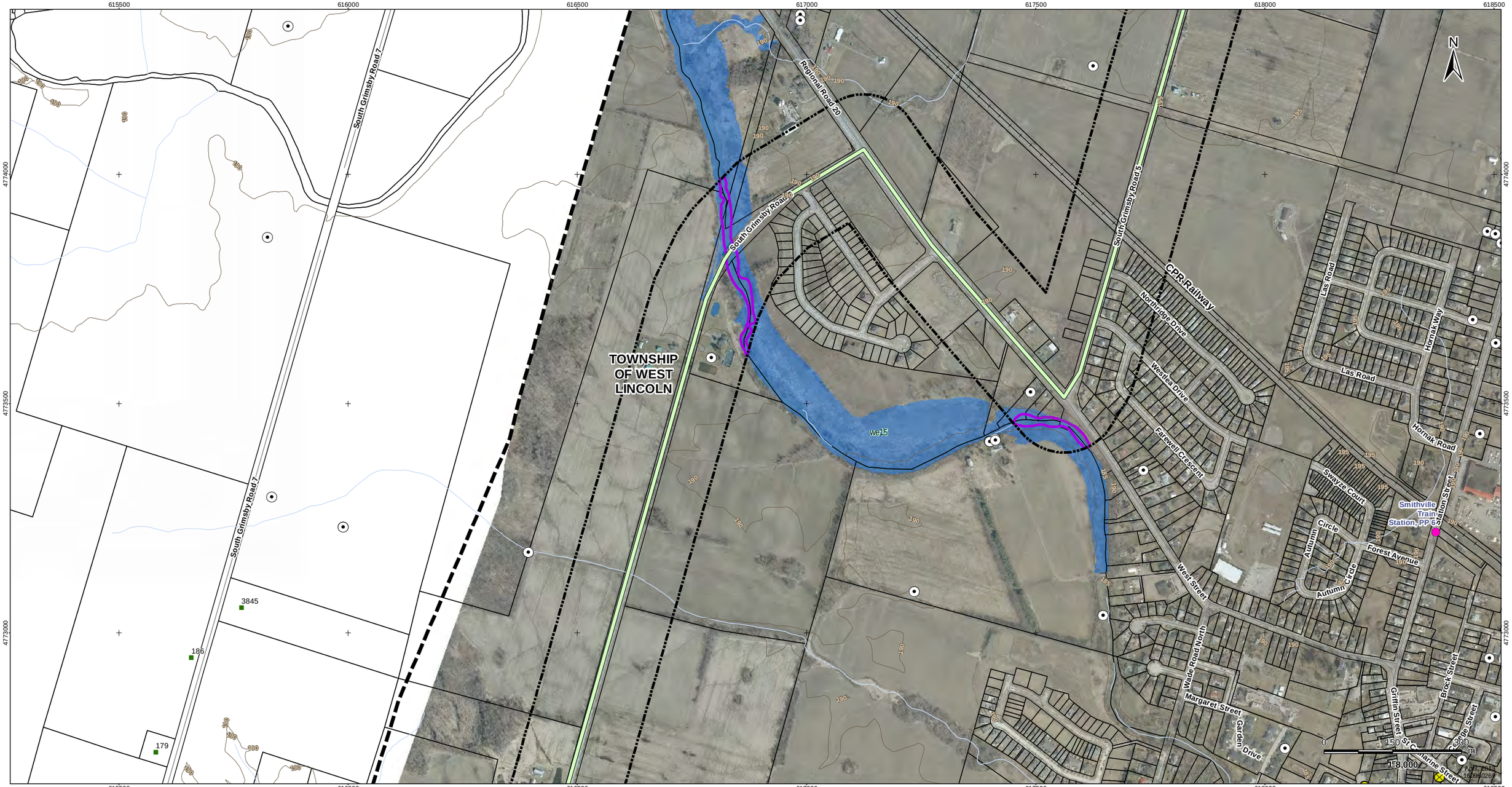


Client/Project
Niagara Region Wind Corporation

Figure No.
2.6

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.6



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Revised: 2013-04-02 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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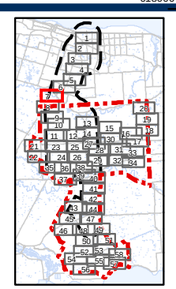
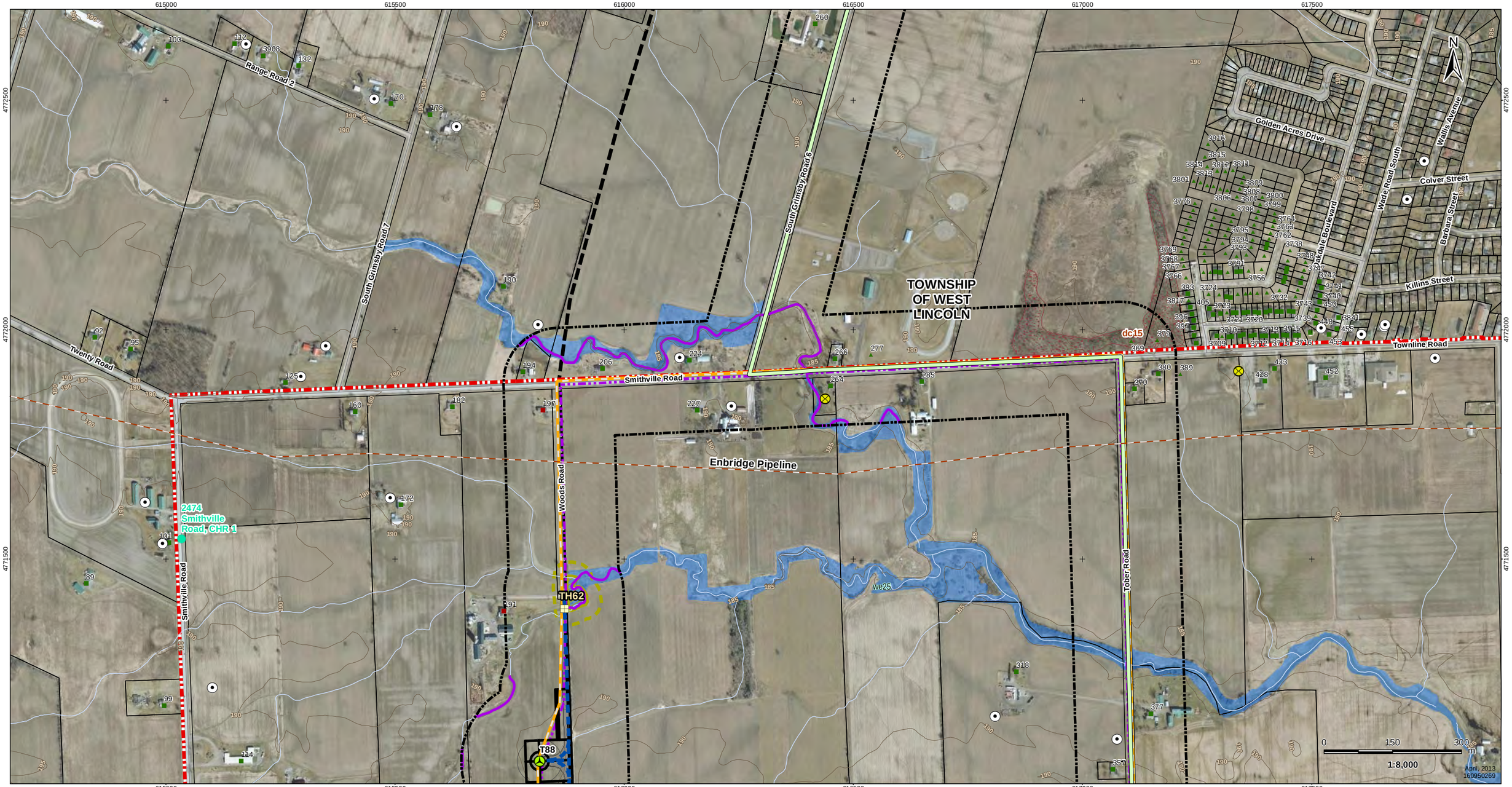


Client/Project
Niagara Region Wind Corporation

Figure No.
2.7

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.7



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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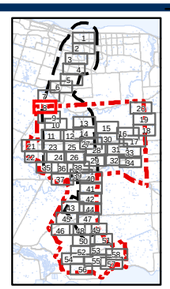
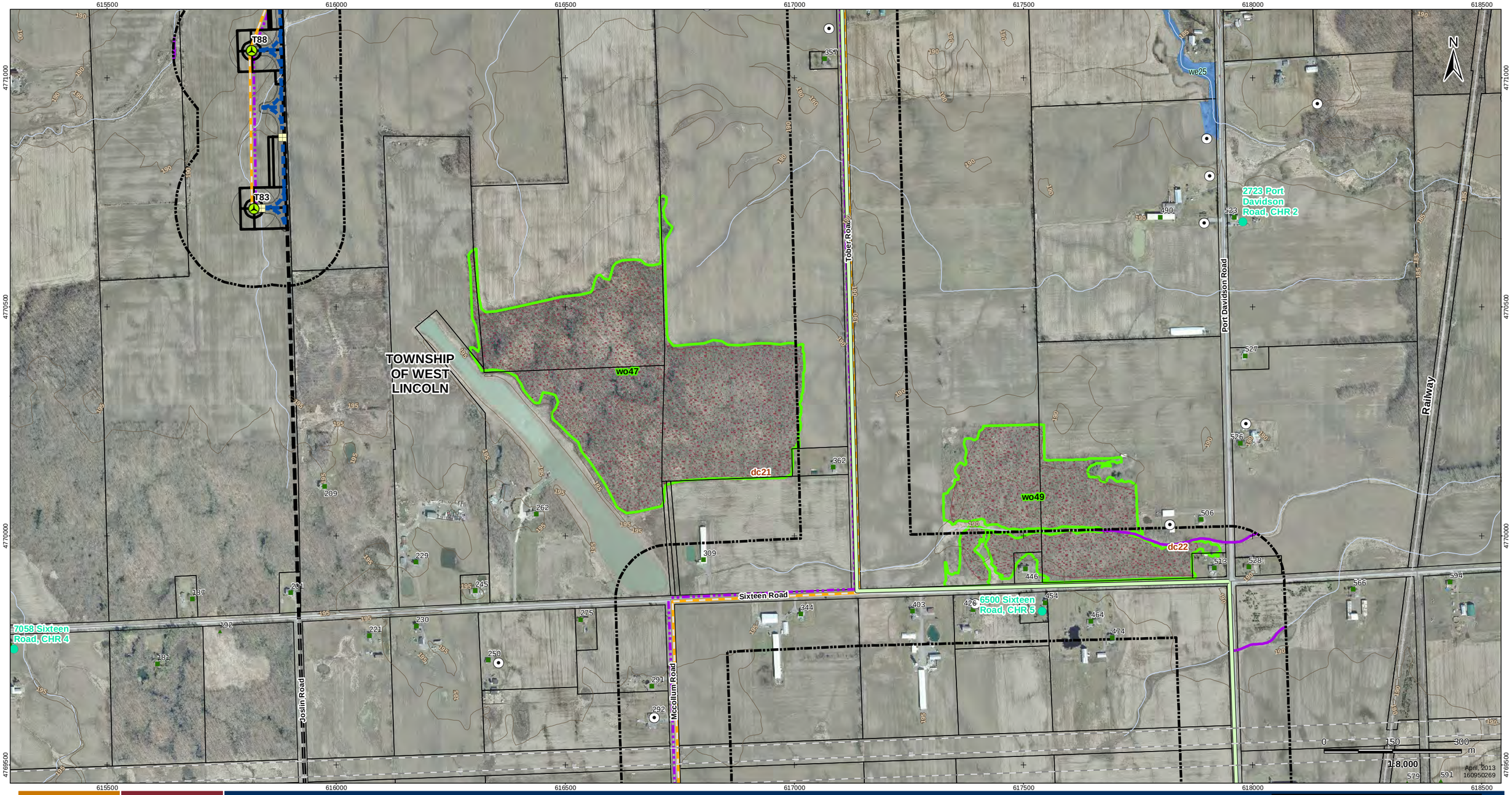


Client/Project
Niagara Region Wind Corporation

Figure No.
2.8

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.8



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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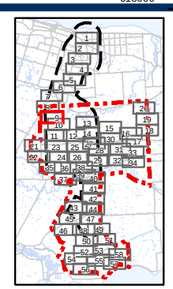
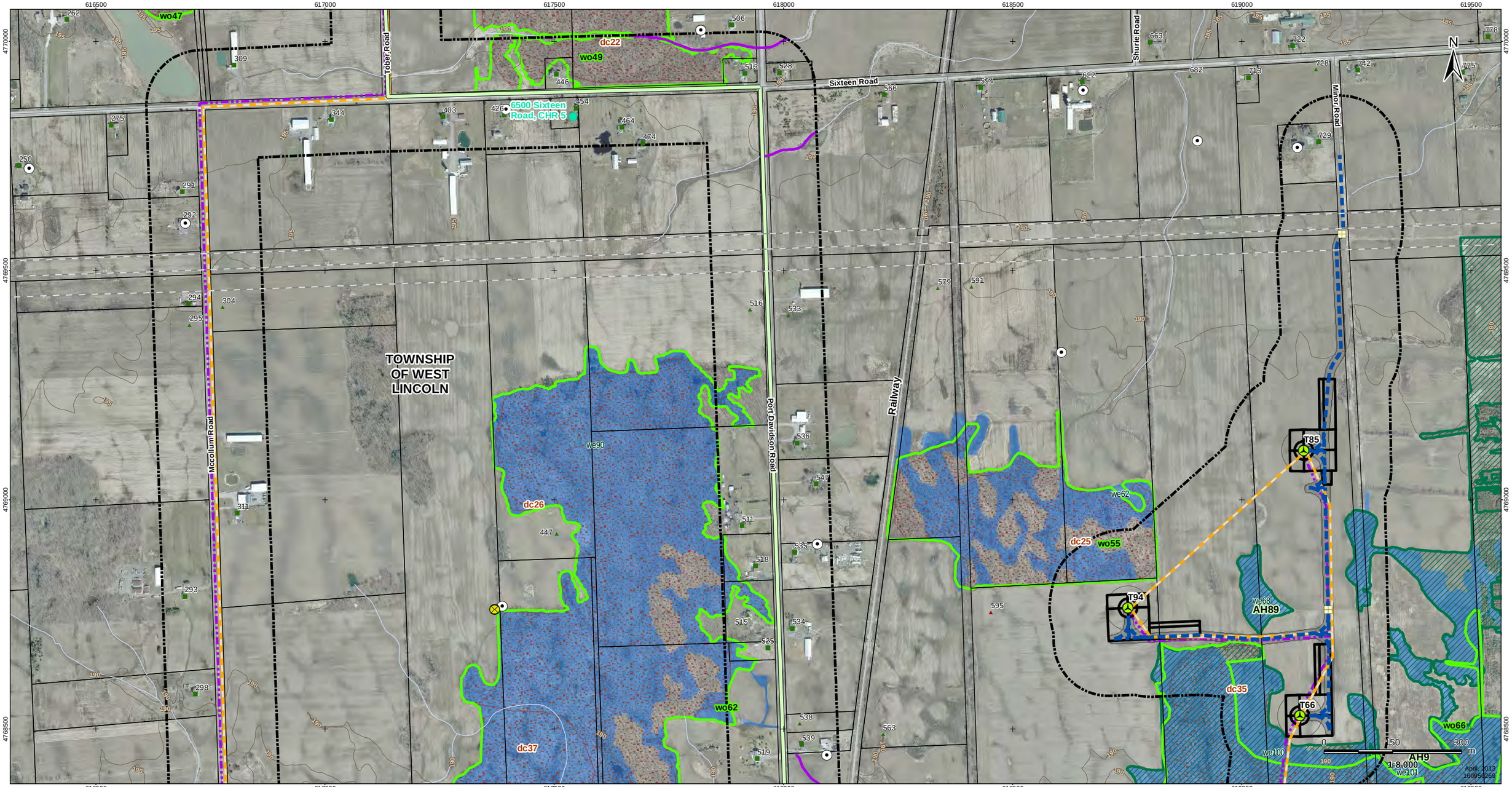


Client/Project
Niagara Region Wind Corporation

Figure No.
2.9

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.9



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

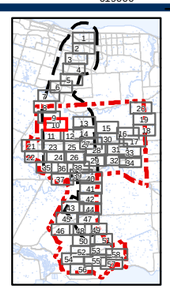
Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

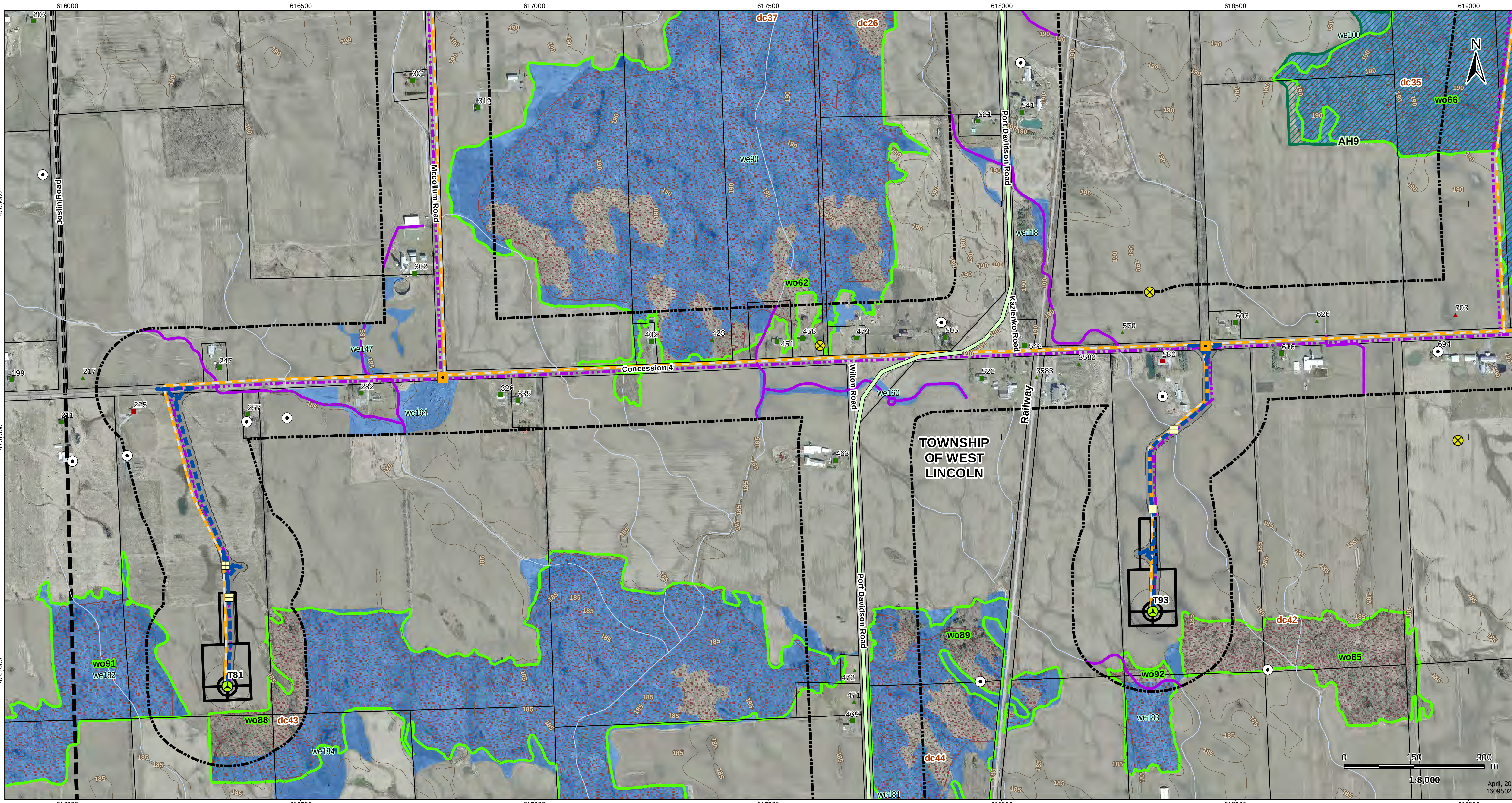
1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.10

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.10



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Revised: 2013-04-02 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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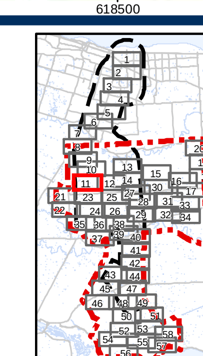
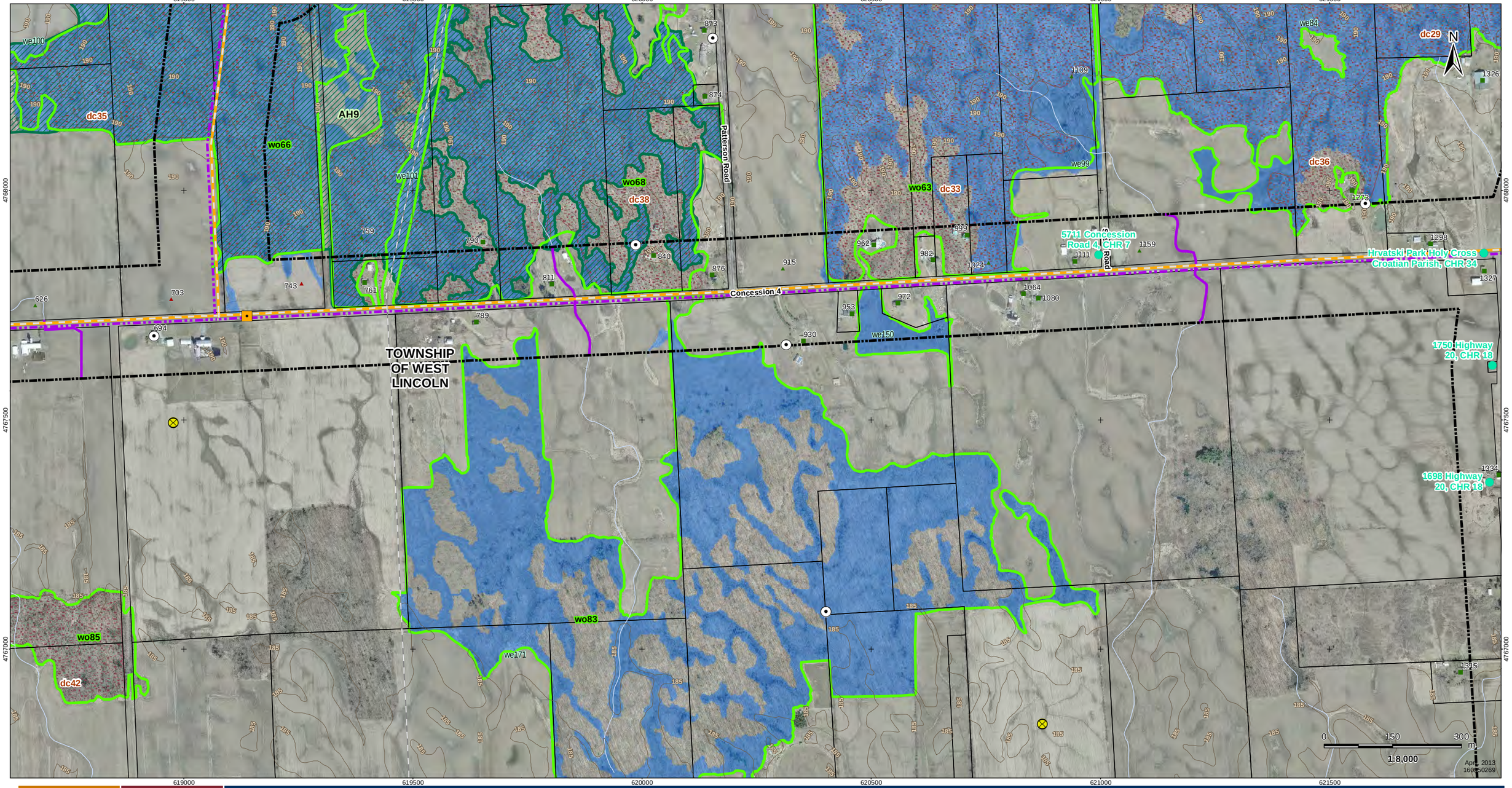


Stantec

Client/Project
Niagara Region Wind Corporation

Figure No.
2.11

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.11



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Revised: 2013-04-02 By: bowpper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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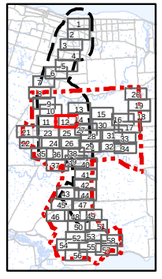

Client/Project
Niagara Region Wind Corporation

Figure No.
2.12

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.12

621000 621500 622000 622500 623000 623500

4770000 4769500 4769000

Sixteen Road
Shaw Road
Regional Road 569
Regional Road 20
Comfort Road
Dengo Road
CPR Railway

TOWNSHIP OF WEST LINCOLN

TH28
TH29
WP47
T28
T27
RV3
dc28
dc29
dc33
wo63
wo69
we84
we99
we124
AH64
dc39

South St. Anns Slough Forest, ANSI, Life Science, Provincially Significant

N

0 150 300 m
1:8,000

April, 2013
160950269

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Revised: 2013-04-02 By: bowpier

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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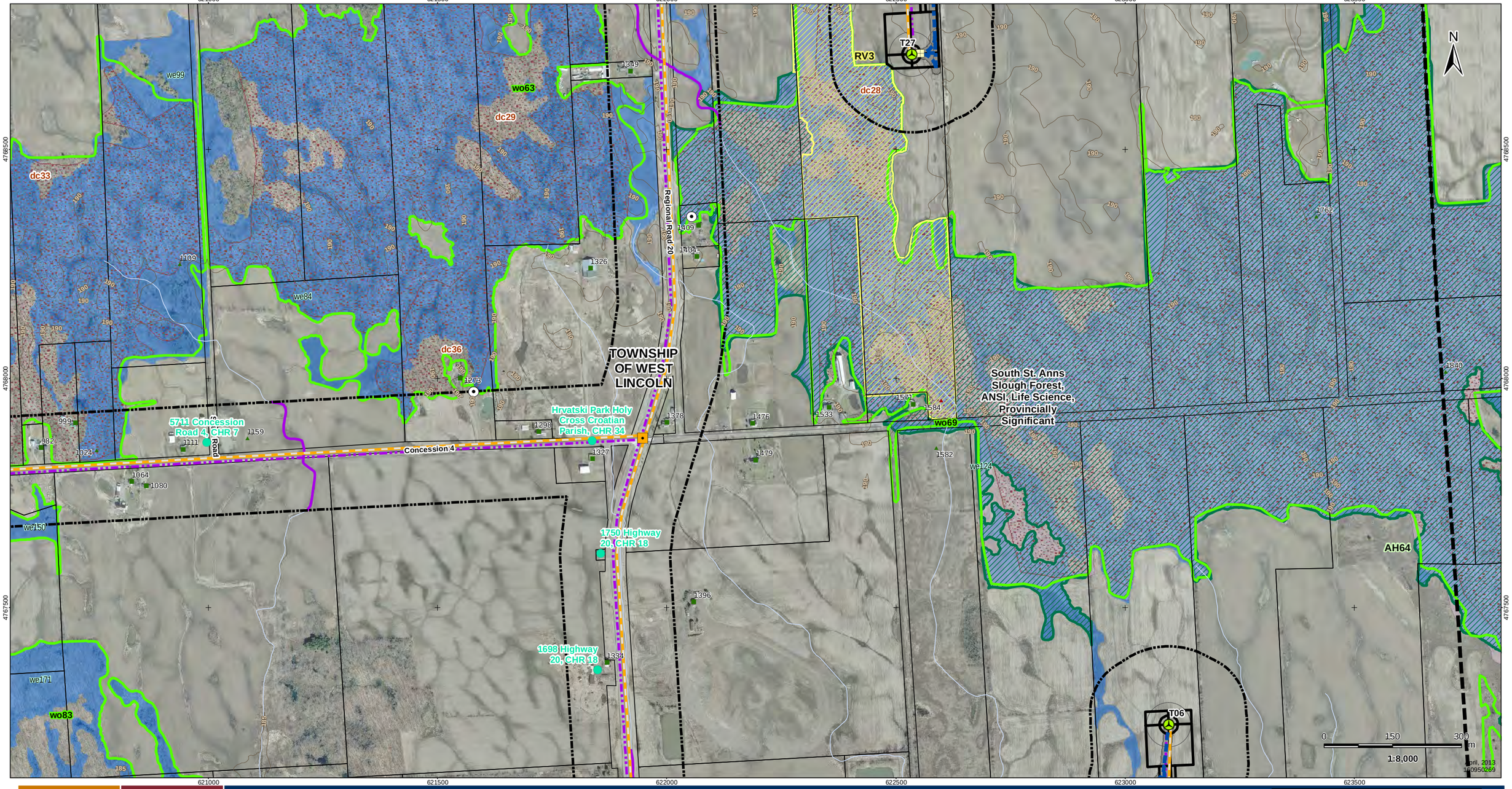
Client/Project
Niagara Region Wind Corporation

Figure No.
2.13

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.13



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Revised: 2013-04-02 By: bcowper

April, 2013
160950269

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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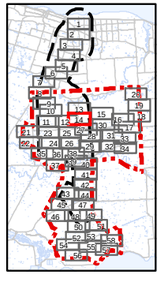
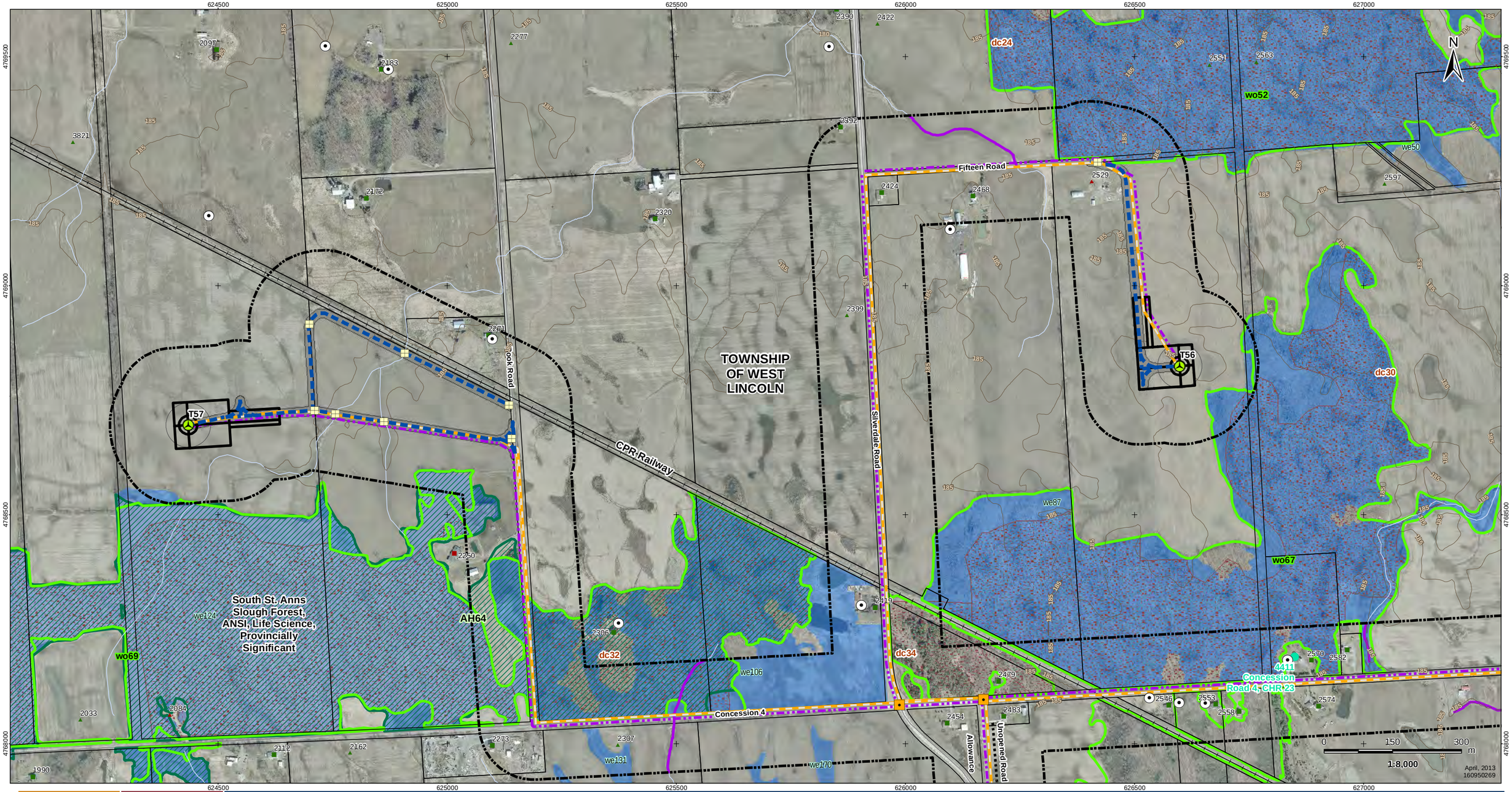


Client/Project
Niagara Region Wind Corporation

Figure No.
2.14

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.14



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Revised: 2013-04-02 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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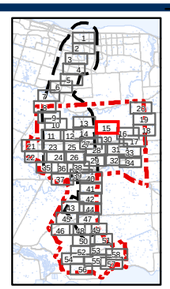

Client/Project
Niagara Region Wind Corporation

Figure No.
2.15

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.15

627500 628000 628500 629000 629500 630000

4768500 4768000 4767500

N

Hodgkins Road
Crown Road
Rosedene Road
Concession 4
CPR Railway
TOWNSHIP OF WEST LINCOLN
TH38
TH21
WR4
RV2
AH65
T04
T58
T59
T60
Comfort Barn, PP 2
we87 we86 we91 we95 we152 we155 we166 we167 we174 we176
wo61 wo67 wo80 wo74 wo86
dc31 dc40
2687 2705 2754 2763 2768 2753 2779 2817 2805 2808 2807 2813 2809 2811 2812 2814 2816 2819 2818 2830 2885 2910 2914 2964 2971 2994 2998 3014 3146 3166 3171 3130 3117 3090 3012 3027 3019 3030 3028 3016 3032 3897 2629

0 150 300 m
1:8,000

April, 2013
160950269

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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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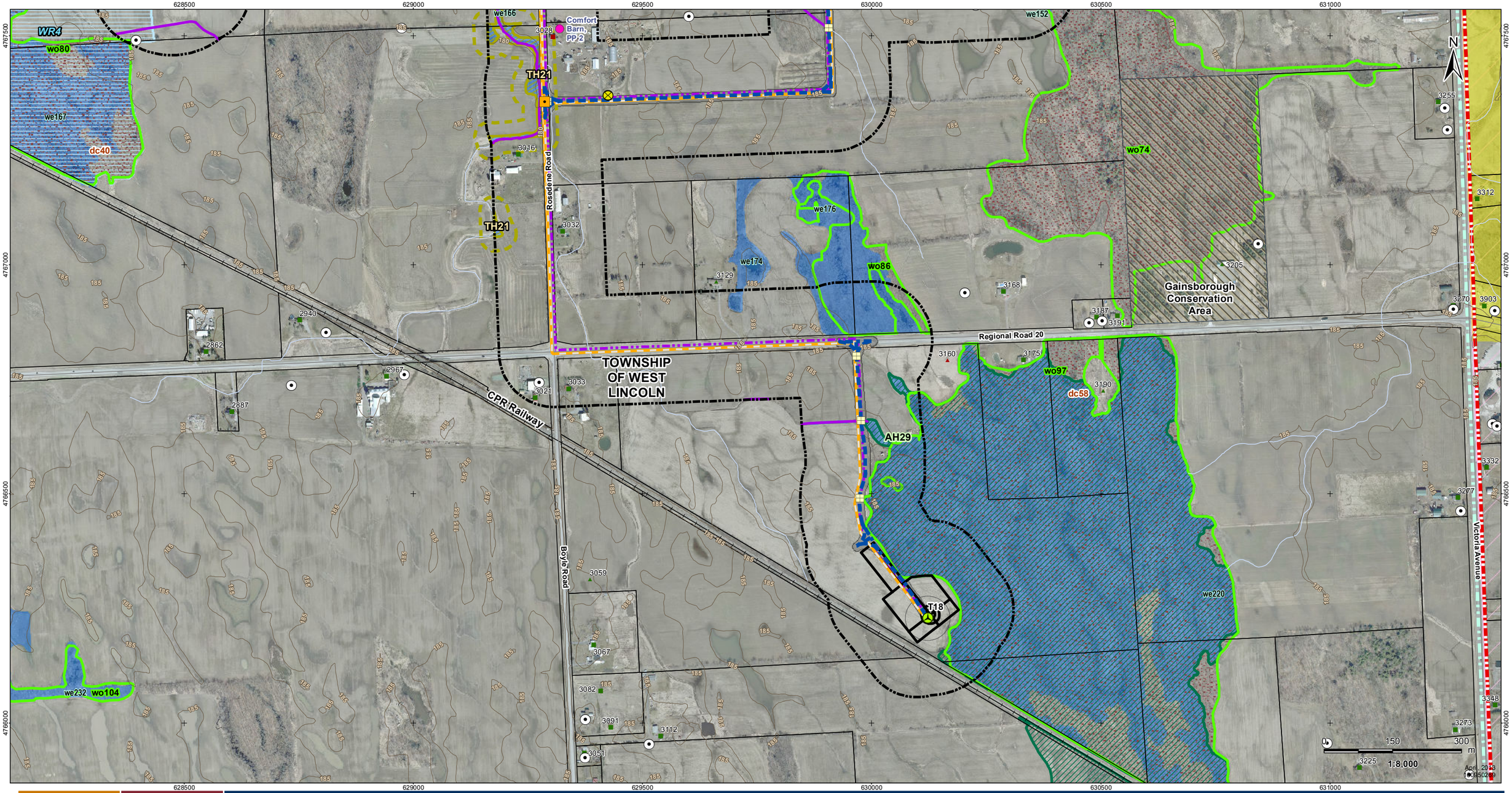
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.

Client/Project
Niagara Region Wind Corporation

Figure No.
2.16

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.16



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Revised: 2013-04-18 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Protected_Property_point

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

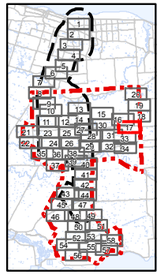
- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

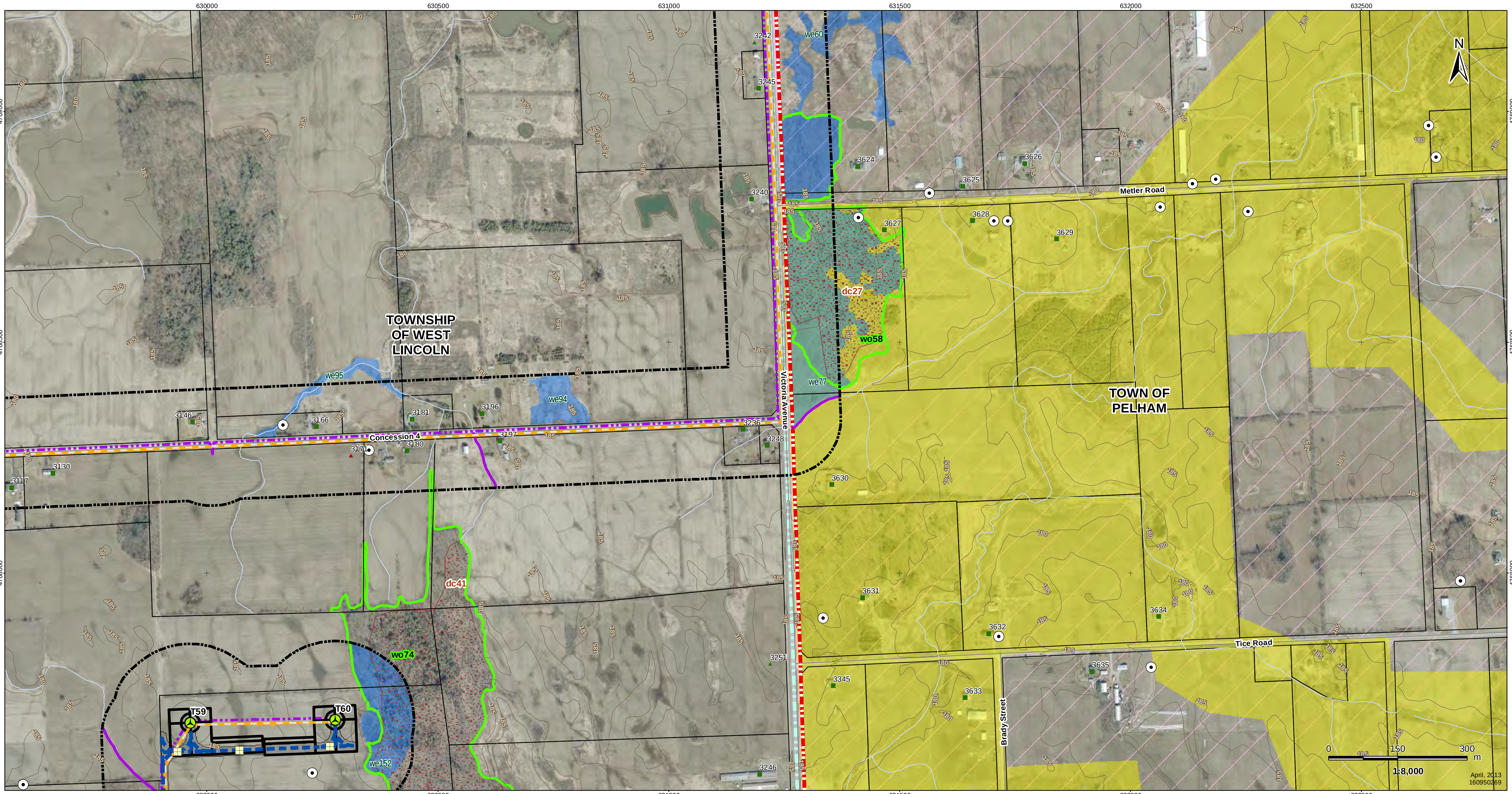
1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.17

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.17



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Revised: 2013-04-02 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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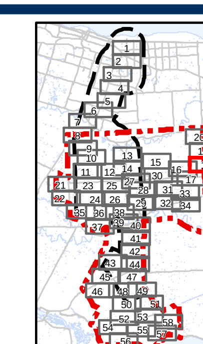
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project

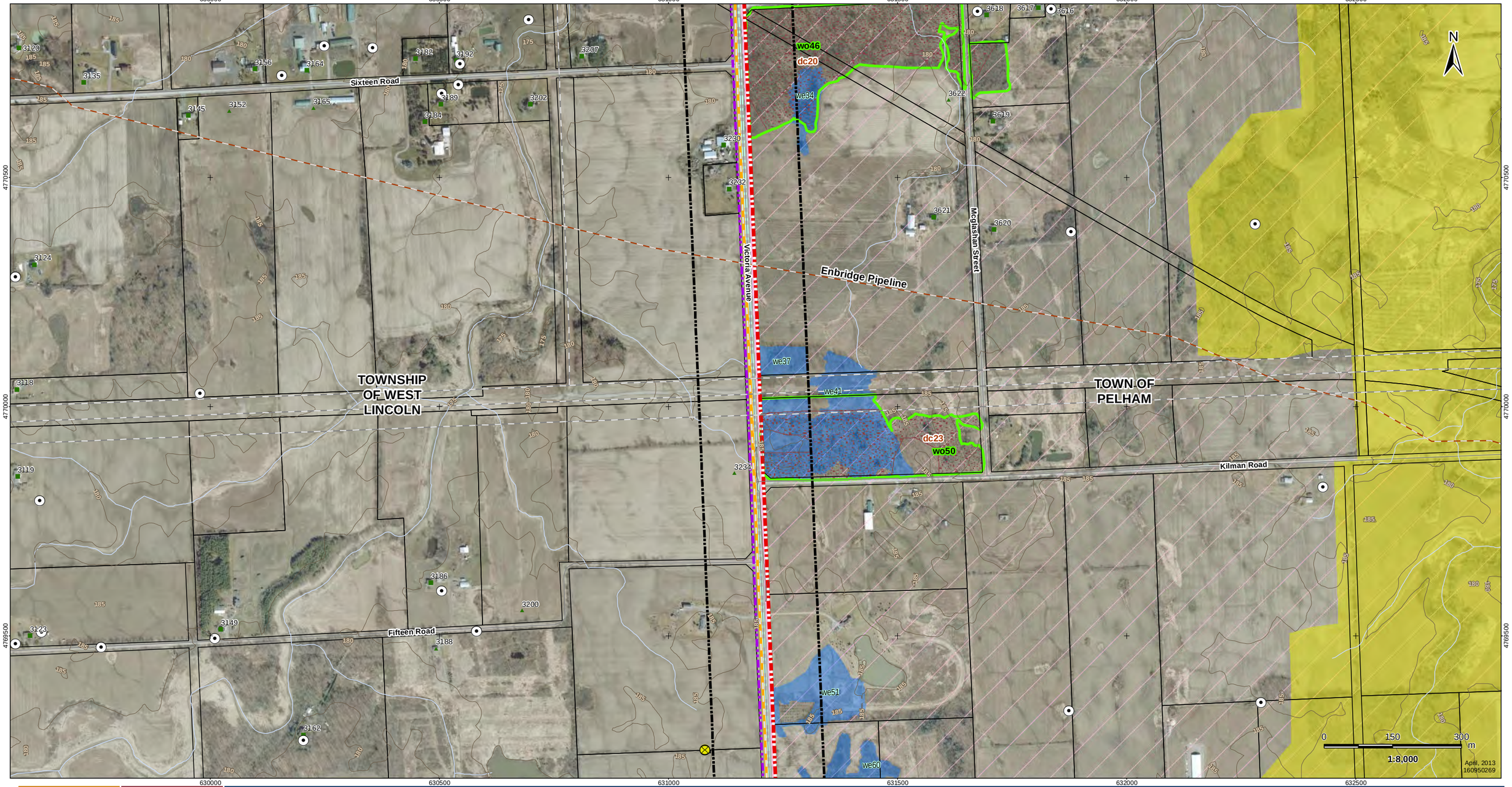
Niagara Region Wind Corporation

Figure No.

2.18

Title

Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.18



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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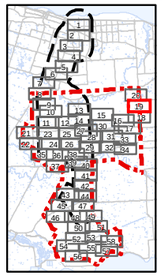
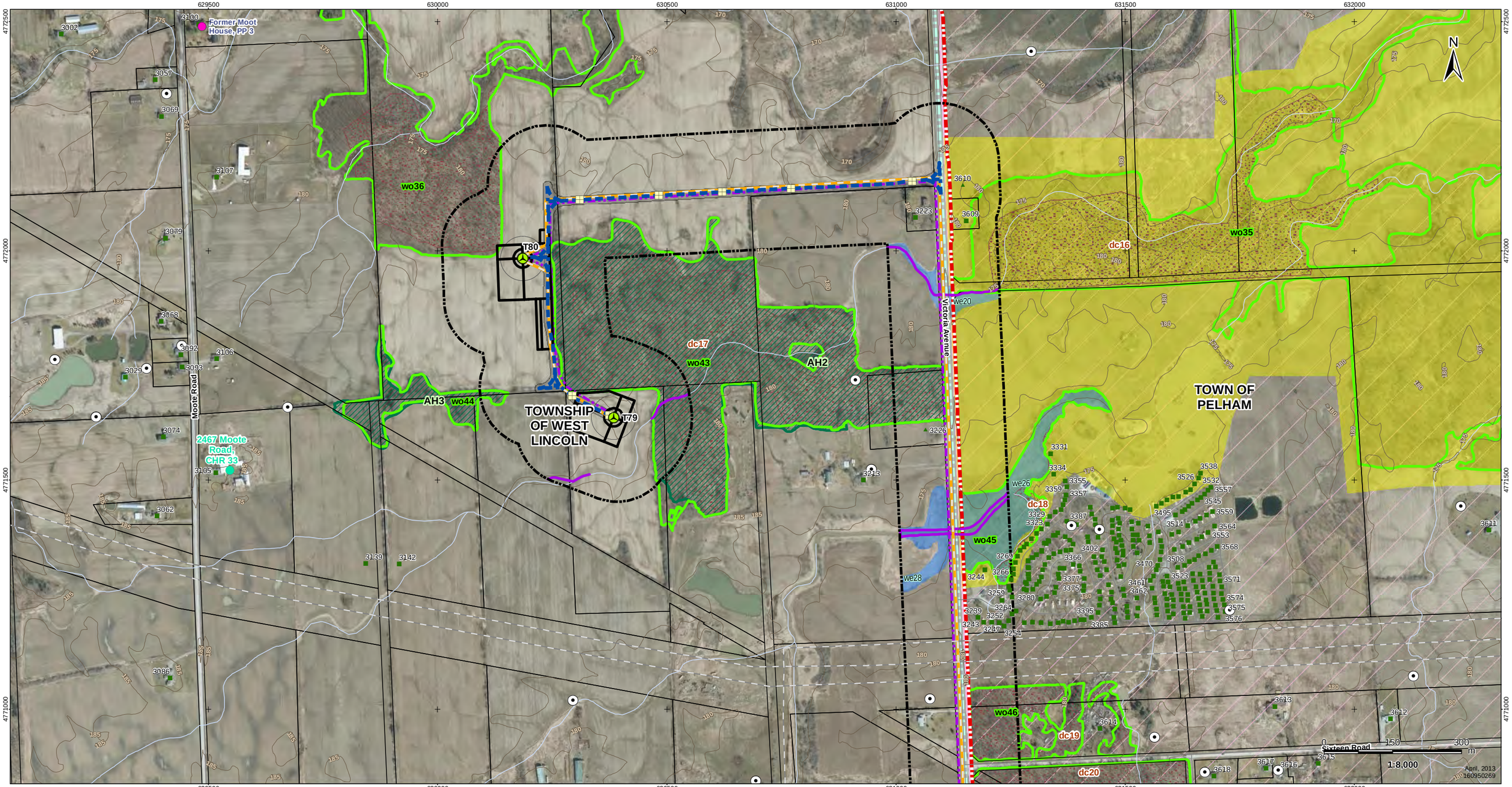
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.19

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.19



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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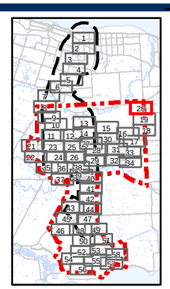
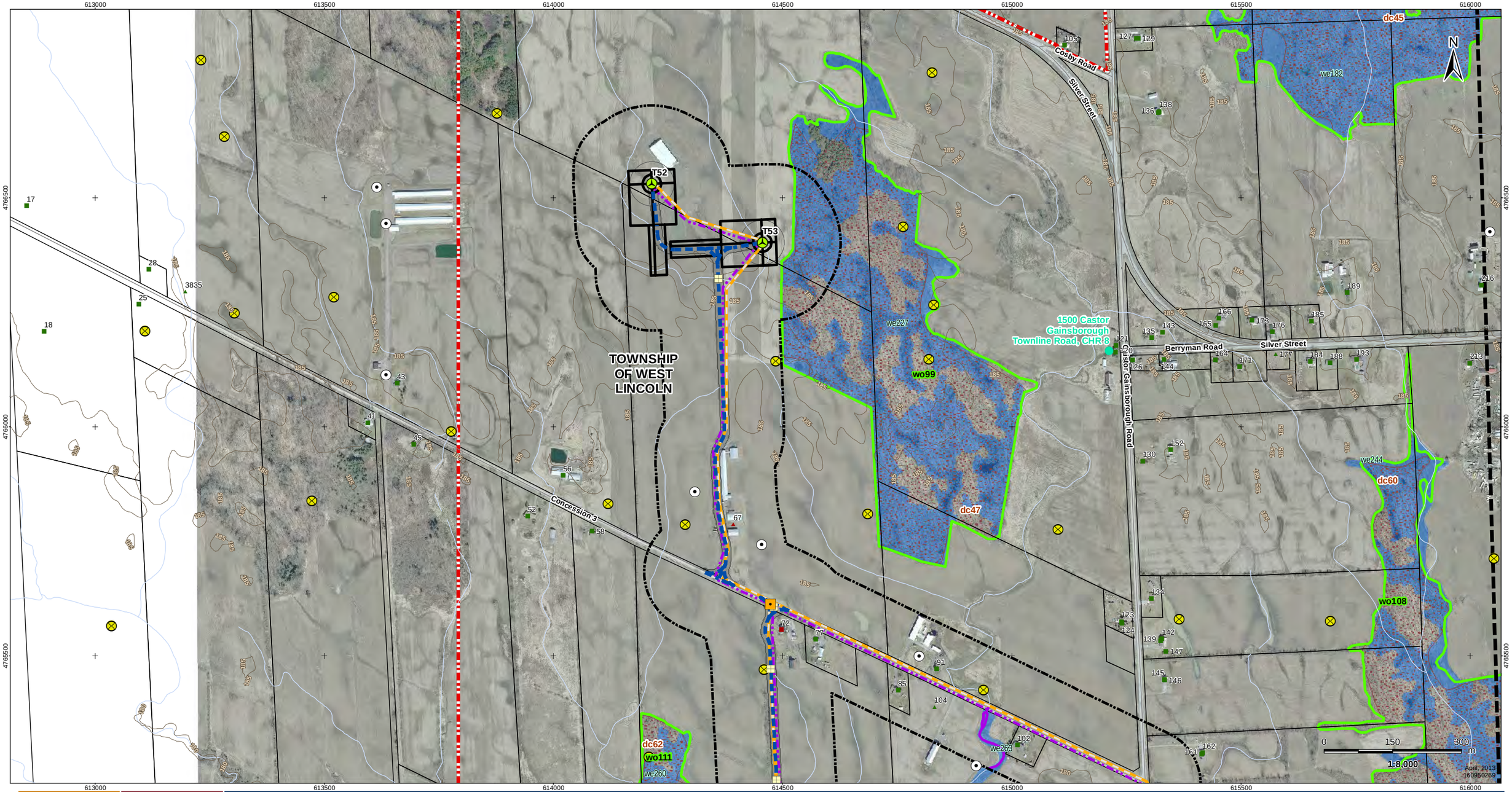
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.20

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.20



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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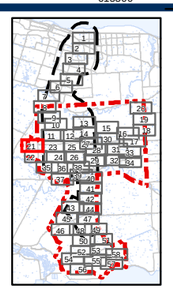
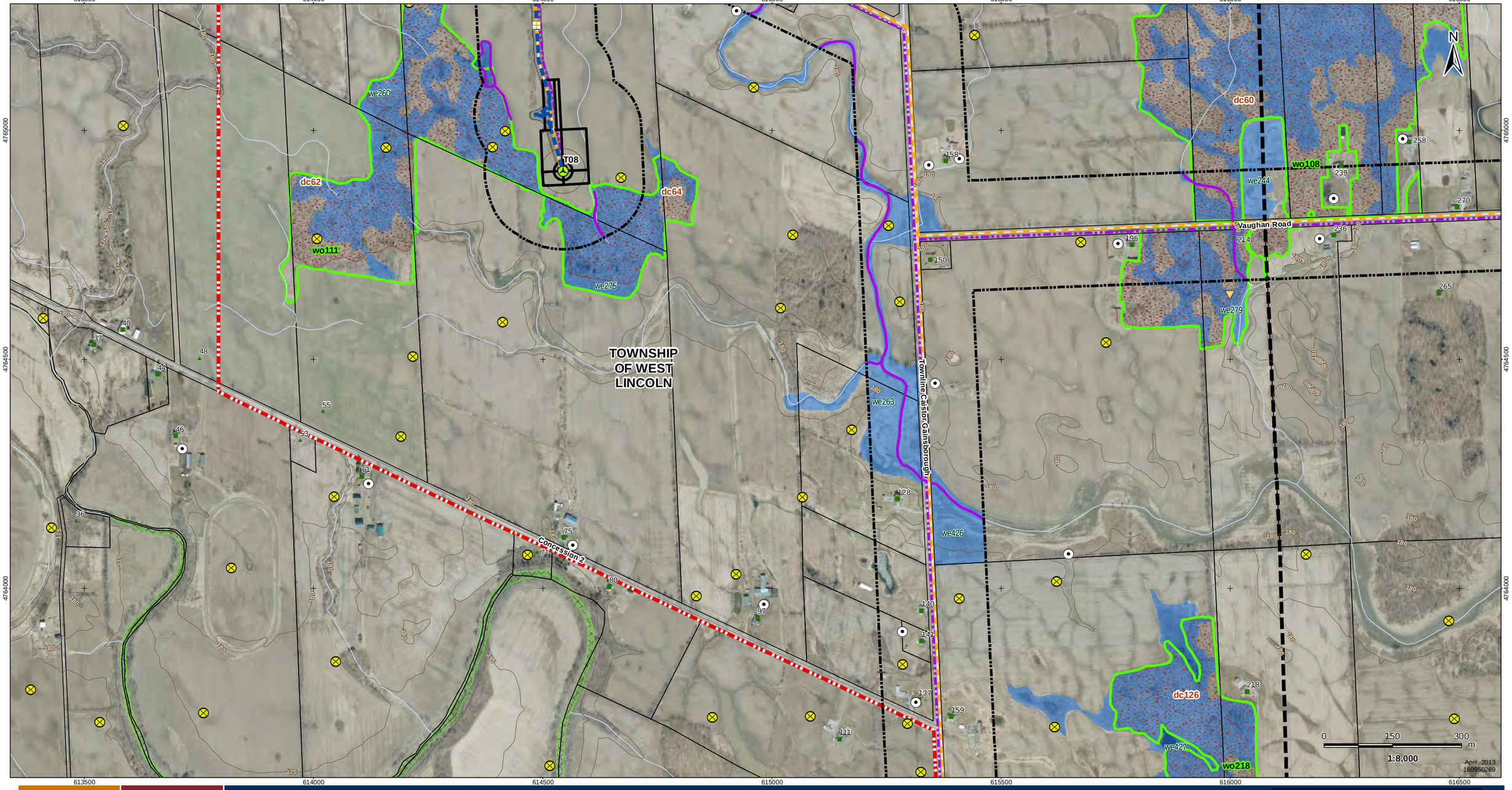


Client/Project
Niagara Region Wind Corporation

Figure No.
2.21

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.21



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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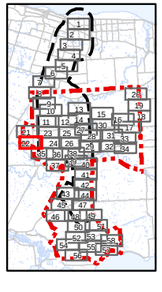
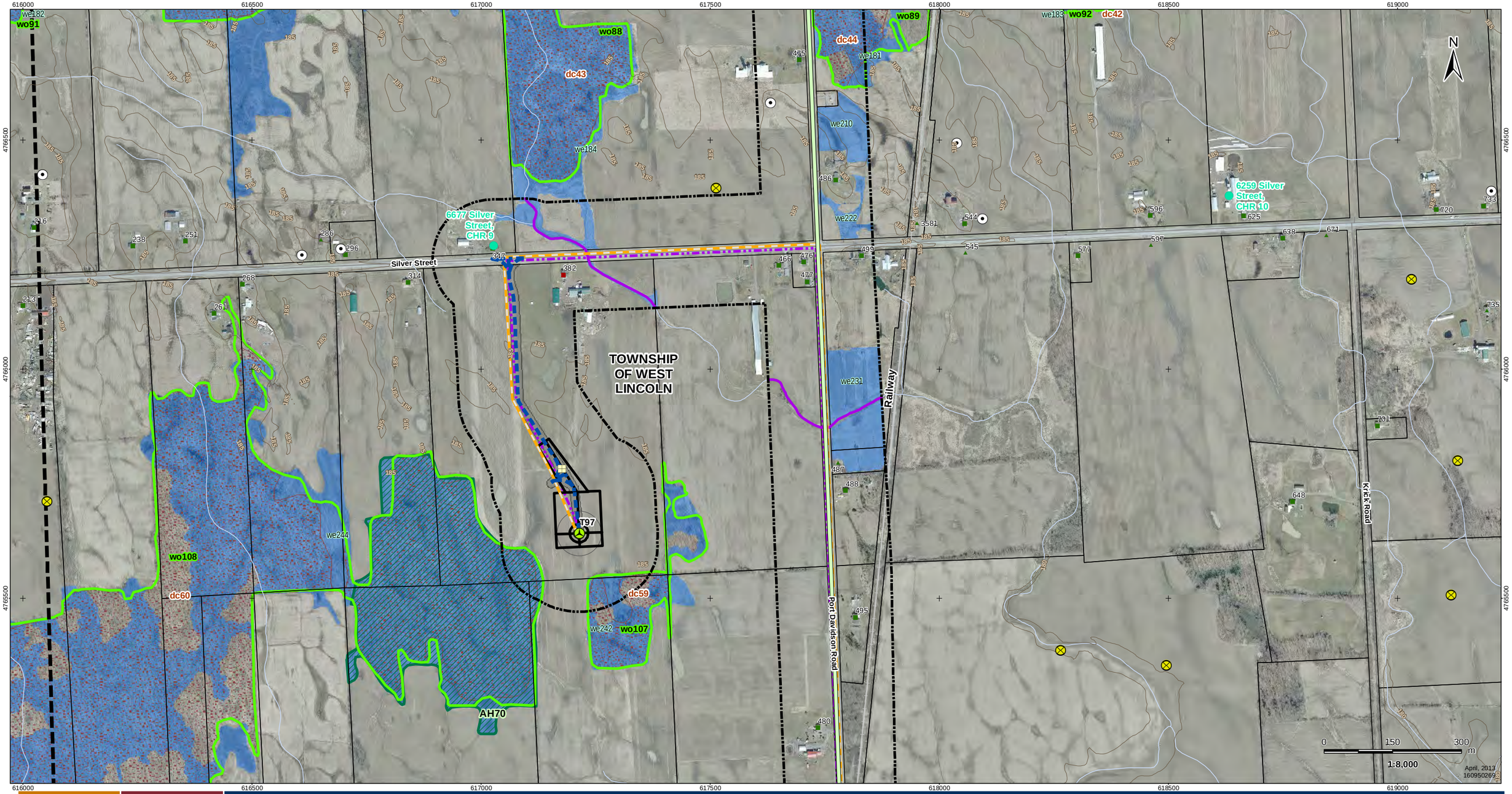
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.22

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.22



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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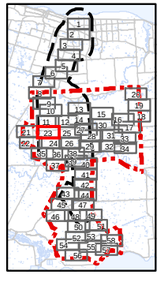
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.23

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.23

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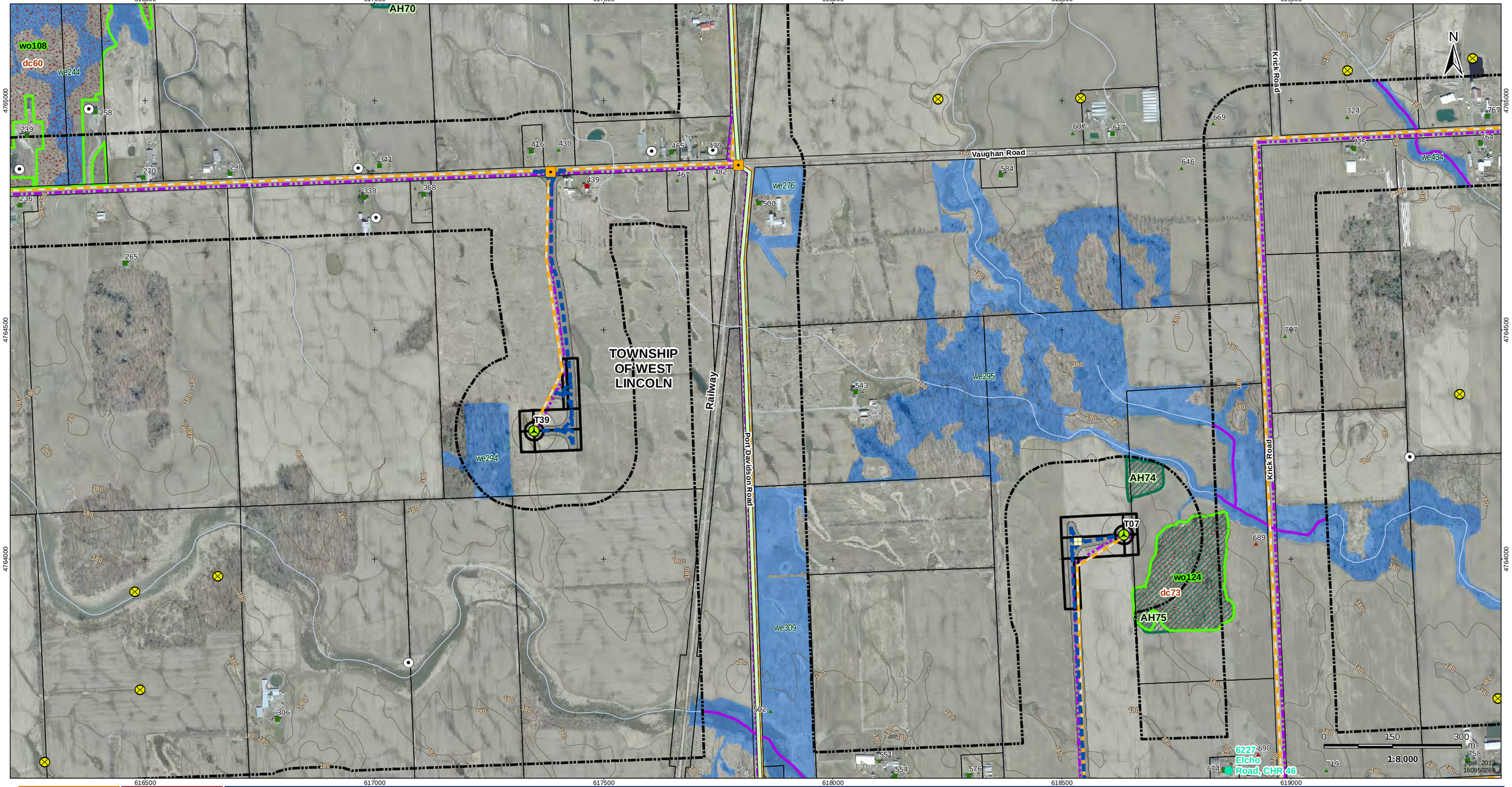

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.

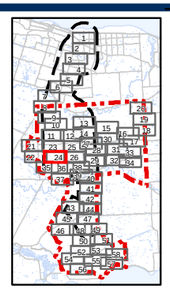

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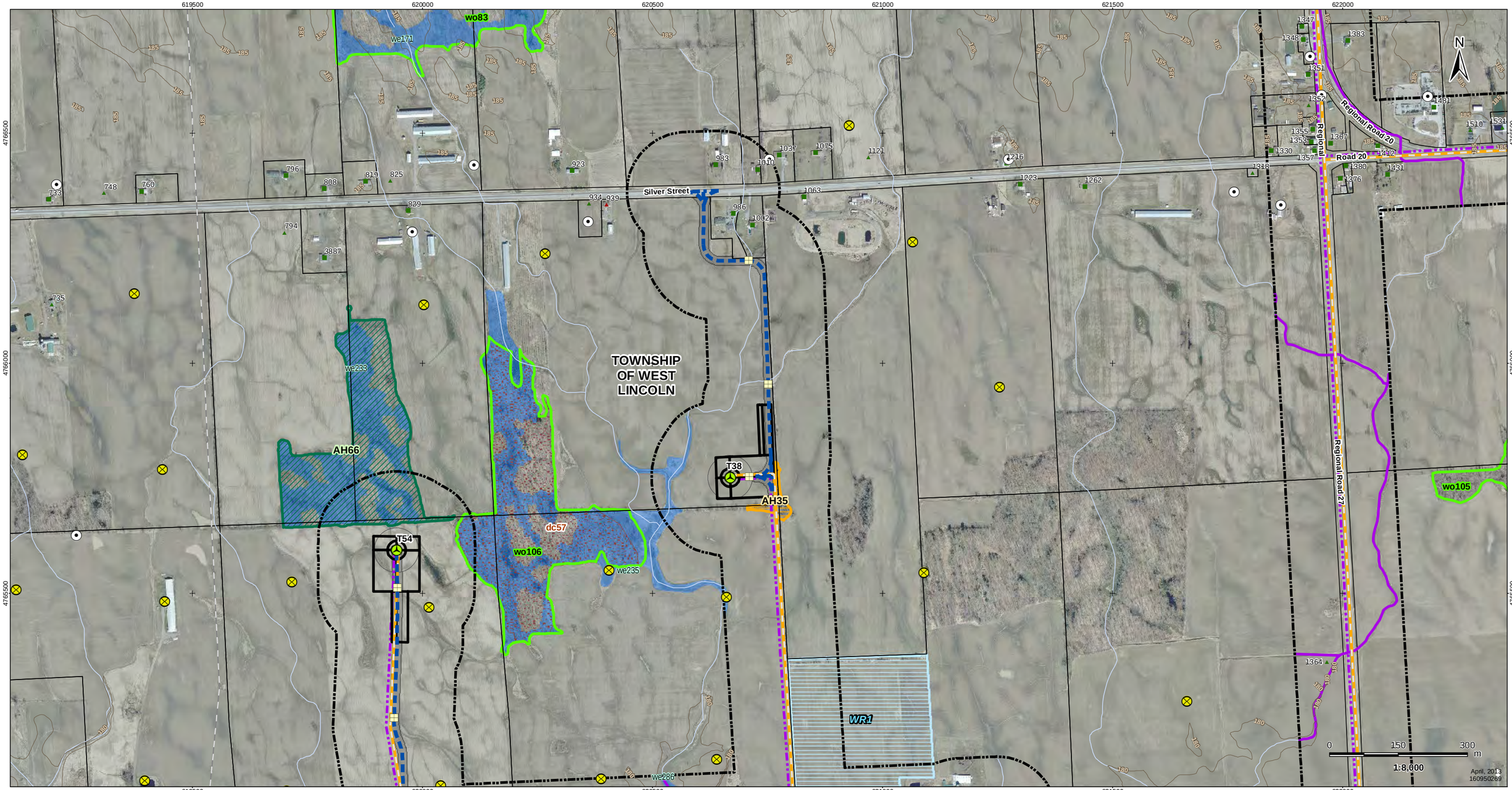
Figure No.
2.24

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.24



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.
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6. Noise receptors are identified within 1500m of any wind turbine.

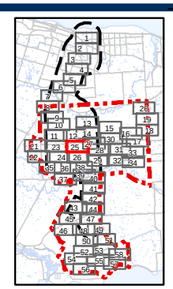

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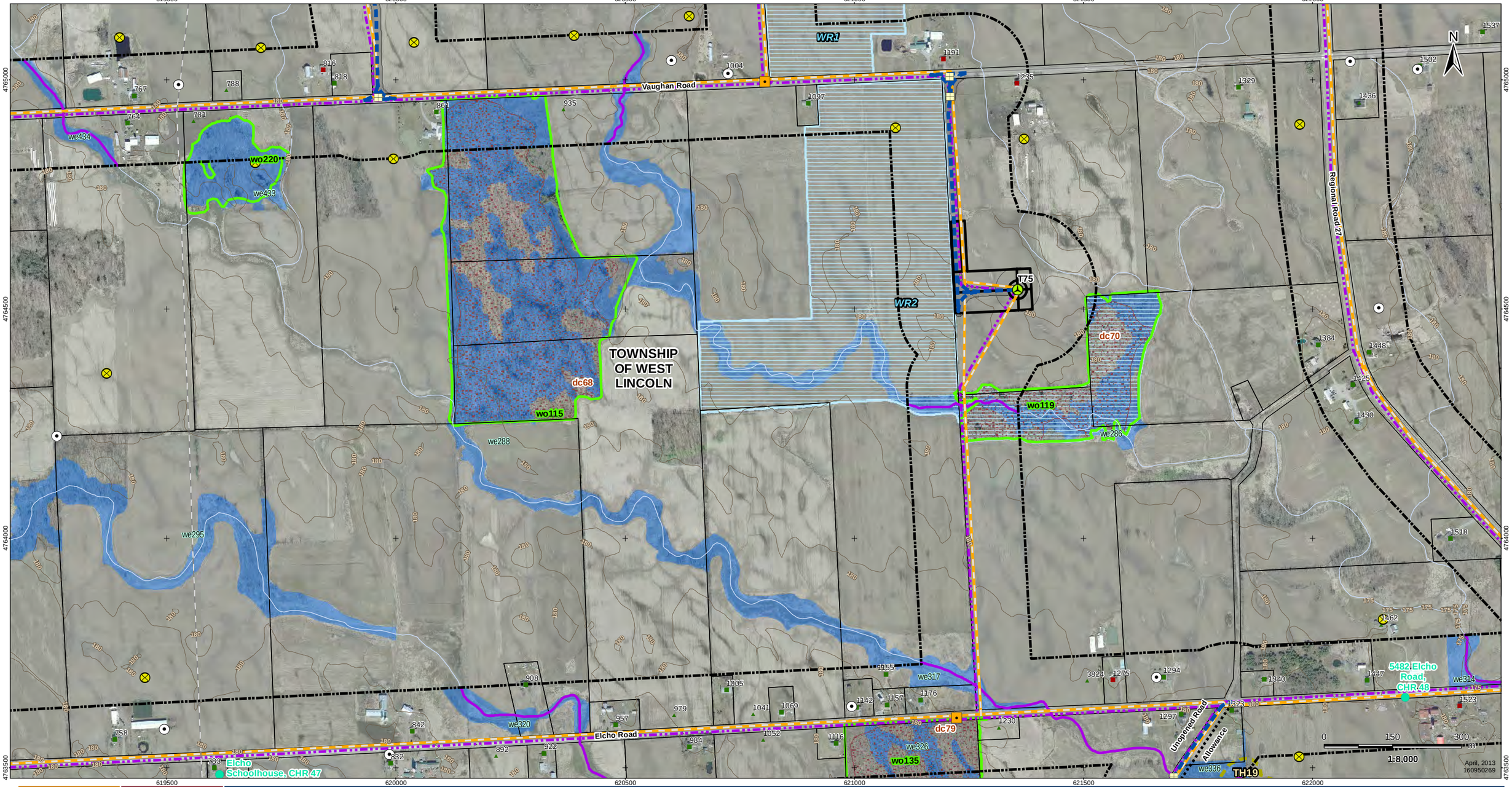
Figure No.
2.25

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.25



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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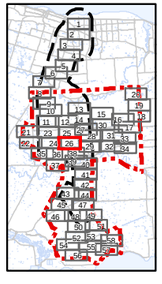

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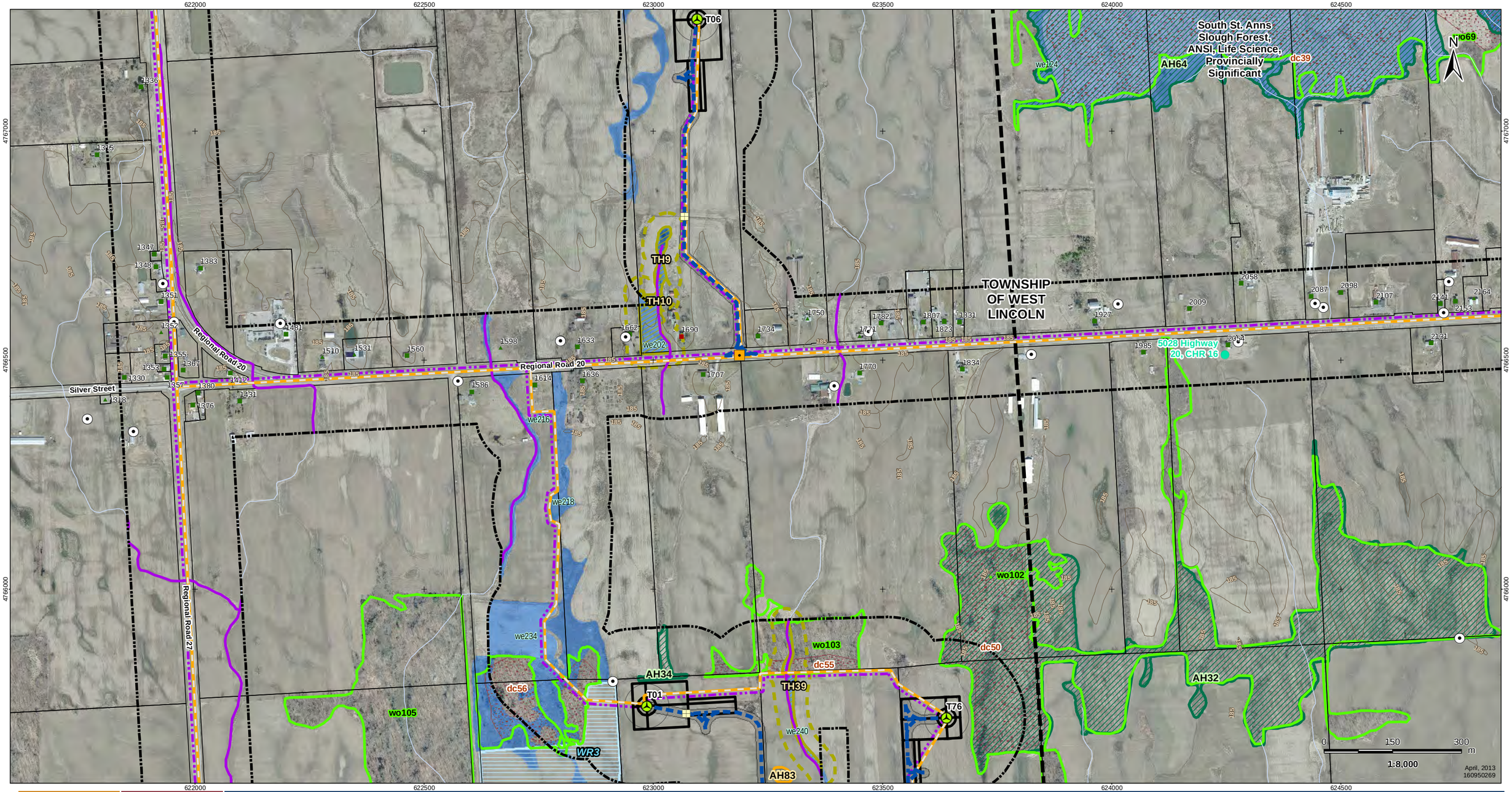
Niagara Region Wind Corporation

Figure No.
2.26

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.26



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
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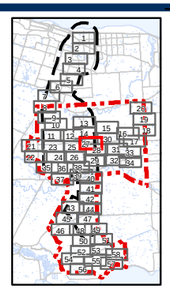

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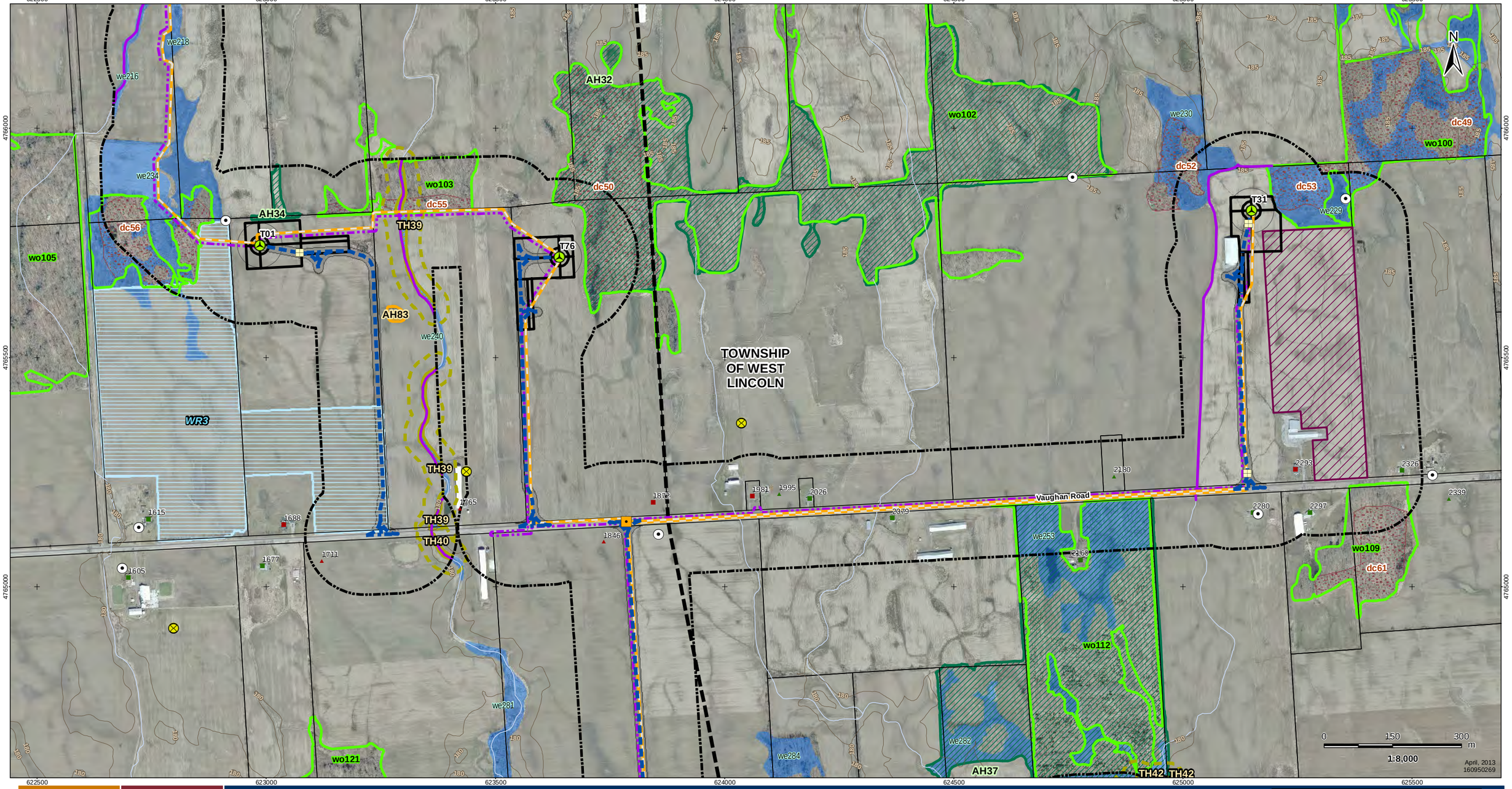
Niagara Region Wind Corporation

Figure No.
2.27

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.27



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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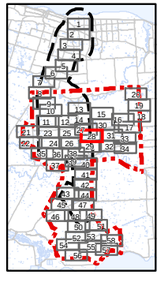
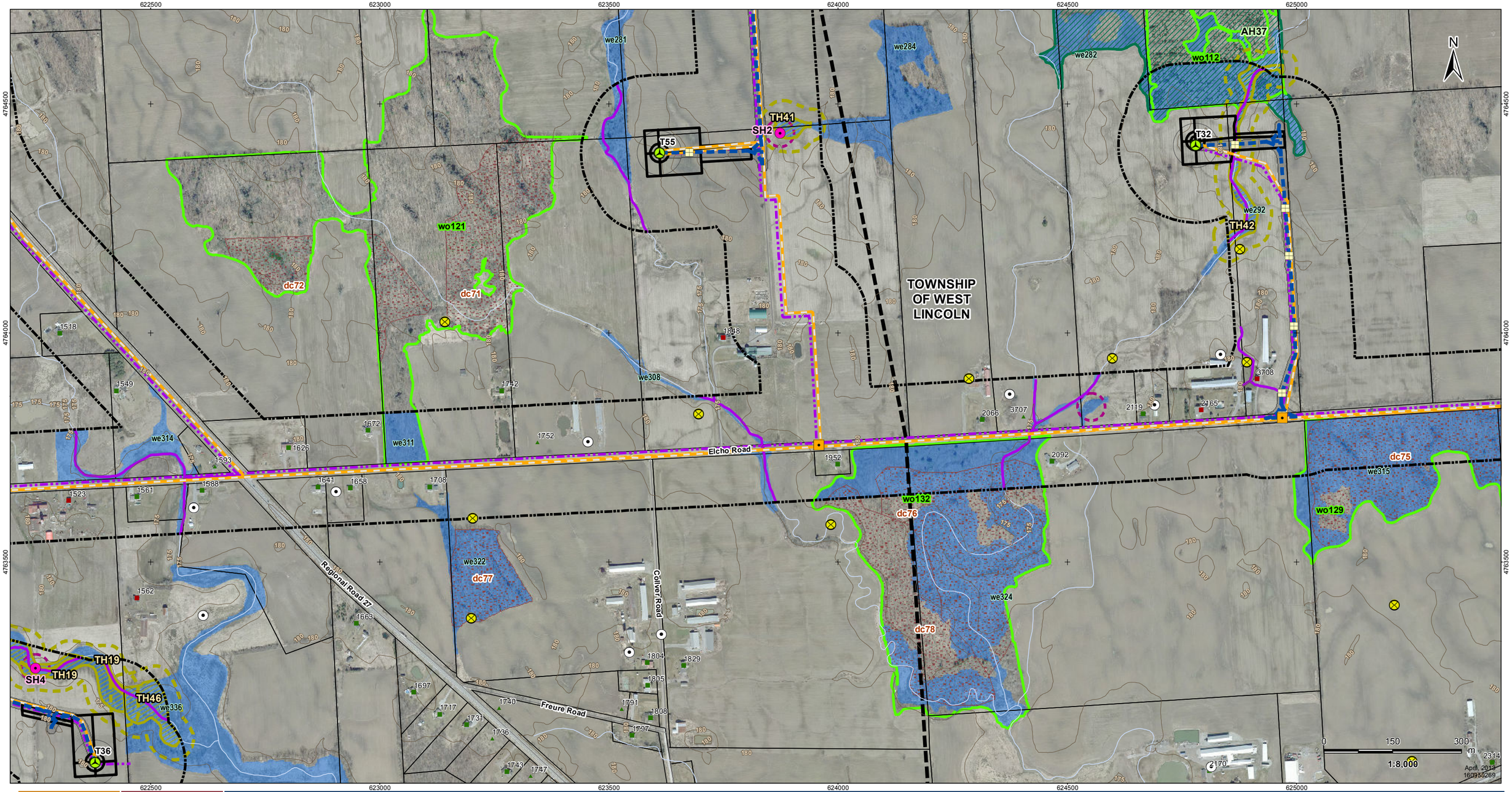


Client/Project
Niagara Region Wind Corporation

Figure No.
2.28

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.28



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Revised: 2013-04-18 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Protected_Property_point

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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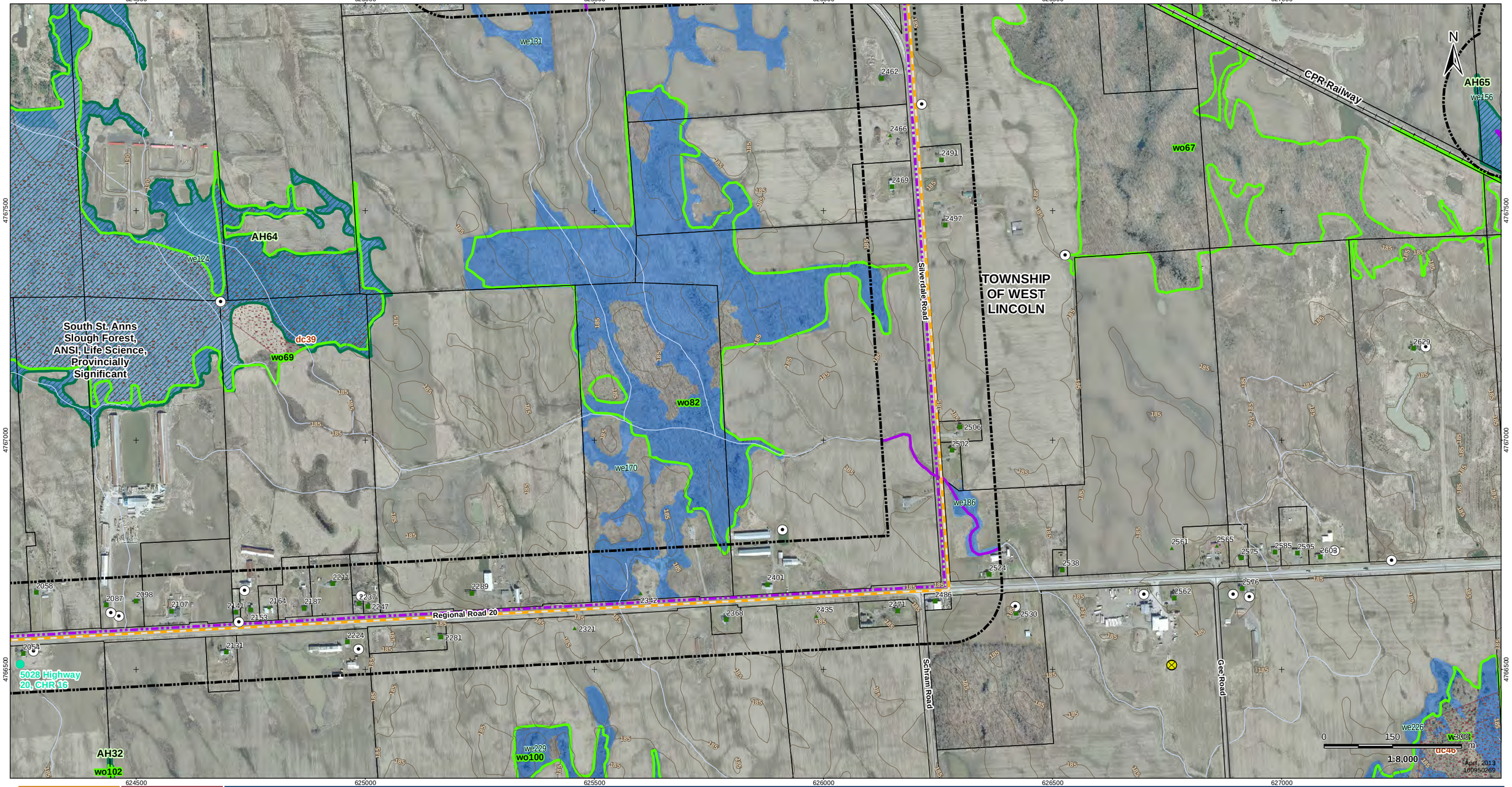
Stantec

Client/Project
Niagara Region Wind Corporation

Figure No.
2.29

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.29



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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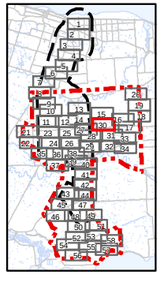
6. Noise receptors are identified within 1500m of any wind turbine.



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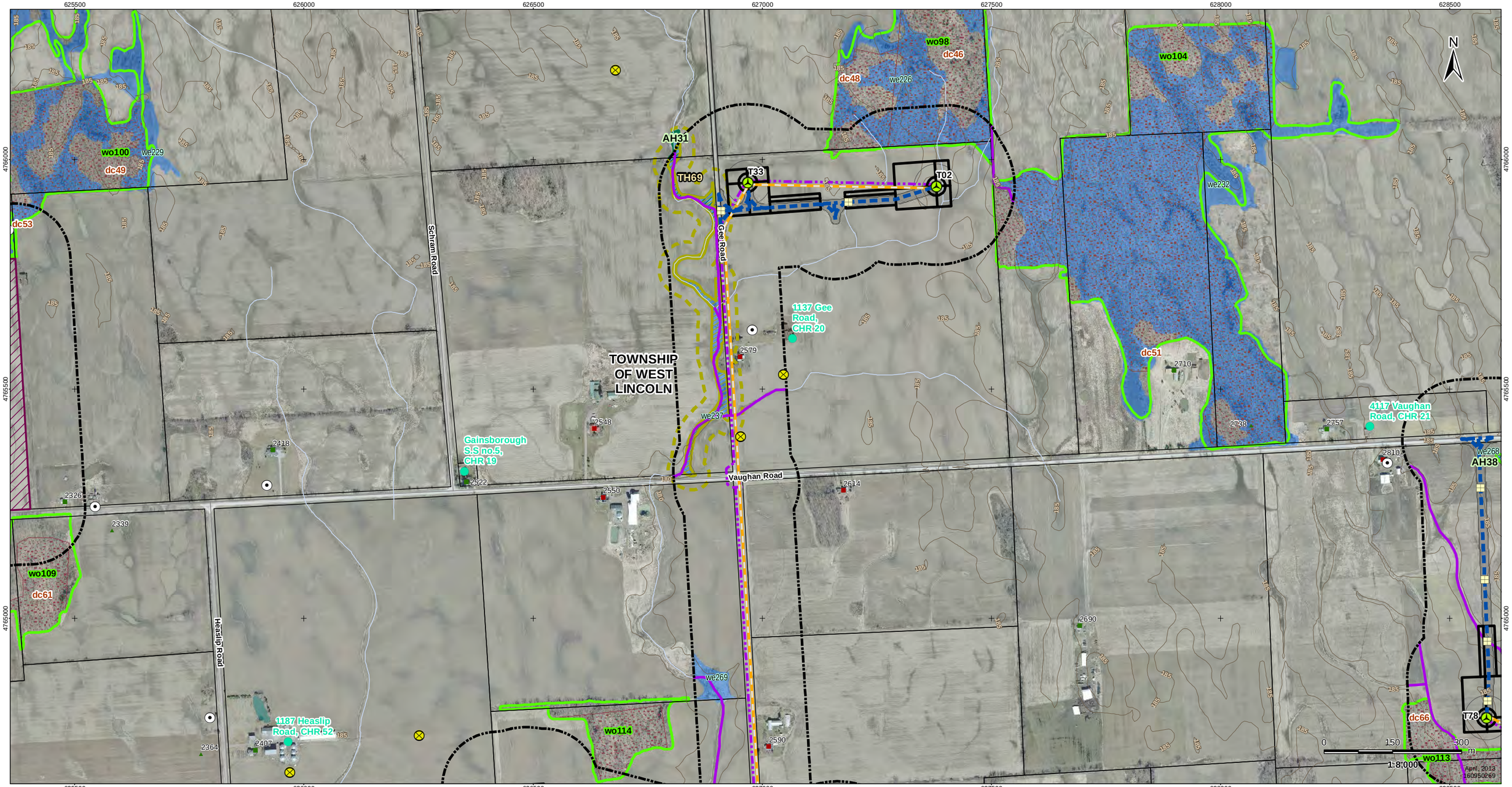
Niagara Region Wind Corporation

Figure No.
2.30

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.30



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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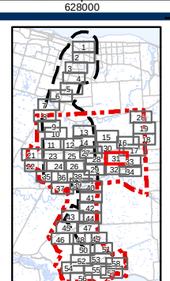
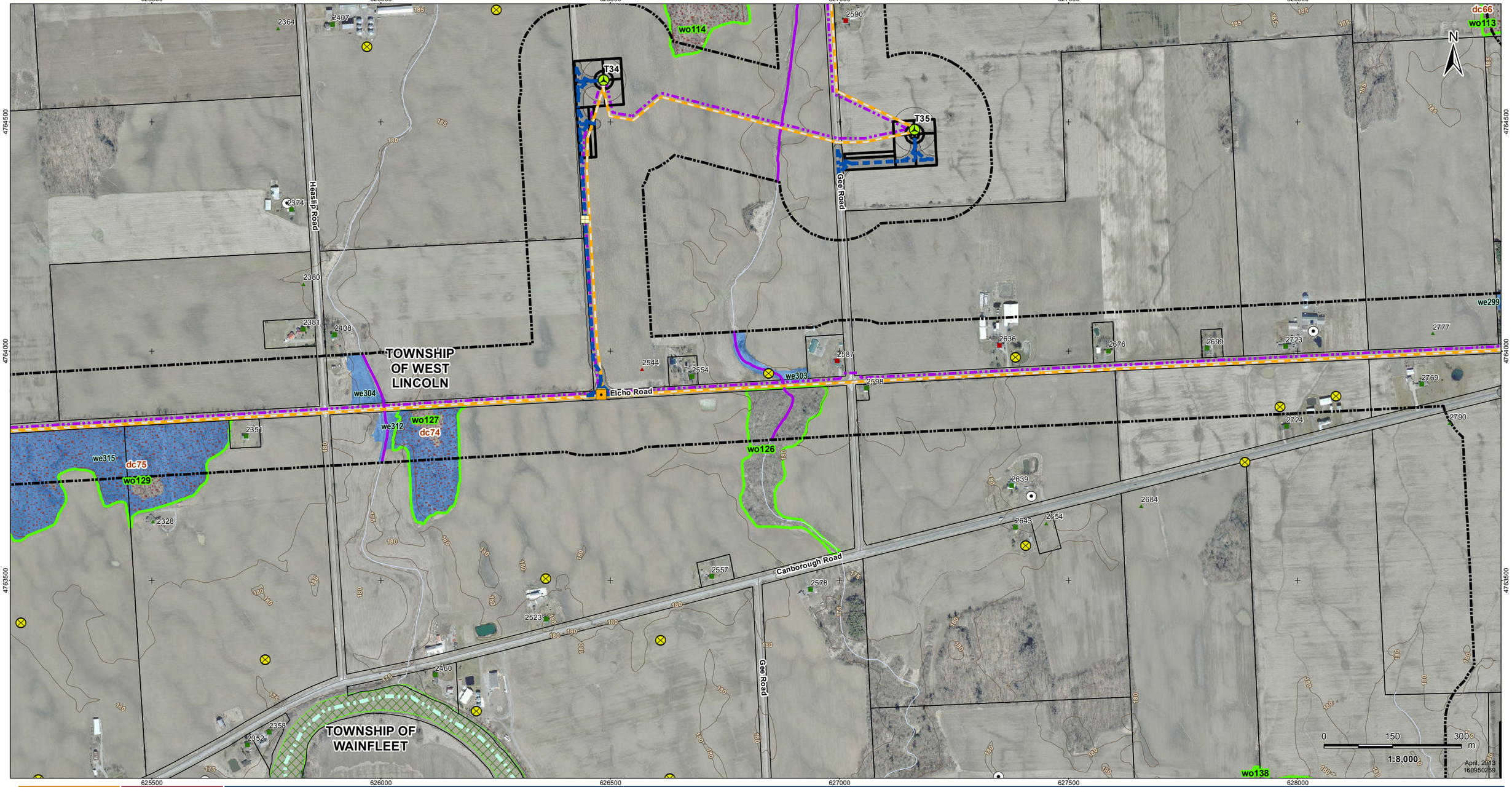


Client/Project
Niagara Region Wind Corporation

Figure No.
2.31

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.31



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Revised: 2013-04-18 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Protected_Property_point

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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3. Orthoimagery source: First Base Solutions, Date Spring 2010.
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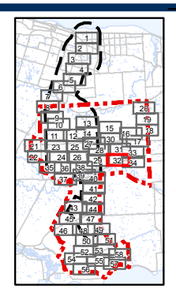
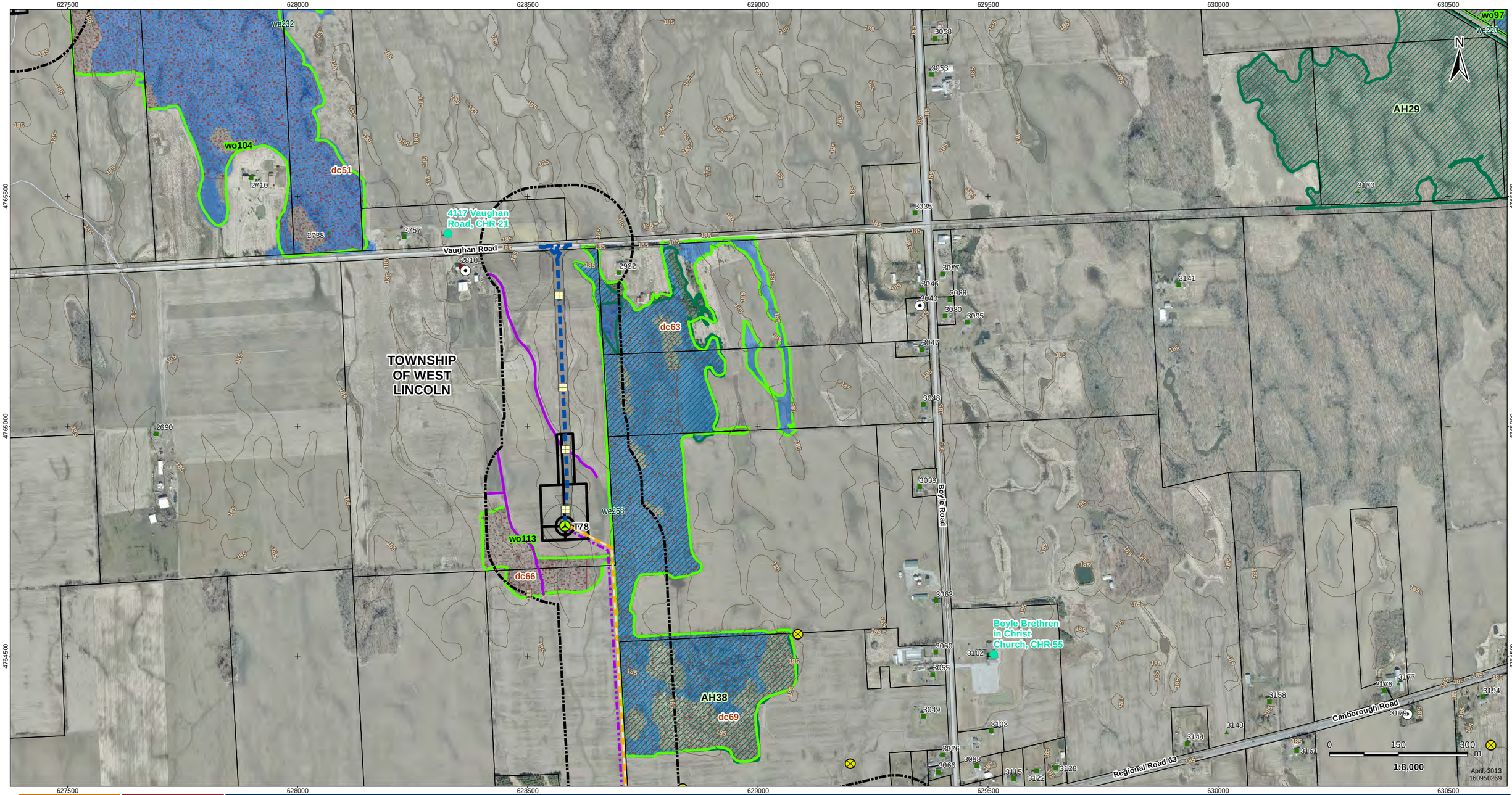
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.32

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.32



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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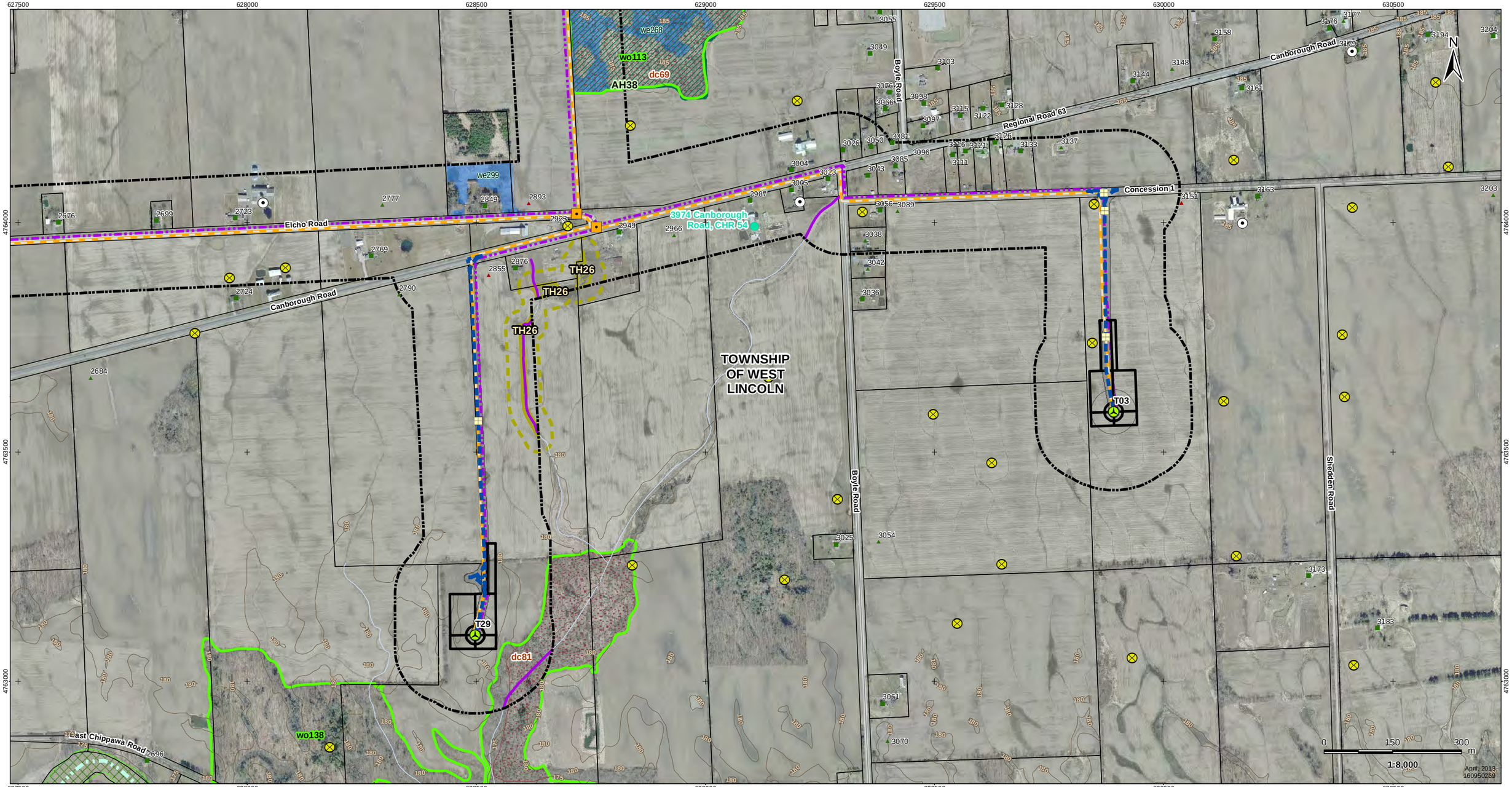
6. Noise receptors are identified within 1500m of any wind turbine.

Client/Project
Niagara Region Wind Corporation

Figure No.
2.33

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.33



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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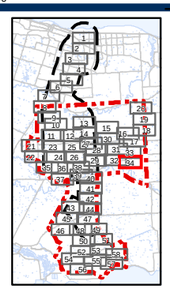
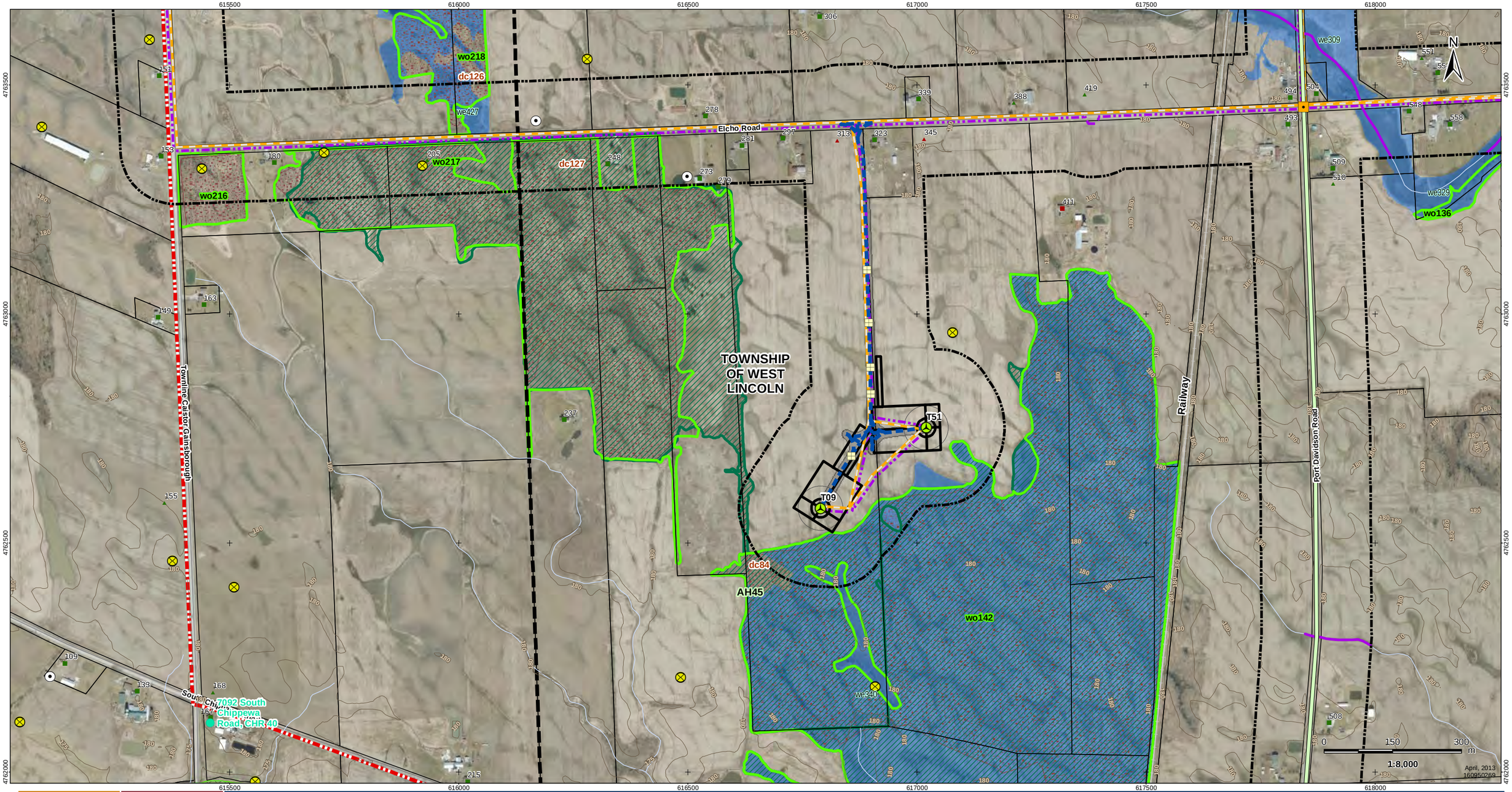
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.34

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.34



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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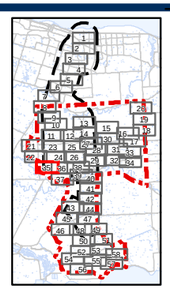
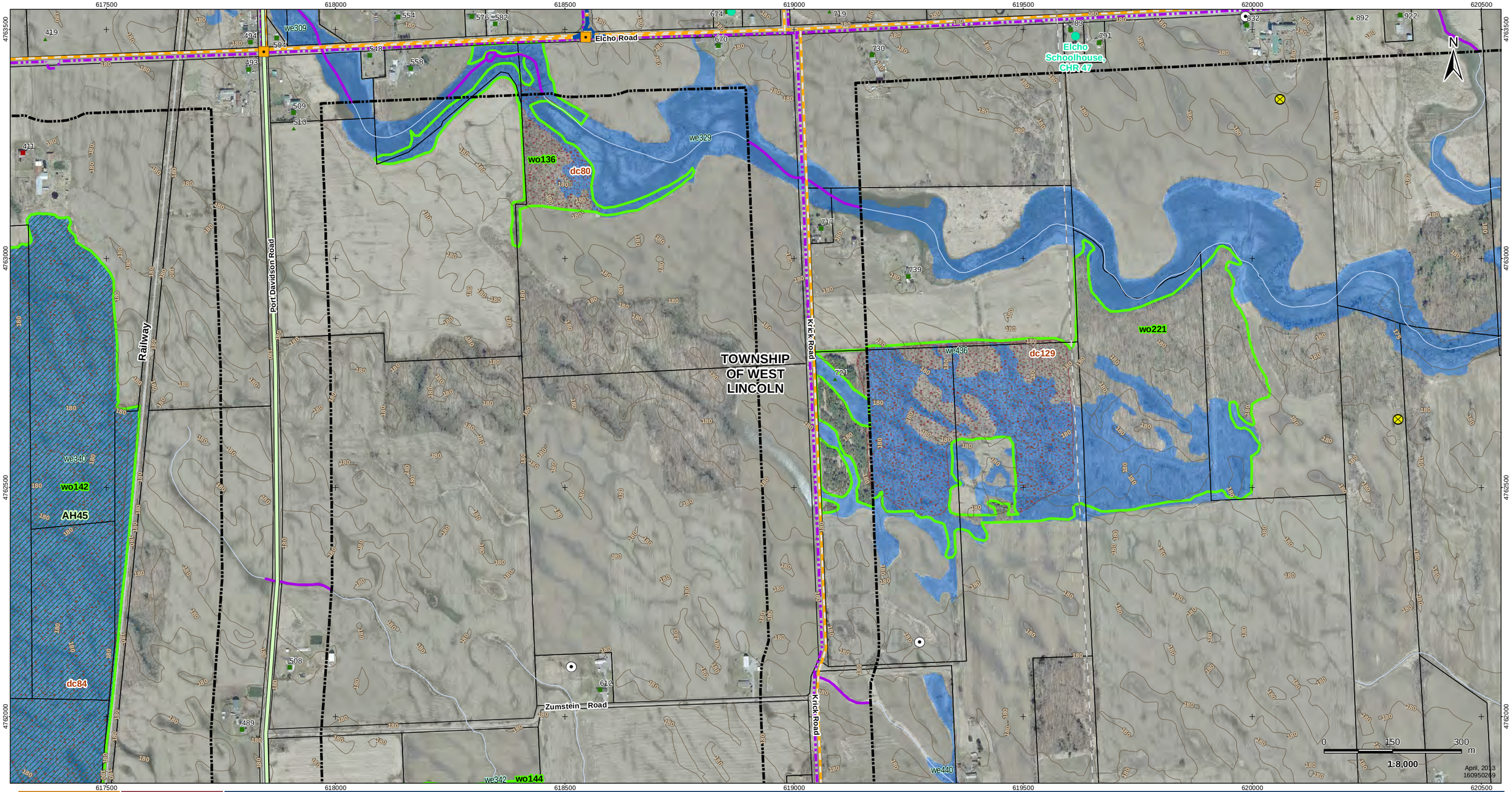
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.35

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.35



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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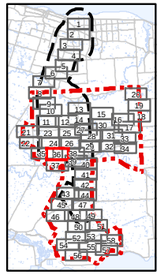
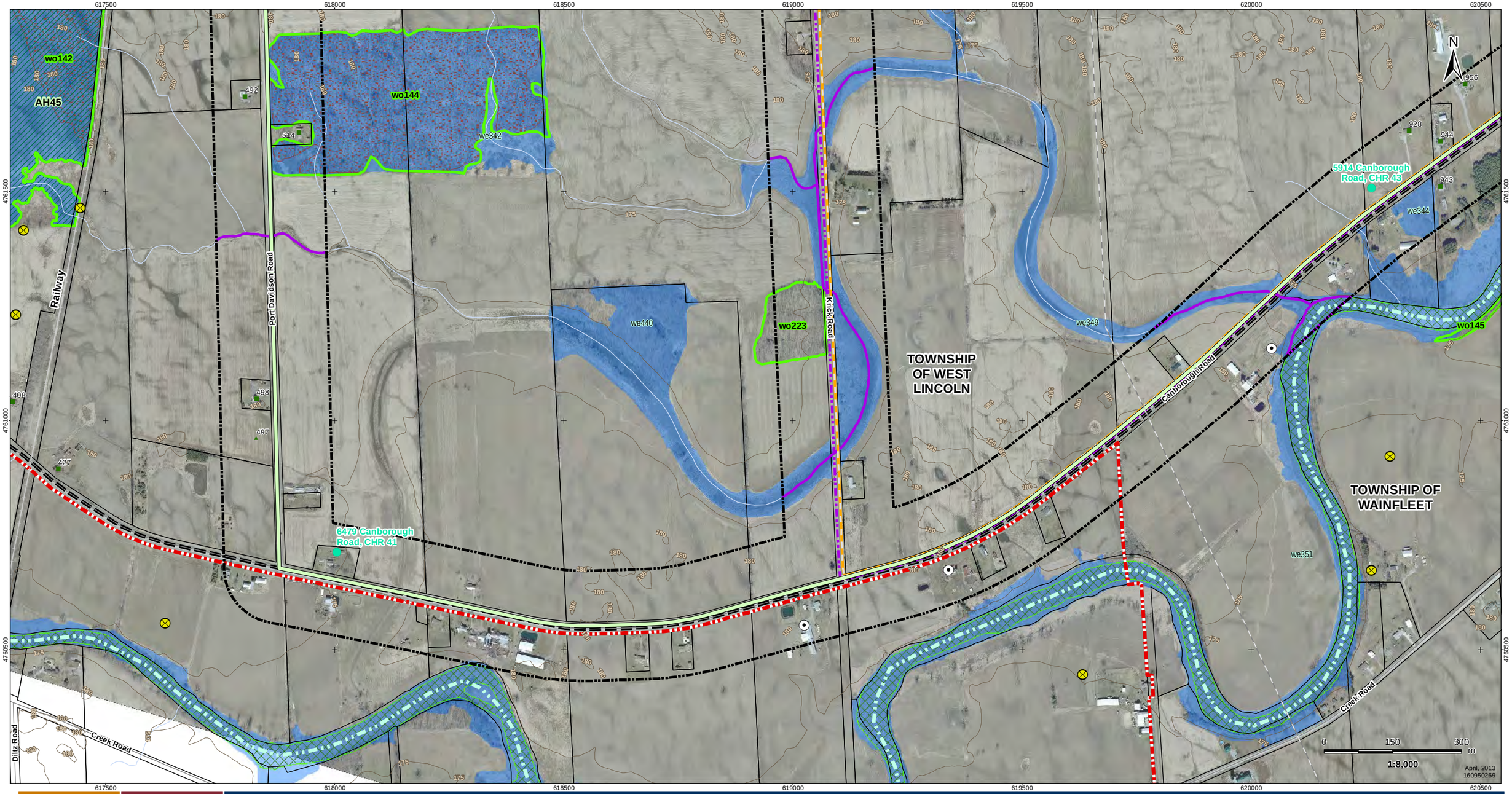


Client/Project
Niagara Region Wind Corporation

Figure No.
2.36

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.36



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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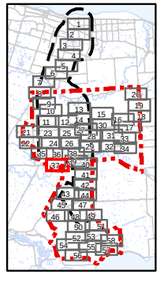
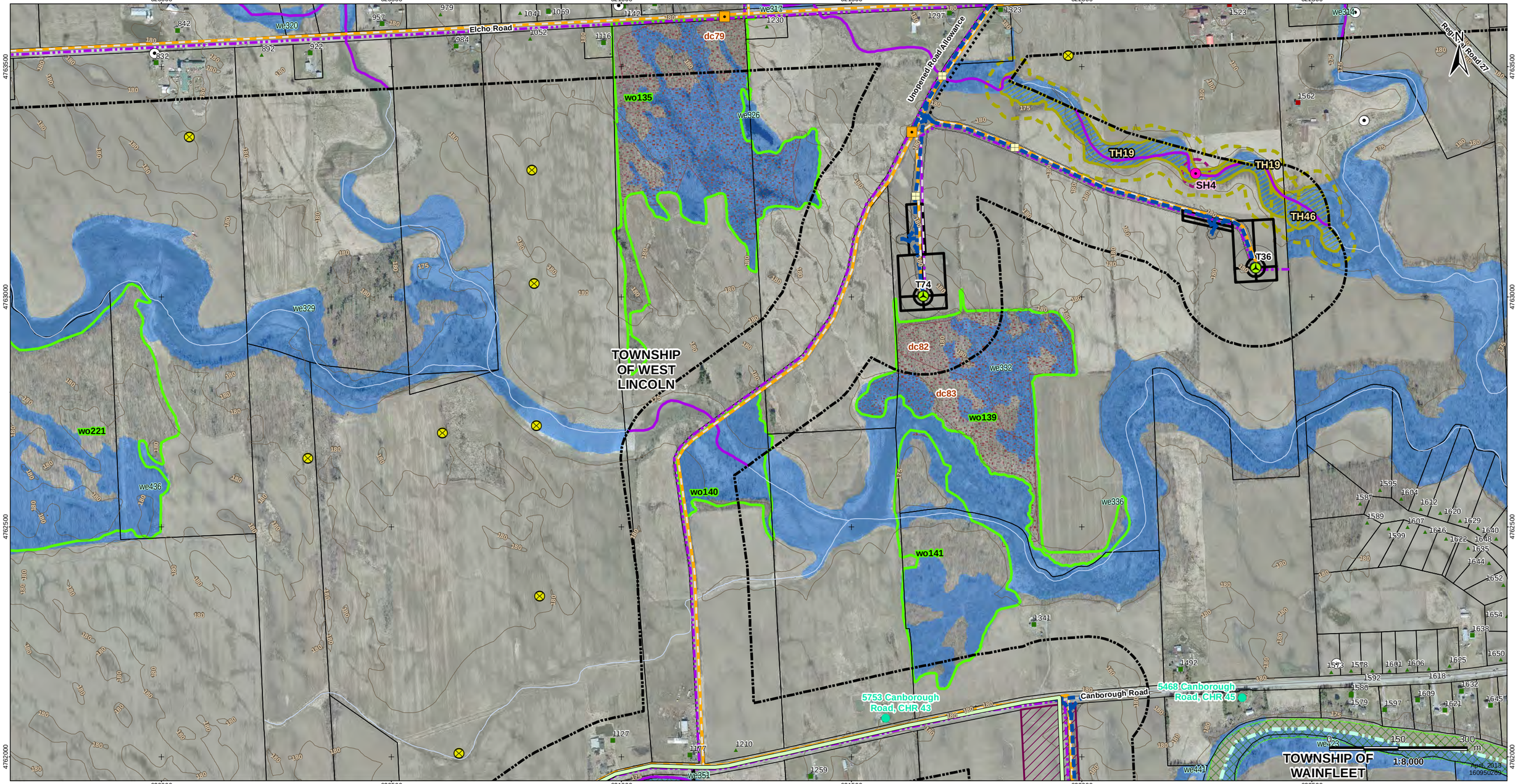
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.37

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.37



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Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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April, 2013
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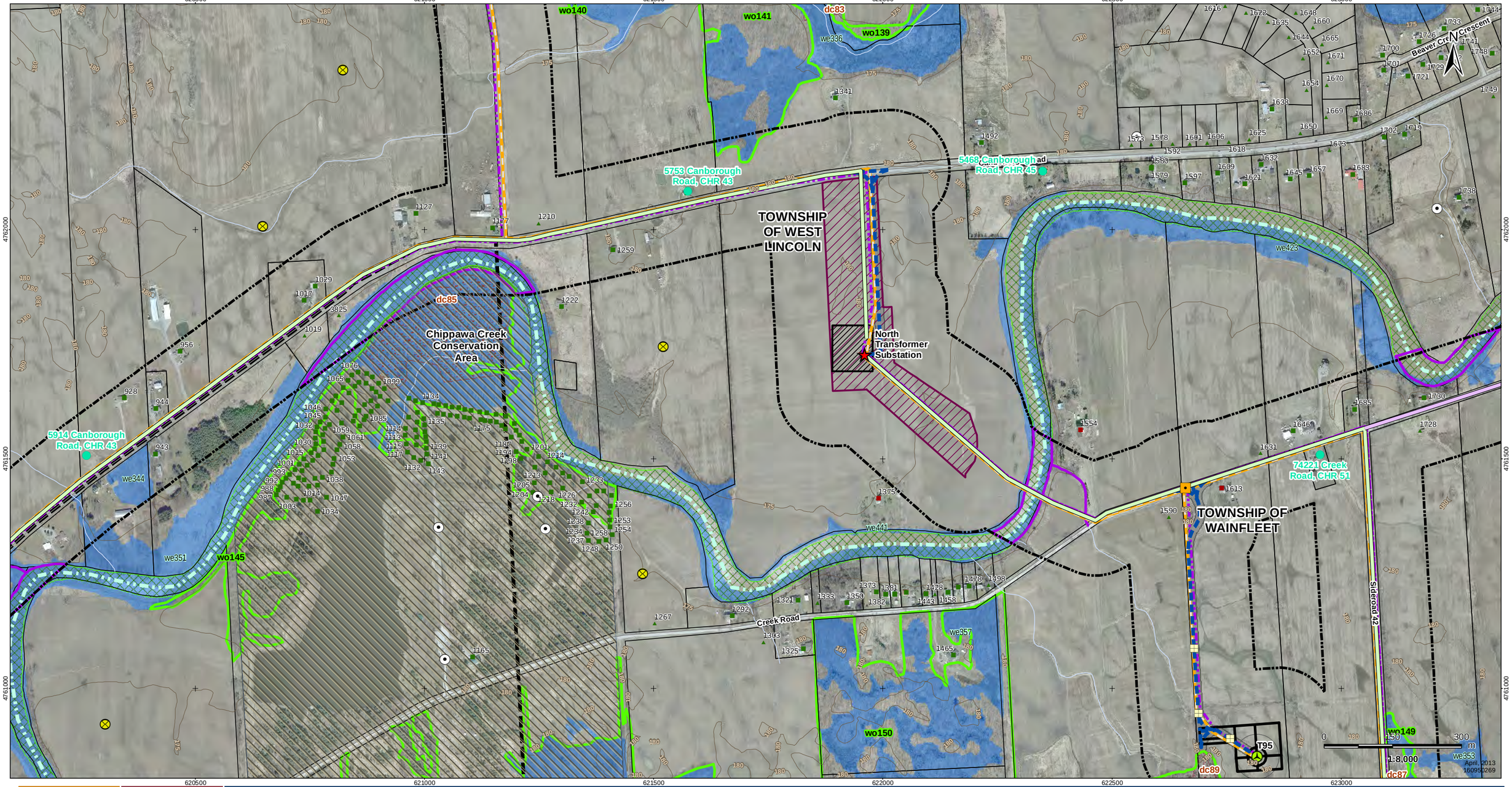
Client/Project
Niagara Region Wind Corporation

Figure No.
2.38

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.38



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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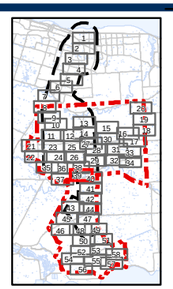
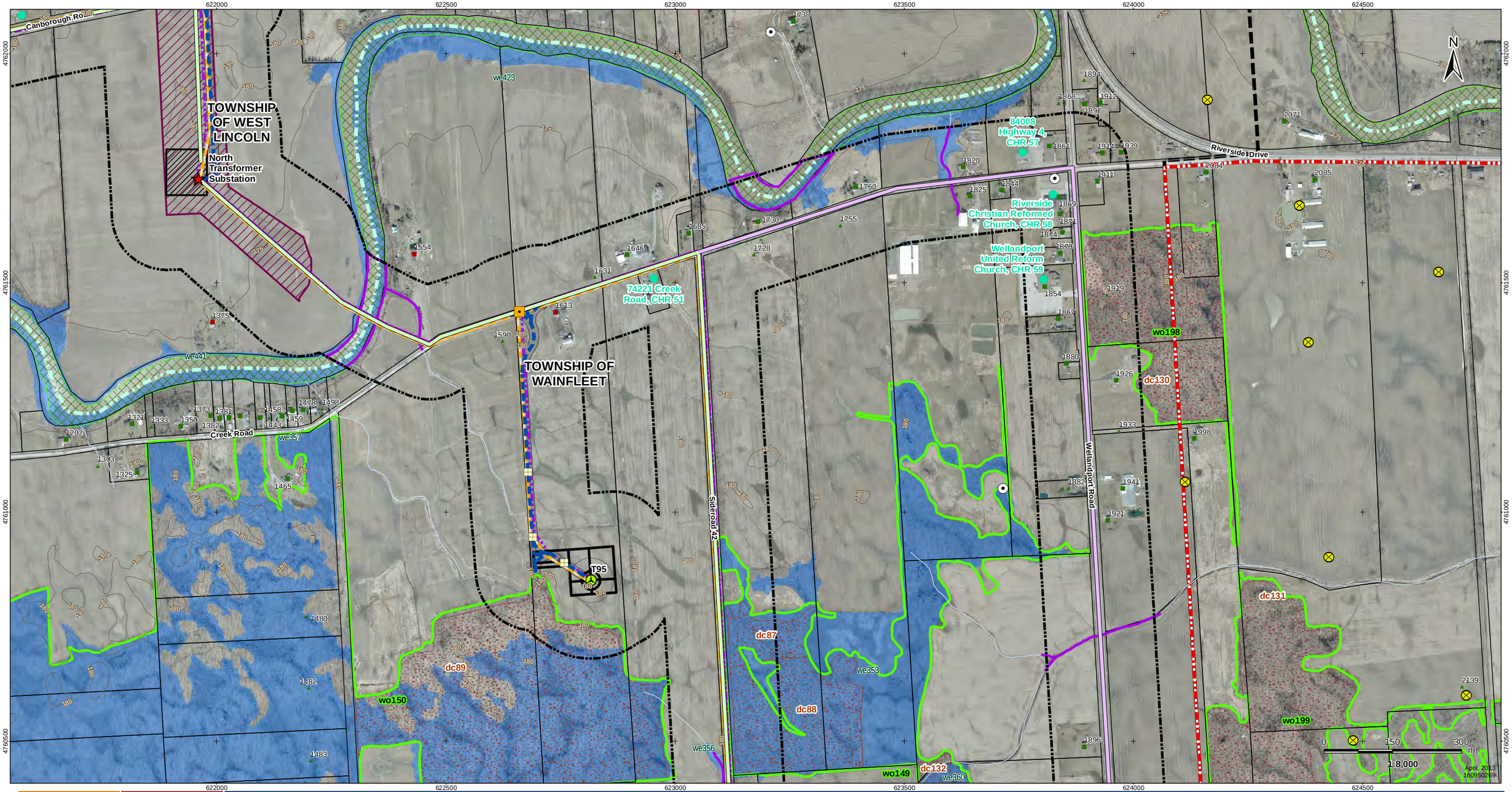
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.39

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.39



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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3. Orthoimagery source: First Base Solutions, Date Spring 2010.
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
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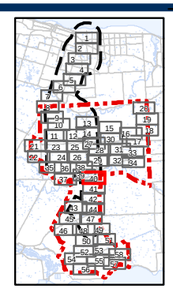
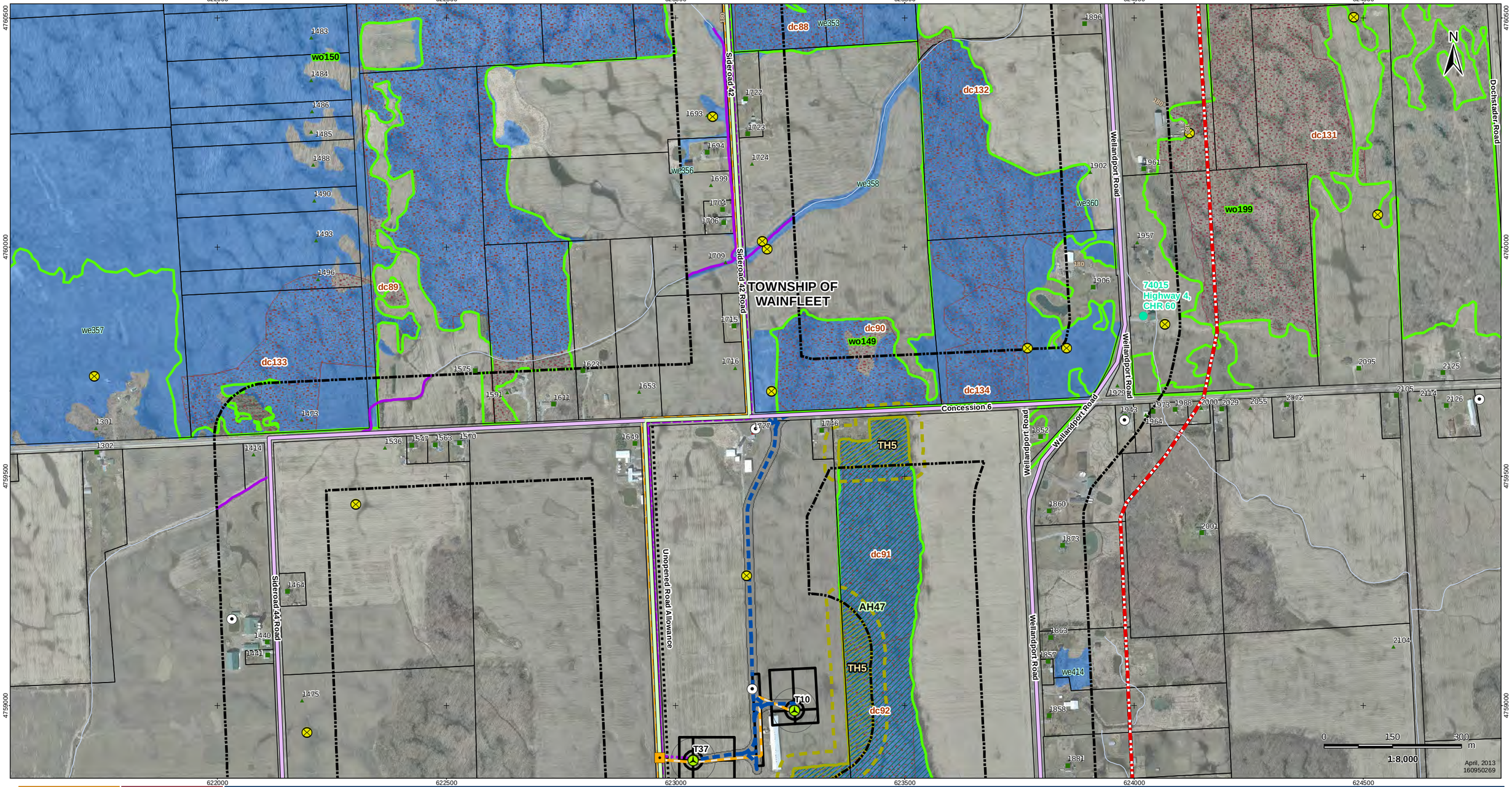
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.40

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.40



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
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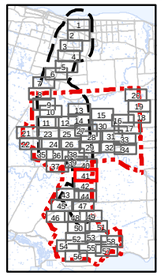

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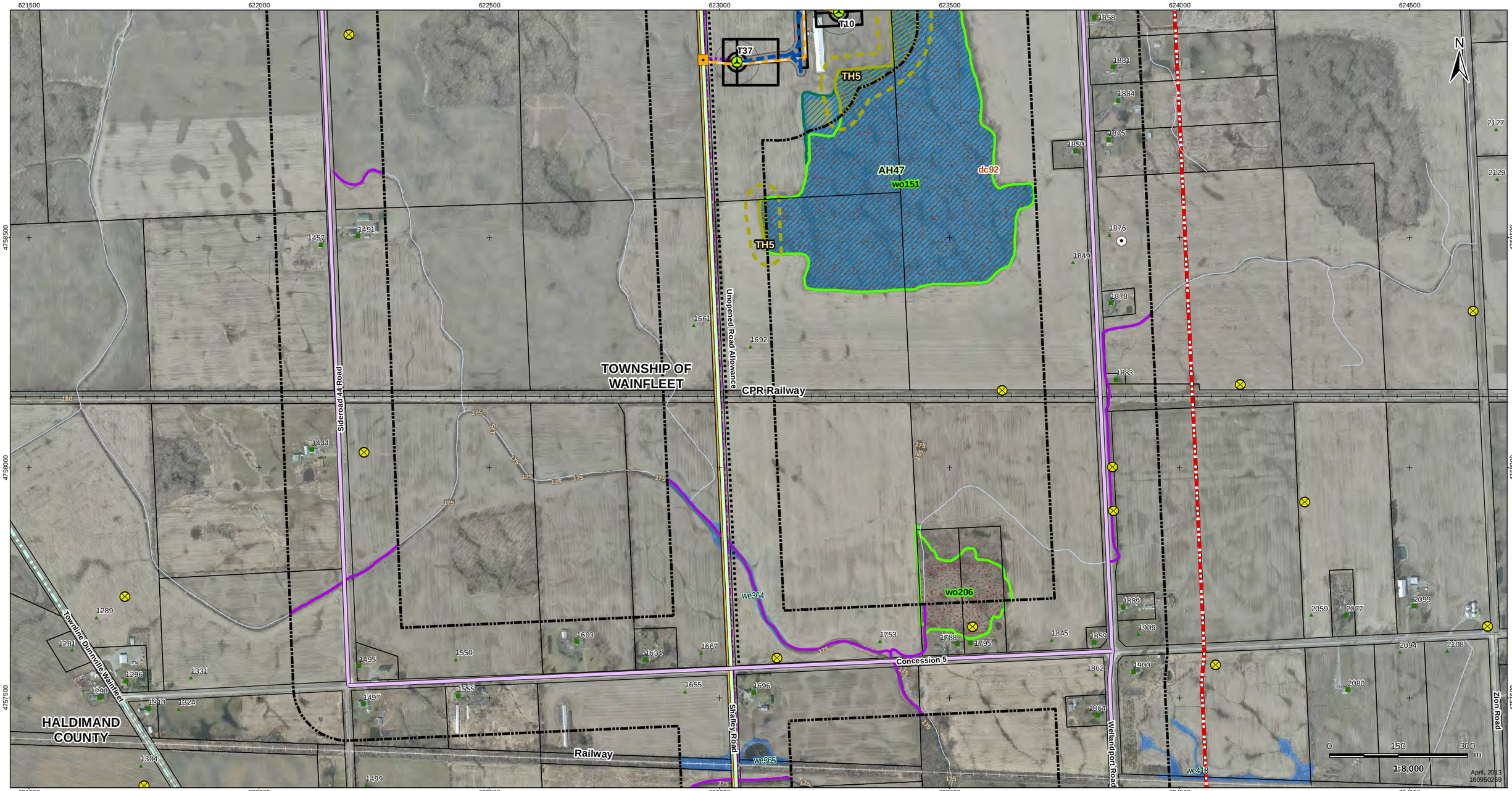
Niagara Region Wind Corporation

Figure No.
2.41

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.41



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Revised: 2013-04-02 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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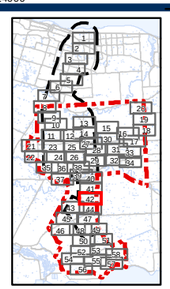

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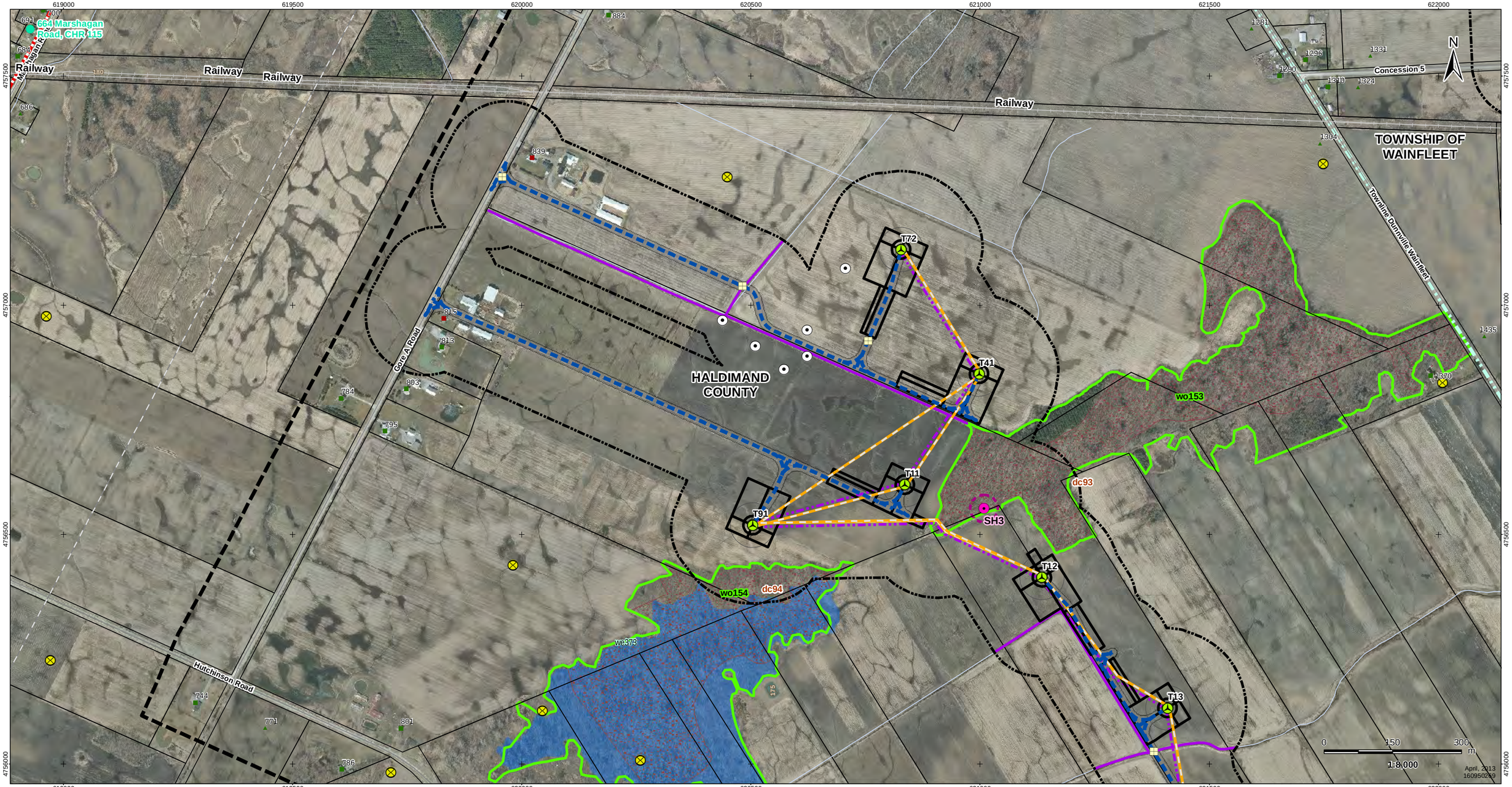
Niagara Region Wind Corporation

Figure No.
2.42

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.42



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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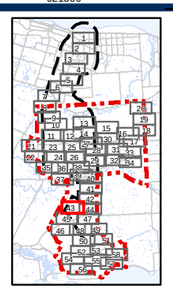
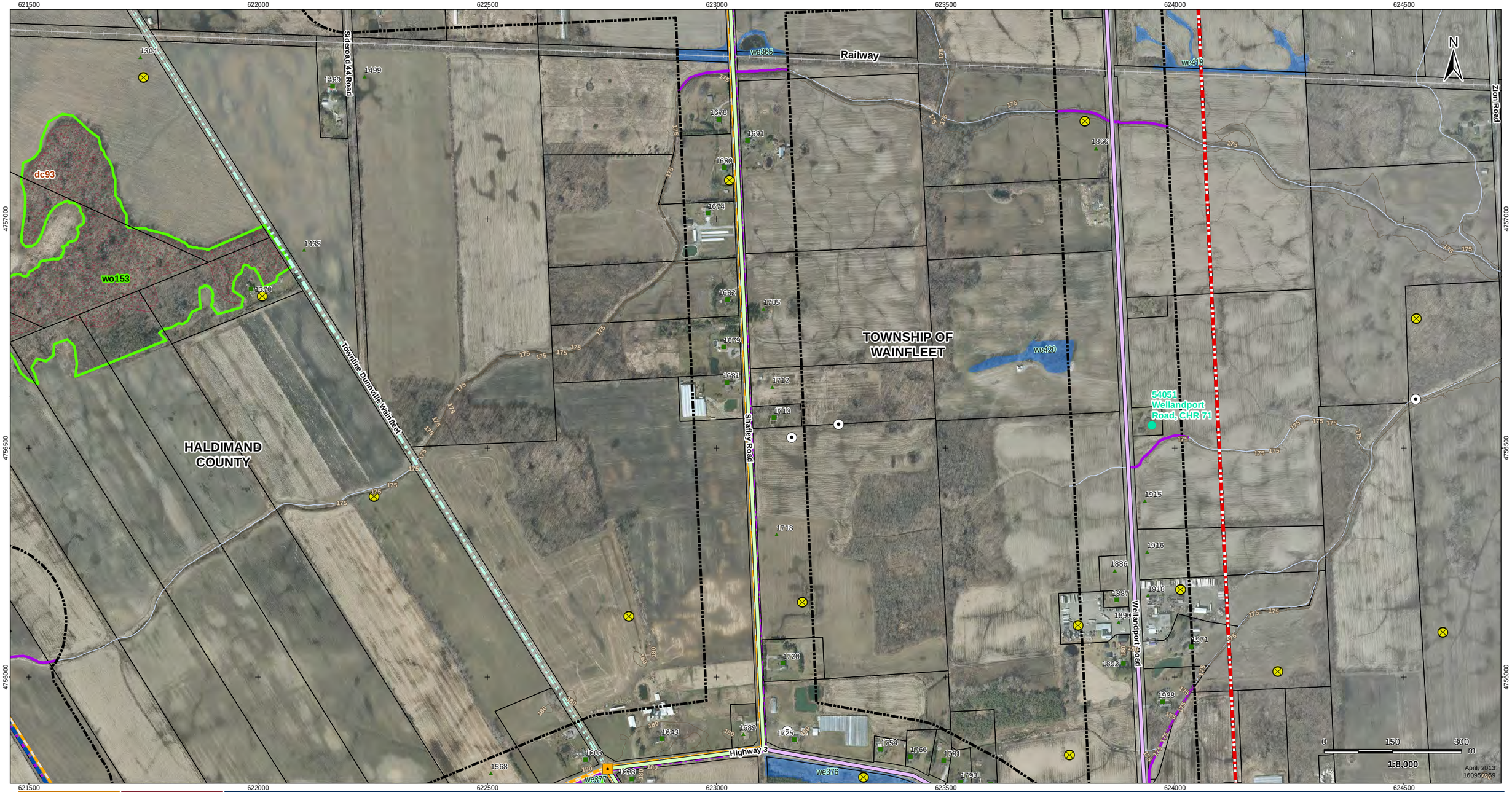


Client/Project
Niagara Region Wind Corporation

Figure No.
2.43

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.43



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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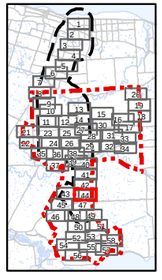

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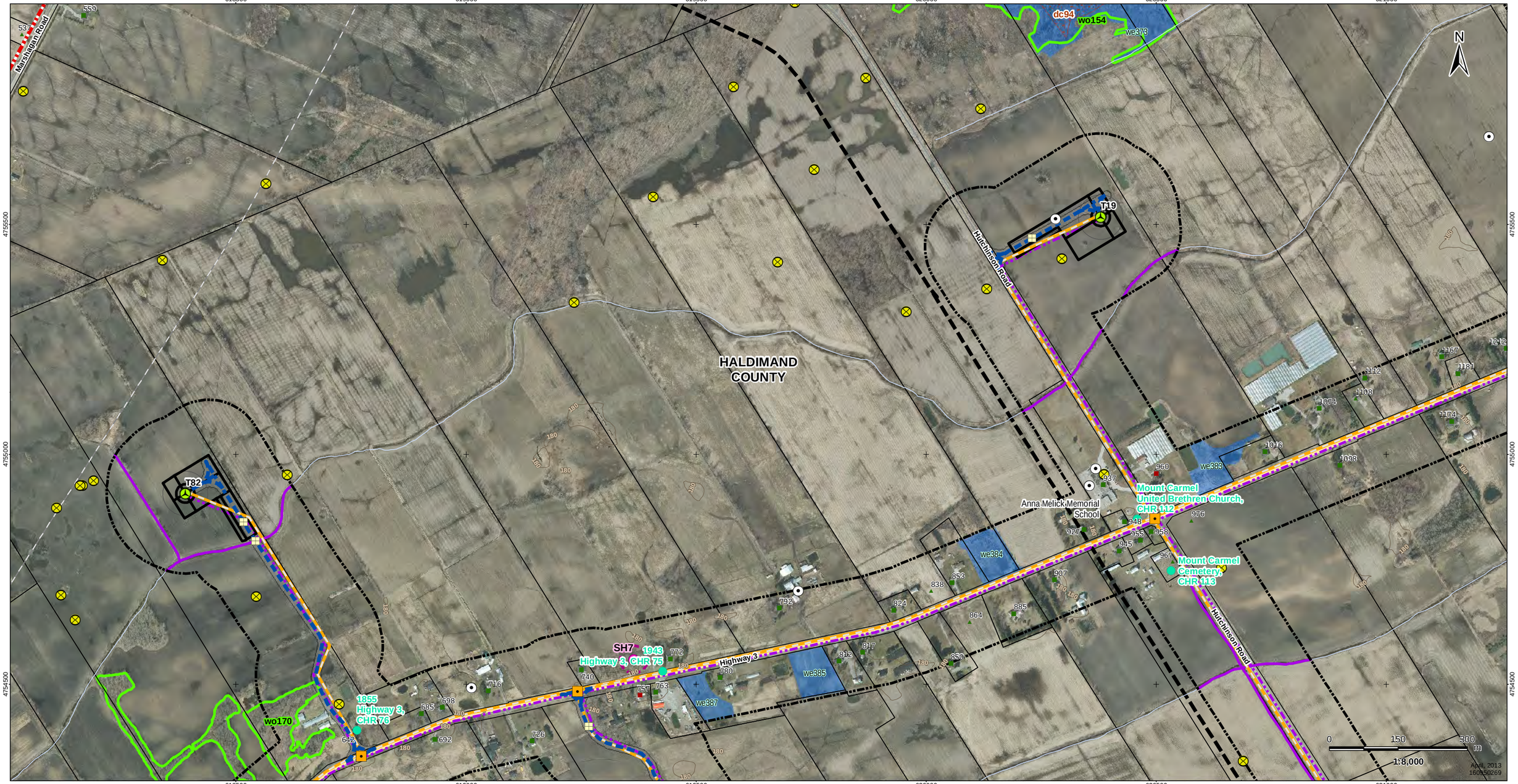
Niagara Region Wind Corporation

Figure No.
2.44

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.44



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Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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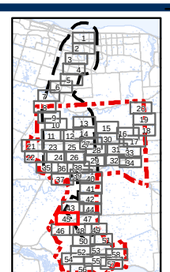

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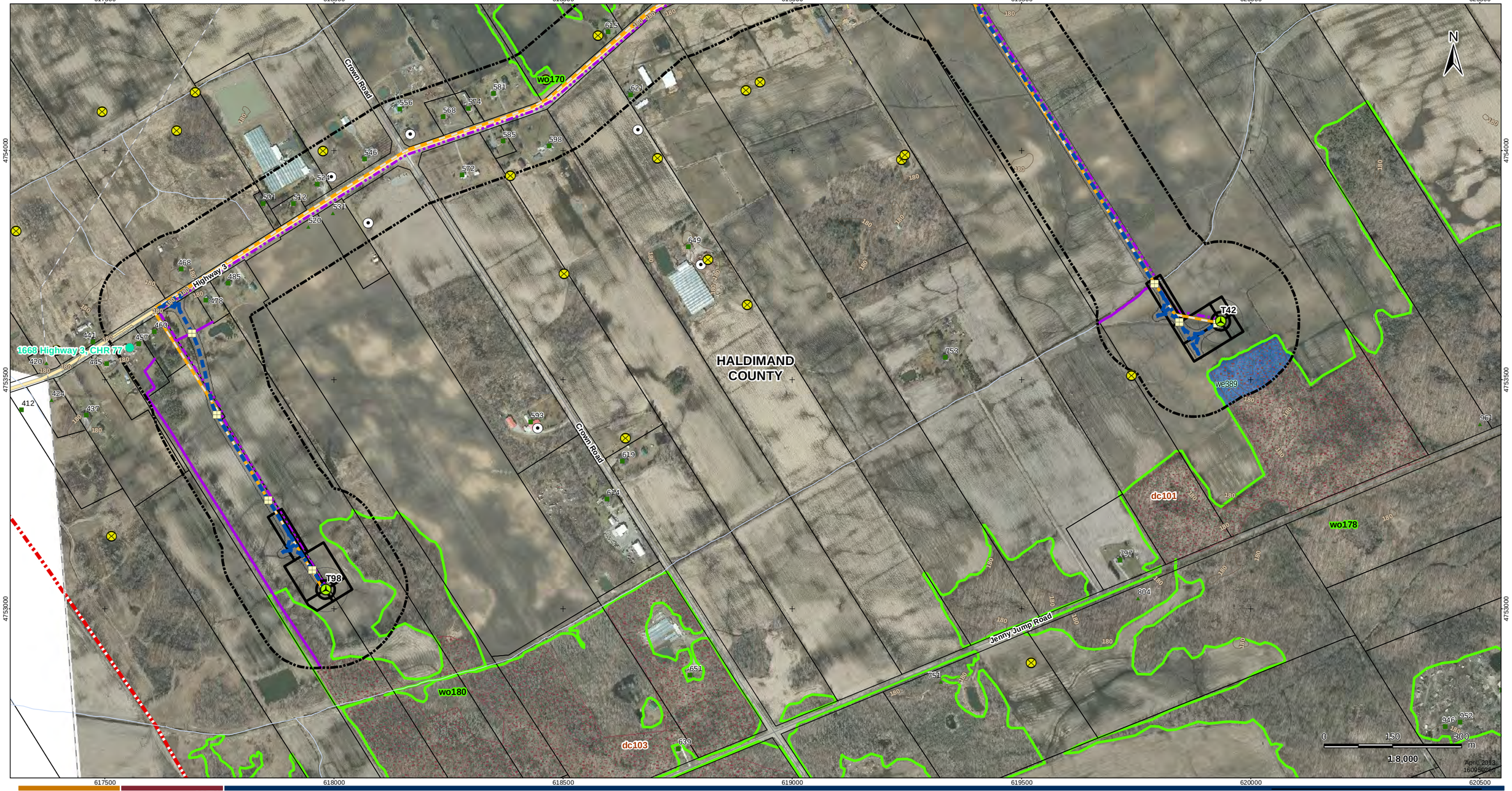
Niagara Region Wind Corporation

Figure No.
2.45

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.45



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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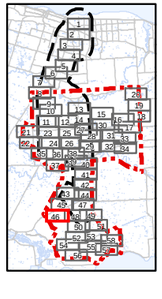
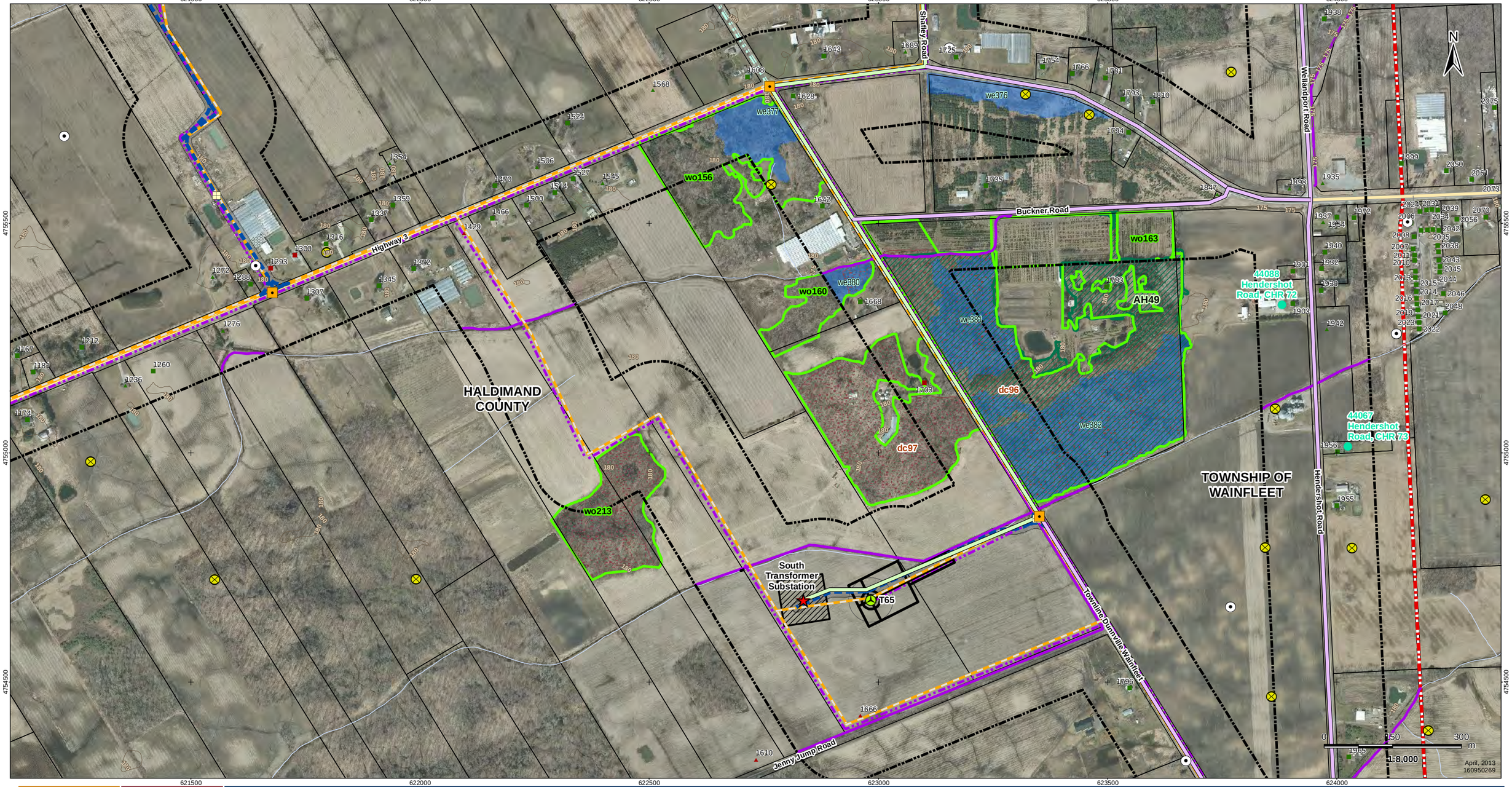


Client/Project
Niagara Region Wind Corporation

Figure No.
2.46

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.46



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
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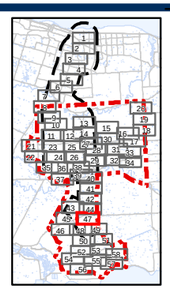
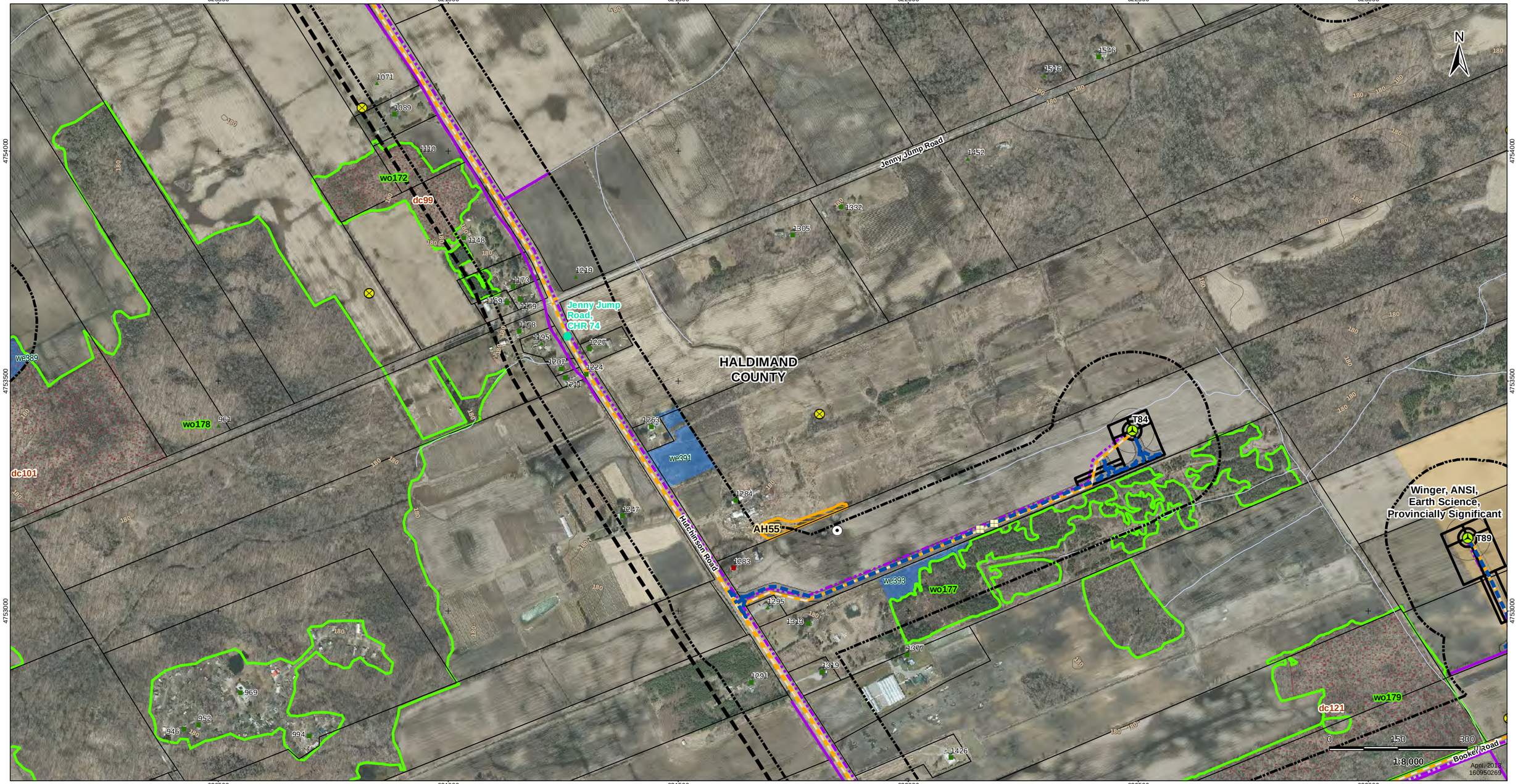
6. Noise receptors are identified within 1500m of any wind turbine.



Client/Project
Niagara Region Wind Corporation

Figure No.
2.47

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.47



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Revised: 2013-04-02 By: bowyper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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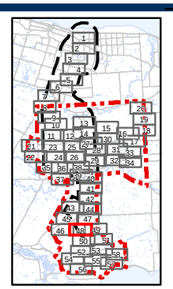

Client/Project
Niagara Region Wind Corporation

Figure No.
2.48

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.48

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Revised: 2013-04-02 By: bcowper

622500 623000 623500 624000 624500 625000 625500

4754000 4753500 4753000

Jenny Jump Road
Hendershot Road
Flanagan Road
Townline Dunnville Wainfleet
Bell Road
Booker Road

HALDIMAND COUNTY
TOWNSHIP OF WAINFLEET

Winger, ANSI, Earth Science, Provincially Significant

T84 T89

wo173 wo176 wo177 wo179 wo208
we392
dc121 dc122
SH6

62 Booker Road, CHR78

1610 1546 1885 1965 1976 1851 1925 1885 1921 1948 1960 1975 1994 2064 2032 2030 2065 2168 2190 2197 3660 2272 2175 2215 2101 2235 2225 2259 2116 2117 2118 1908 1853 1856

180

N

0 150 300 m
1:8,000
April, 2013
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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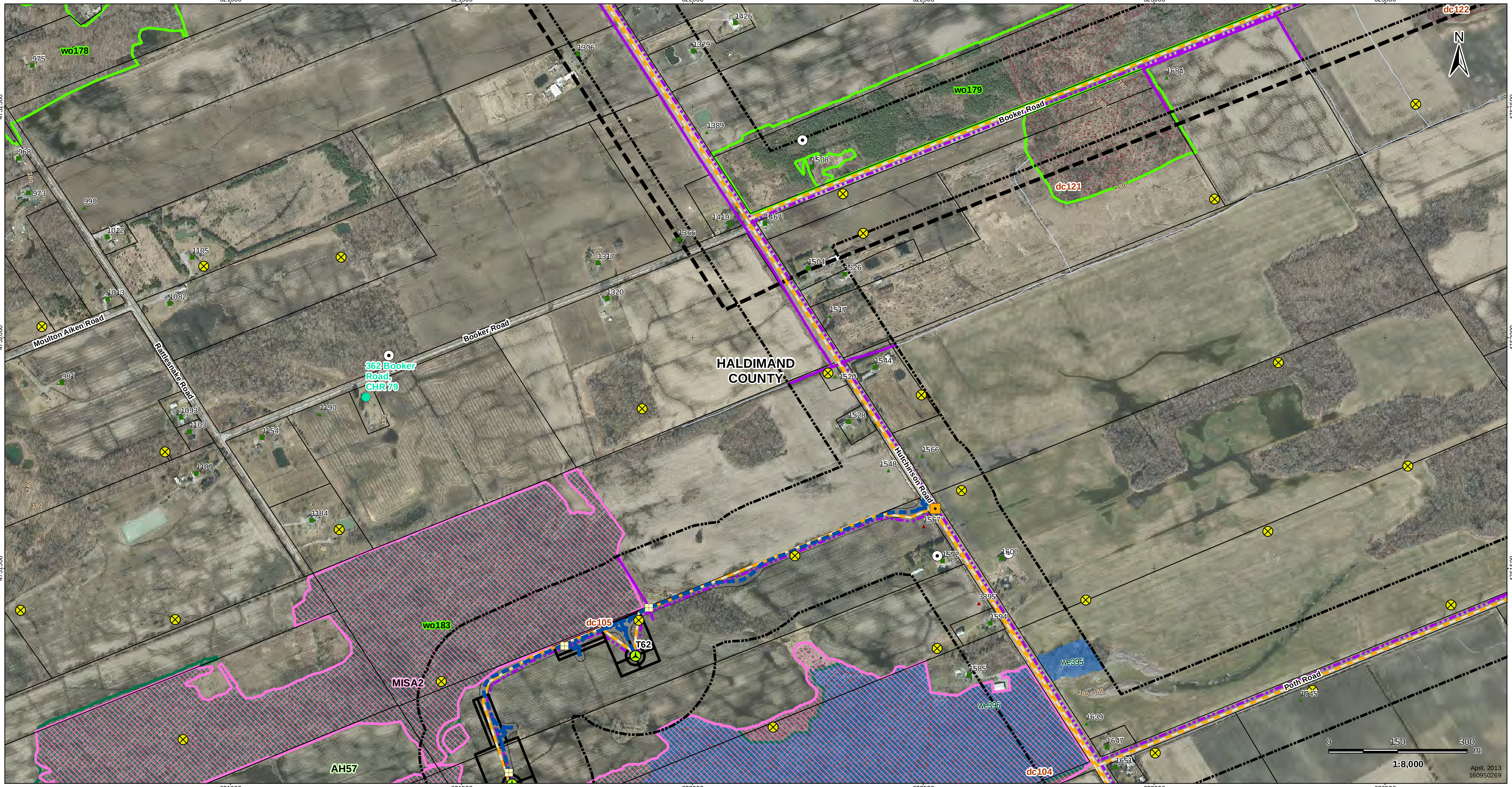
Stantec

Client/Project
Niagara Region Wind Corporation

Figure No.
2.49

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.49



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Revised: 2013-04-02 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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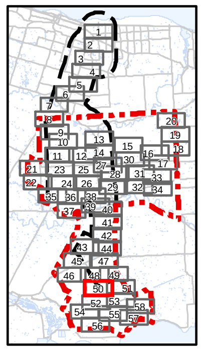
6. Noise receptors are identified within 1500m of any wind turbine.



Stantec

Client/Project

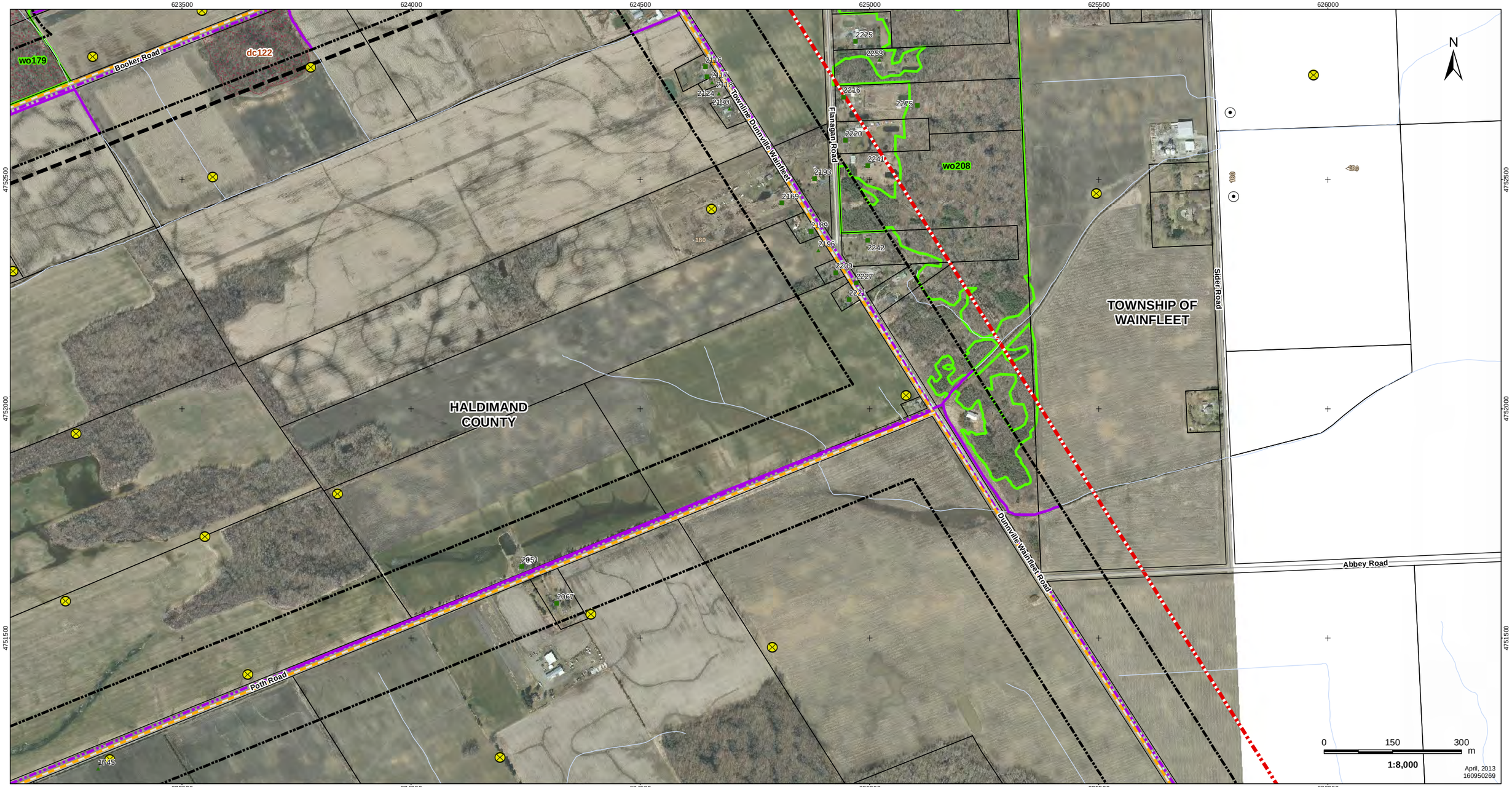
Niagara Region Wind Corporation

Figure No.

2.50

Title

Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies
Figure 2.50



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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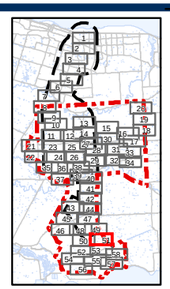
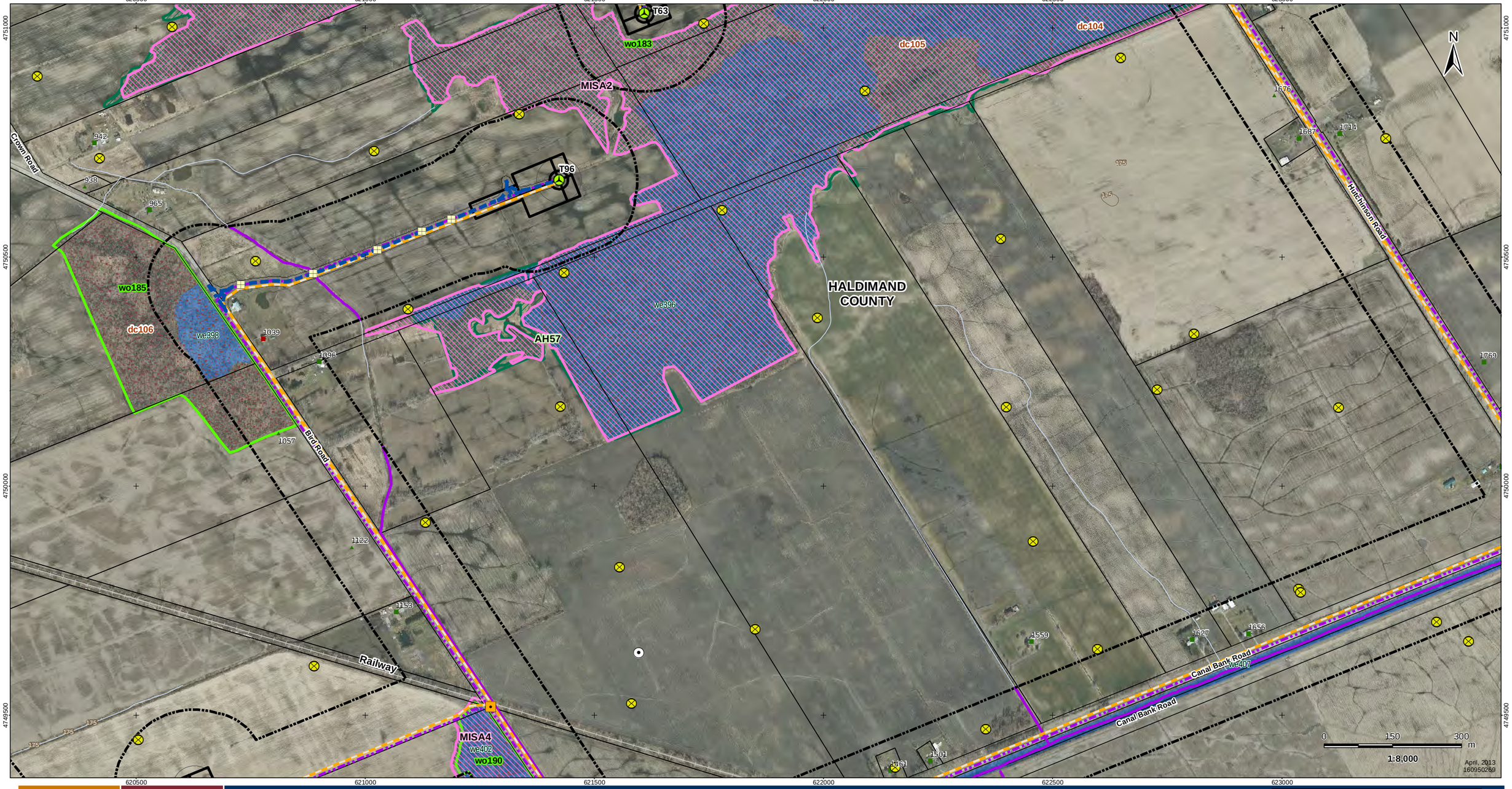


Client/Project
Niagara Region Wind Corporation

Figure No.
2.51

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.51



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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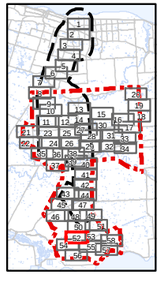

Client/Project
Niagara Region Wind Corporation

Figure No.
2.52

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.52

623500 624000 624500 625000 625500 626000

4751000 4750500 4750000

Poth Road
1745
Dunnville Wainfleet Road
TOWNSHIP OF WAINFLEET
Feeder Road South
2482
2343
2331
2266
2309
2300
Canal Bank Road
Feeder Canal Road
we425
dc137
HALDIMAND COUNTY
2108
2308
2301
dc120
Regional Road 65
2316
2096
1769
2069
Hutchinson Road
2020
2312
1785
we407
2090
2322
1949
2332
1800
2336
1777
2338
1799
2327
wo212
2349
2340
175
2346
2348
dc107
0 150 300
1:8,000
April, 2013
160950269

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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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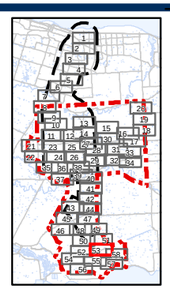

Client/Project
Niagara Region Wind Corporation

Figure No.
2.53

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.53

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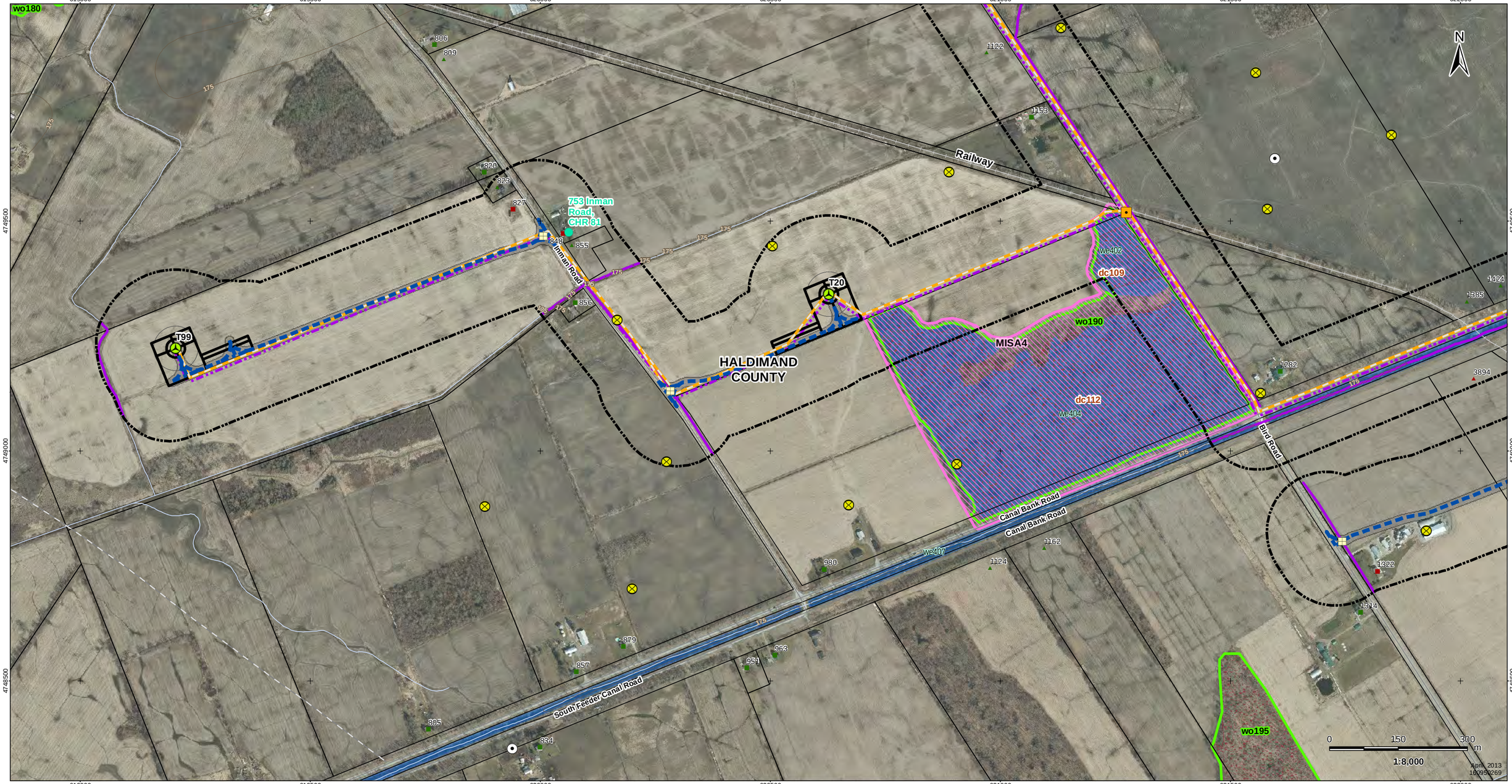

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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3. Orthoimagery source: First Base Solutions, Date Spring 2010.
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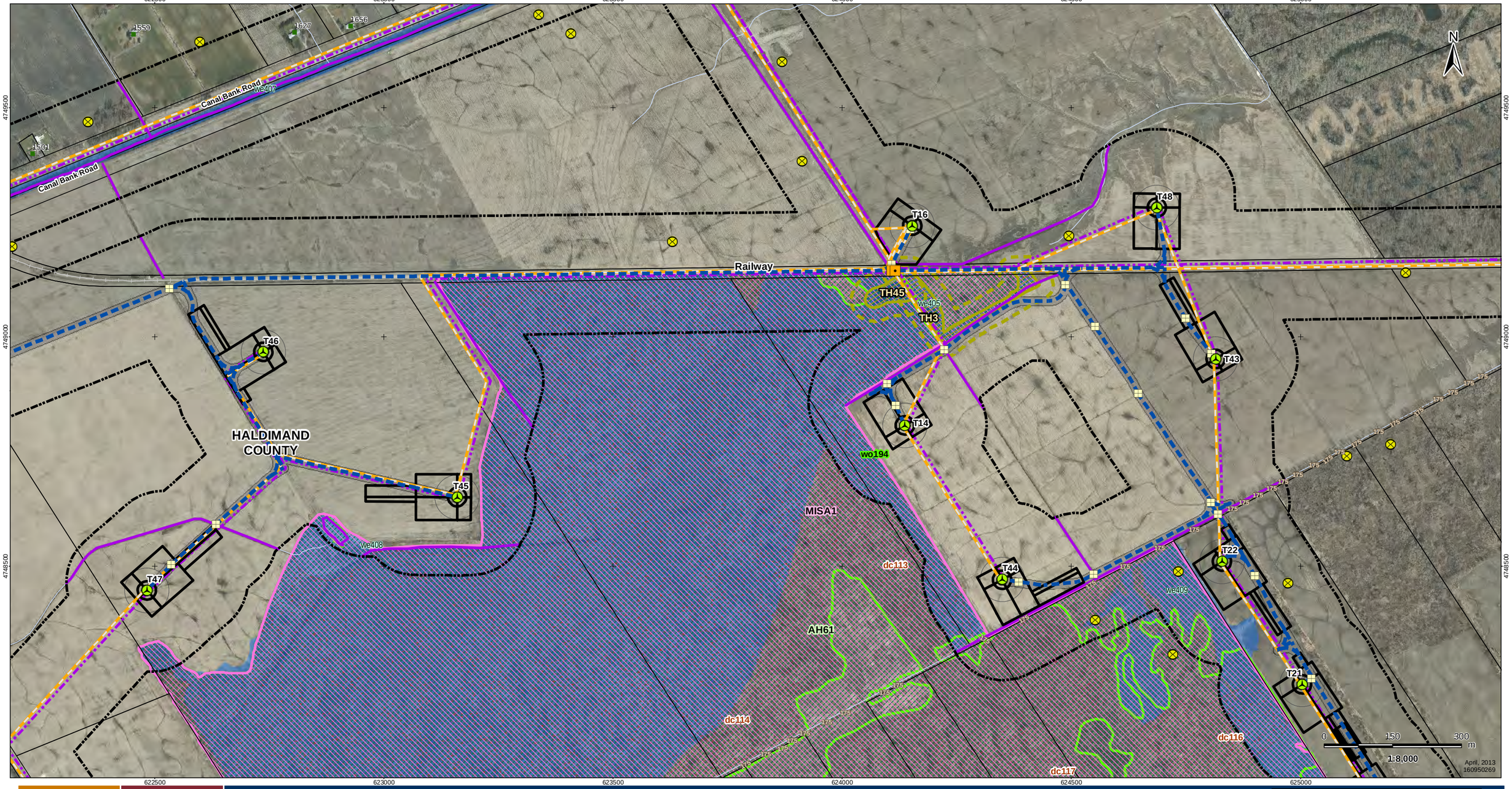
5. MOE Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2012.
6. Noise receptors are identified within 1500m of any wind turbine.

Client/Project
Niagara Region Wind Corporation

Figure No.
2.54

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.54



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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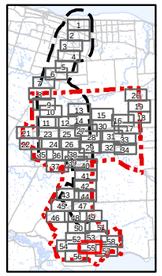
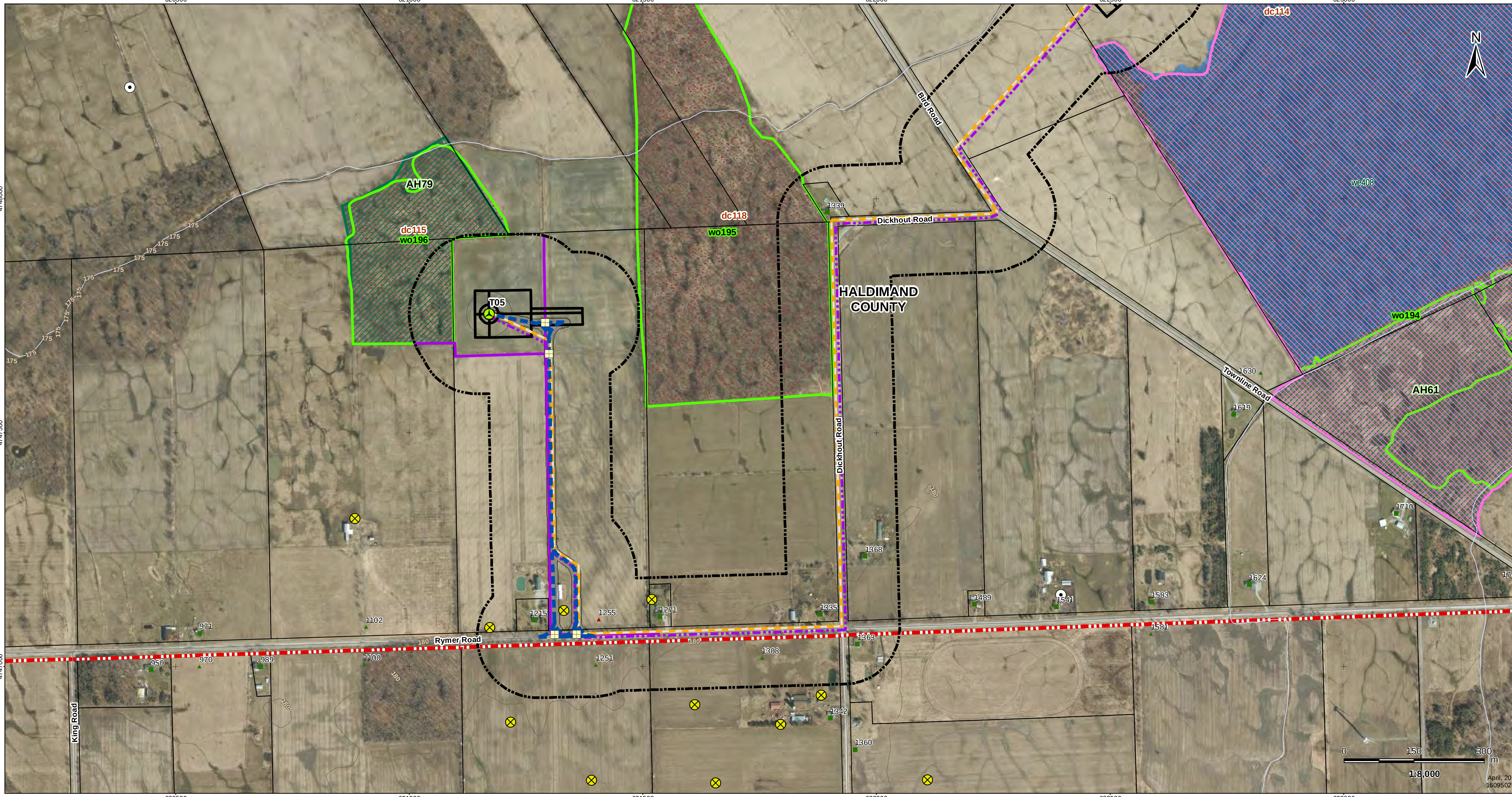


Client/Project
Niagara Region Wind Corporation

Figure No.
2.55

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.55



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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features
- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features
- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features
- Protected Property
- Cultural Heritage Resource

- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied
- Vacant

Notes

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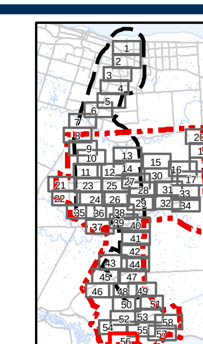

Client/Project
Niagara Region Wind Corporation

Figure No.
2.56

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.56

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Revised: 2013-04-02 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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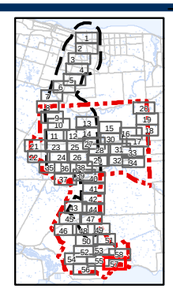

Client/Project
Niagara Region Wind Corporation

Figure No.
2.57

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.57

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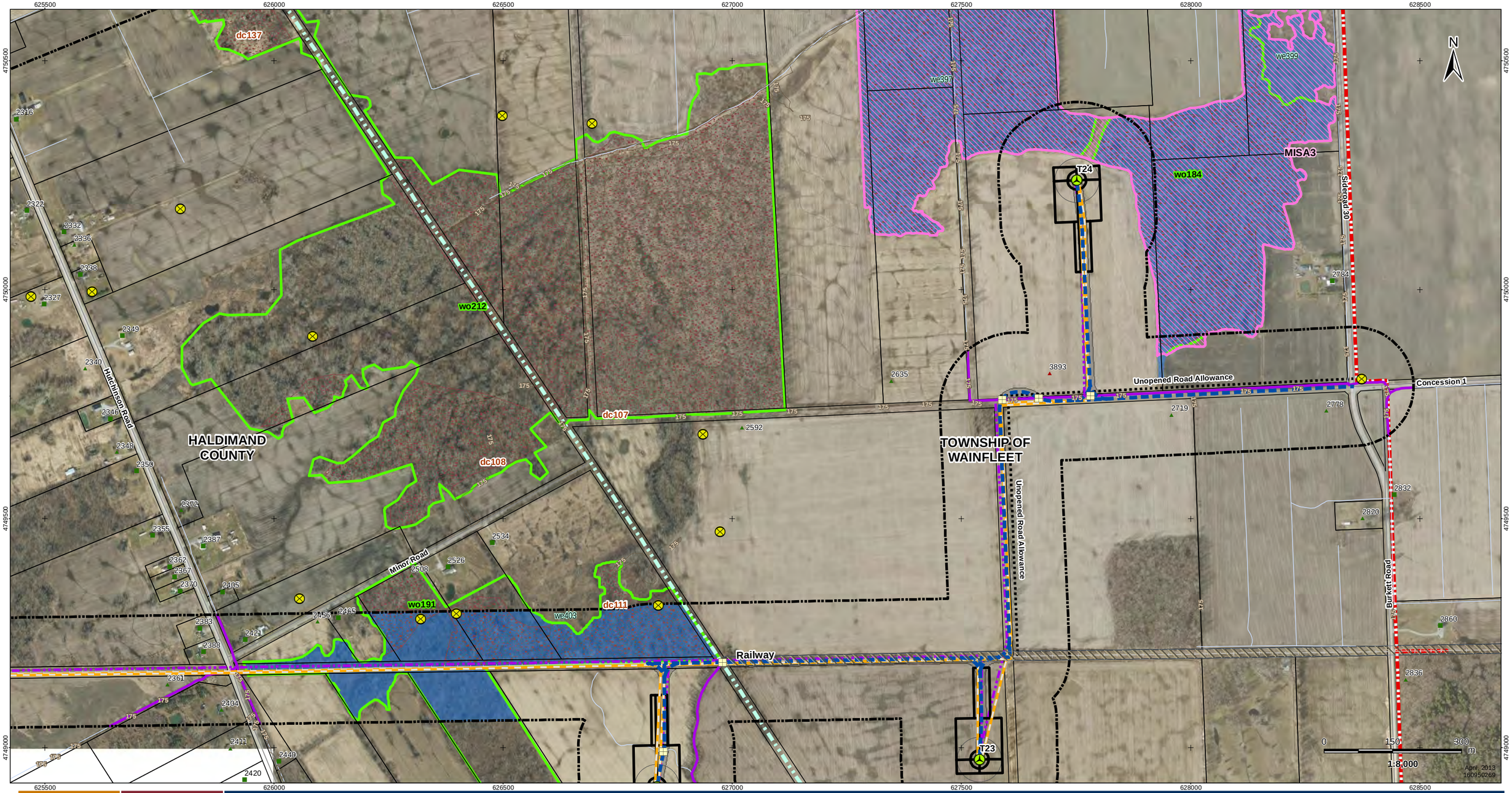
Revised: 2013-04-02 By: bcowper



Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Tap-in Location
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Potential Construction Laydown Area
- Transformer Substation

Existing Features

- Road
- Expressway / Highway
- Unopened Road Allowance
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Pipeline
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier
- Niagara Escarpment Plan Area (NEC)
- Greenbelt Natural Heritage System
- Conservation Areas (NPCA)
- Greenbelt Plan Area (MMAH)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Raptor Wintering Areas
- Deer Congregation Areas (MNR) (Generalized)
- Wetland Amphibian Breeding Habitat
- Woodland Amphibian Breeding Habitat
- Other Rare Vegetation Community
- Landbird Migratory Stopover
- Turtle Nesting Habitat/ Snapping Turtle Habitat
- Turtle Habitat 30m Buffer
- Turtle Wintering Area

Significant Natural Features

- Woodland Communities
- Wetland Communities
- ANSI, Earth Science, Provincially Significant (MNR)
- ANSI, Life Science, Provincially Significant (MNR)

Cultural Heritage Features

- Protected Property
- Cultural Heritage Resource
- Landfill - Active (MOE)
- Landfill - Closed (MOE)
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]

- Occupied
- Vacant

Participating Noise Receptors [5]

- Occupied
- Vacant

Notes

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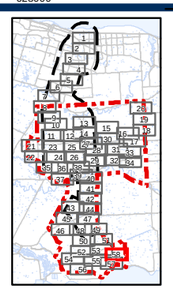

Client/Project
Niagara Region Wind Corporation

Figure No.
2.58

Title
Site Plan with Socio-Economic Features, Significant Natural Heritage Features and Water Bodies Figure 2.58