Niagara Region Wind Farm
Renewable Energy Approval
Amendment
Modification Report #3

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1.0 INTRODUCTION

FWRN LP ('FWRN') is developing the Niagara Region Wind Farm (the Project), a 230 MW wind energy 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.

The Project's Renewable Energy Approval (REA) was issued under Ontario Regulation 359/09 of the *Environmental Protection Act*. The REA was issued on November 6, 2014 (EBR #012-0614). Since receipt of the REA and completion of the Environmental Review Tribunal, FWRN has identified the need to make minor amendments (Modifications) to the Project that differ from the information described in the REA Application documents and approved by the Ministry of the Environment and Climate Change (MOECC). Modification Report #1 was submitted to the MOECC on October 5, 2015 and covered two project design changes and five technical changes. Modification Report #2 was submitted to the MOECC on February 23, 2016 for one project design change. Both reports are currently under review by the MOECC.

Since submission of Modification Reports #1 and #2, two additional Modifications to the Project have been identified, which differ from the information approved through the REA documents, including:

1. Meteorological Towers: the installation of three (3) new Meteorological (MET) towers to monitor wind speed, wind direction, and other atmospheric parameters, in order to satisfy Independent Electricity System Operator (IESO) telemetry and forecasting requirements; and
2. Transmission Line: the addition of an alternate transmission route to avoid pole placement along the Hwy 3 MTO right of way to address recent comments received from the MTO, whereby a portion of the transmission line will be located on a new participating property to accommodate a transmission crossing of Highway 3.

This report and its attachments constitute Modification Report #3, and provide information on the additional proposed Modifications. Based upon the classification system outlined in the MOECC's *Technical Guide to Renewable* Energy *Approvals* (2013), the proposed Modifications are Project Design Changes. As such, this document has been prepared to address the requirements of Chapter 10 "Making Changes to Renewable Energy Approval (REA) Projects" of the Technical Guide.

2.0 SUMMARY AND RATIONALE FOR MODIFICATIONS

The Project team is continually reviewing design features of the Project layout to consider efficiencies, address stakeholder comments, and further reduce potential environmental impacts. In our opinion, the proposed Modifications described below are properly classified as a Project Design Change because it meets the factors set out in Chapter 10 of the Technical Guide to Renewable Energy Approvals. Further rationale specific to the individual modifications is provided below.

2.1 PROJECT DESIGN CHANGES

2.1.1 Modification – Installation of MET Towers

This Modification involves the installation of MET tower(s) within the Project Study Area at three locations based on the requirements of the Independent Electricity System Operator (IESO). The existing development stage MET towers in operation for this Project were described in the REA documents for context, but were not included in the REA application. Through on-going discussions with the IESO, the need for MET towers at specific locations and heights relative to the approved turbine locations was identified. This modification is proposed to address the IESO requirement.

Three (3) new MET towers are proposed, as follows:

- MM_North: proposed to be built north of Concession Road 3 and just west of Caistor Gainsborough Road, which will be situated near two turbines (T52 and T53) (Figure 2.21);
- MM_Centre: proposed to be built between Gore A Road and Townline Dunnville Wainfleet just south of the railway, which will be situated near five turbines (T11, T12, T41, T72, and T91) (Figure 2.43); and
- MM_South: proposed to be built north of Rymer Road and west of Dickhout Road, which will be situated near one turbine (T05) (Figure 2.56).

All three proposed MET tower locations are positioned on agricultural land within the Zone of Investigation (ZOI) previously identified for the Project.

The MET towers will be used for long-term monitoring of wind conditions. In the original REA, existing MET towers on site that were installed during the development stage were planned to be used. These existing towers were not part of the REA approval but had been included in the site plan for transparency. However, it has since been identified that additional MET towers are required in order to satisfy IESO requirements.

The proposed MET towers will be approximately 120 m in height and will consist of a center lattice tower supported by three guy wires. The lattice tower supports meteorological

instrumentation located at multiple elevations for the measurement of wind speed, wind direction, temperature, barometric pressure and other atmospheric parameters. The tower will be installed on a concrete foundation designed by a qualified engineer. Each of the three guy wires will be secured to the ground surface by a concrete anchor located approximately 90 m from the tower. The tower foundation and concrete anchors will be installed using standard construction equipment such as an excavator or backhoe, crane and light duty trucks.

The MET towers will carry instrumentation for collecting wind data to support operation of the Project. Power and data cabling for the MET towers would be trenched in from the nearest collector line system. Alternatively, power could be supplied at the MET tower through an attached solar panel and data could be transmitted wirelessly. The aviation safety lighting requirements will depend on location and requirements of NAV Canada and Transport Canada regulations. These permanent MET towers and associated meteorological instrumentation will remain for the duration of the Project.

The construction and installation activities for the MET towers will be completed in a similar manner as those for a turbine as described in the Construction Plan Report, submitted as part of the original REA application.

Based on the description above, the Modification is considered a Project Design Change because there is an extension of the original project location resulting in a minimal increase in negative environmental effects that may occur or are likely to occur as a result of the Modification. The following rationale is provided:

- There is no increase in the overall impact at the receptors (i.e., no noise impacts);
- The Modification requires an additional Stage 2 Archaeological Assessment (AA) on lands not previously assessed, but does not require additional Stage 3 AA work;
- The Modification requires undertaking additional natural heritage work on lands not previously assessed (i.e., new zone of investigation (ZOI));
- The Modification requires reconfirmation of written comments for archaeology and cultural heritage from the Ministry of Tourism, Culture and Sport (MTCS) and for natural heritage from the Ministry of Natural Resources and Forestry (MNRF); and
- There is no substantial increase in negative environmental effects that occur or are likely to occur as a result of the Modification.

As a result, the Modification described above is properly classified as a Project Design Change based on the factors set out in Chapter 10 of the *Technical Guide to Renewable Energy Approvals* (MOE, 2013).

2.1.2 Modification – Alternate Transmission Line Routing at Highway 3

Recent consultation between the FWRN and MTO has identified MTO's strong preference for the transmission route to avoid placement of transmission poles within the MTO Hwy 3 right-of-way. The proposed alternate transmission route identified in this Modification allows FWRN to accommodate these new comments and to avoid the placement of transmission line poles along Hwy 3 and outside of the MTO right-of-way.

This Modification involves the addition of an additional alternate transmission line route across a new participating property within the Project Study Area. A segment of the approved 115 kV transmission line route would cross an agricultural field from the intersection of Buckner Road and Dunnville Wainfleet Townline to the intersection of Highway 3 and Shafley Road (Figure 2.47, Appendix A). The remainder of the transmission line would follow the approved route between the North and South Substations.

A portion of the revised transmission line route will extend outside of the ZOI originally identified in the REA application, which consists of an actively managed agricultural field. The location of the alternate route is presented on Figure 2.47 (Appendix A) and discussed in the following sections.

The construction, installation and decommissioning activities for the transmission line will be completed in a similar manner as described in the Construction Plan Report and Decommissioning Plan Report, submitted as part of the REA application.

Based on the description above, the proposed Modification is classified as a Project Design Change because there is an extension of the original project location resulting in a minimal increase in negative environmental effects that may occur or are likely to occur as a result of the Modification.

The following rationale is provided:

- There is no increase in the overall impact at the receptors (i.e., no noise impacts);
- The Modification requires an additional Stage 2 Archaeological Assessment (AA) on lands not previously assessed, but does not require additional Stage 3 AA work;
- The Modification requires undertaking additional natural heritage work on lands not previously assessed (i.e., new zone of investigation (ZOI));
- The Modification requires reconfirmation of written comments for archaeology and cultural heritage from the MTCS and for natural heritage from the Ministry of Natural Resources and Forestry (MNRF); and
- There is no substantial increase in negative environmental effects that occur or are likely to occur as a result of the Modification.

As a result, the Modification described above is properly classified as a Project Design Change based on the factors set out in Chapter 10 of the *Technical Guide to Renewable Energy Approvals* (MOE, 2013).

3.0 RESULTS OF EFFECTS ASSESSMENT FOR THE PROJECT MODIFICATIONS

Ontario Regulation 359/09 requires that any adverse environmental effects that may result from construction, installation, operation, maintenance and decommissioning activities be described. The term "environment" in Ontario Regulation 359/09 has the same meaning as in the *Environmental Protection Act*, and includes the natural, physical, cultural, and socio-economic environment.

A screening to identify any new environmental effects that would require additional mitigation or monitoring measures beyond those outlined in the REA documents as a result of the proposed Modifications to the Project was completed.

In summary, the proposed Modifications described above will not result in increased negative environmental effects that will or are likely to occur beyond those originally identified, documented and consulted on during the REA process for the original project.

3.1 IMPACTS ON STUDIES/ REA REPORTS

The REA reports require a material change to the content as a result of the Modifications. The following sections identify the steps taken to identify any new environmental effects and the results of the screening. A summary of the amendments required to the sections and figures in each REA report and the applicable text change is provided in Table 1.

3.1.1 Natural Heritage Assessment and Environmental Impact Study

The Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) included in the REA Application identified natural features within the Project Location and associated ZOI (i.e., land within 120 m of the Project Location for the MET Towers and 50 m for the transmission line, in accordance with O. Reg. 359/09).

A technical review was conducted to determine if the Modifications result in: (a) a change to the identification of natural features within 120 m of the Project Location; and/or (b) a change to the assessment of impacts and mitigation measures. The review also provided an overall assessment of changes to the NHA/EIS.

All three proposed MET Towers and the proposed modified transmission route near Buckner road are sited in actively managed agricultural fields. While the MET towers and portions of the transmission line are located within the ZOI that was previously assessed in the NHA/EIS (Stantec, 2013), guy wires for the MET towers may extend outside the previously assessed ZOI and a portion of the transmission line is located outside of the ZOI. The ZOI for each of the new MET Tower

locations and revised transmission line route near Buckner road has been modified to extend beyond the previously assessed ZOI (Appendix A, Figures 2.21, 2.43, 2.47 and 2.56).

Following the same methods used in the original NHA/EIS, a records review was conducted for the new portions of the modified ZOI for the MET Tower Modification to determine if known natural features are present in the area of the Modification. According to the Natural Heritage Information Centre (NHIC, 2015) and Land Information Ontario (LIO, 2015) databases, there are no areas designated as a wetland, woodland or Area of Natural or Scientific Interest (ANSI) in the new portions of the modified ZOI. No rare species were identified as potentially occurring in the new portions of the modified ZOI.

The proposed MET Tower Modification and associated revised Project Location and ZOI all fall entirely within Ecological Land Classification (ELC) polygons that were previously identified and assessed in the NHA (Stantec, 2013). No additional natural features were identified through a combination of air photo interpretation and review of background data.

No natural features were found in the modified Project Location or ZOI for the MET towers. The proposed MET towers and associated modified ZOI consist of agricultural fields comprised of soy, corn and hay.

For the transmission line Modification, the Project Location consists of actively managed agricultural fields comprised of wheat. The surrounding ZOI was comprised primarily of managed agricultural fields, with a small proportion of residential, wetland (we376), and woodland (wo155) areas previously identified in the original NHA/EIS (Stantec, 2013).

With the exception of updates to the figures to reflect the proposed Modifications, no changes are required to the Records Review, Site Investigation, Evaluation of Significance or Environmental Impact Study reports as presented in the NHA/EIS as a result of the proposed MET towers or proposed modified transmission line near Buckner Road. With the exception of updates to the figures to reflect the proposed Modifications, no changes are required to the Construction Plan Report and the Environmental Effects Monitoring Plan as a result of the proposed Modifications.

The information contained in the NHA/EIS and approved by the MNRF through their letter dated April 2, 2013, remains applicable for these Project Modifications.

It was concluded that the Modifications can be implemented with no new net negative environmental effects. See Appendix B to this Modification Document for correspondence with the MNRF, including the NHA/EIS Addendum and documentation of the additional assessment undertaken and associated recommendations provided.

3.1.2 Water Assessment and Water Body Report

The Water Assessment and Water Body Report (WAWBR) as approved through issuance of the REA identified waterbodies within the Project Location and the associated ZOI within 120 m of the Project Location.

A technical review was conducted to determine if the Modifications result in: (a) a change to the identification of water bodies within 120 m of the Project Location; and/or (b) a change to the assessment of impacts and mitigation measures. The review also provided an overall assessment of changes to the WAWBR.

The Modifications are associated with a revised Project Location that extends the ZOI into areas that were not previously assessed. No new additional assessment or site visit was required to determine the status and boundary of water bodies as no new water features were identified within the extended ZOI. Water bodies that occur in or within 120 m of the revised Project Location were already identified on the maps provided within the WAWBR as approved in the REA.

The only water body located within the extended ZOI is a continuation of a previously identified water body (T072-1) located near the central MET Tower (MM_Center) (Figure 2.43). The southern MET Tower (MM_South) is located within 120 m of a previously identified water body (T005-1 and T005-2) (Figure 2.56). No water bodies are identified within 120 m of the northern MET Tower (MM_North) (Figure 2.21) or the new alternate transmission line route.

T072-1 is located approximately 120 m from the centre of the proposed MM_Center, with guy wires possibly extended to within approximately 30 m. T005-1 and T005-2 are located approximately 100 m from the centre of the proposed MM_South, with guy wires possibly extended to within approximately 10 m. The evaluation of water bodies in the WAWBR does not change as a result of the Modifications.

The standard mitigation measures previously identified in the WAWBR as approved in the REA still apply. The standard mitigation measures presented in the WAWBR should be implemented during construction of the MET towers to reduce the risk of potential impacts to nearby water bodies. The modified Project Location will result in updates to tables in the WAWBR, as described in Table 1.

It was concluded that the Modifications can be implemented with no new net negative environmental effects to water bodies.

3.1.3 Heritage Assessment

A technical review was conducted to determine if the Modifications result in: (a) a change to the identification of cultural heritage resources within 120 m of the new Project Location; and/or (b) a change to the assessment of impacts and mitigation measures. The review also provided an overall assessment of changes to the Heritage Assessment report.

The Project Location associated with the Modifications was previously assessed as part of the Heritage Assessment that was submitted as part of the original REA Application and was accepted by the MTCS in their Confirmation Letter dated April 12, 2013.

A review of the Heritage Assessment report determined that a single cultural heritage resource previously identified is situated adjacent to a property where a MET Tower is proposed. Upon review, this property was determined to be listed on Haldimand County's Heritage Register and therefore an assessment of impacts related to the introduction of new Project infrastructure was required. In order to determine the potential for Project impacts resulting from the proposed introduction of a MET tower on an adjacent property, an assessment of potential impacts was completed (Appendix C). Based on this assessment, no potential impacts were identified resulting from the proposed MET tower.

The impact assessments contained within the Heritage Assessment were determined to remain valid for all properties and the recommendations contained within the Heritage Assessment do not need to be modified. Specifically, the analysis, assessment, and recommendations pertaining to the heritage resource identified remains unchanged as a result of the proposed project Modifications.

It was concluded that the Modifications can be implemented with no new net negative environmental effects to heritage resources. See Appendix C for a copy of the letter and Heritage Assessment Addendum sent to the MTCS to address the Modifications.

3.1.4 Protected Properties Assessment

The Project Location associated with the Modifications, was previously assessed as part of the Protected Properties Assessment that was submitted as part of the original REA Application and was accepted by MTCS in their Confirmation Letter dated April 12, 2013. As such, no additional Protected Properties Assessment was required for these Modifications. Impact assessments contained within the Protected Properties Assessment Report were determined to remain valid for all properties and the recommendations contained in that report do not need to be modified.

It was concluded that the Modifications will not result in any potential effects not previously identified and mitigated in the Protected Properties Assessment report.

3.1.5 Stage 2 Archaeological Assessment

The Project Location was previously assessed as part of the 2012 Stage 1 Archaeological Assessment (Stantec Consulting Ltd., 2012) and the Stage 2 Archaeological Assessment (Stantec Consulting Ltd., 2013) for the Niagara Region Wind Farm in the original REA Application. The Stage 1 report was accepted by the MTCS in a Confirmation Letter dated January 4, 2013 and the Stage 2 report was accepted in a Confirmation Letter dated April 5, 2013.

Due to proposed changes to the Project Location, Stantec was retained to complete a Stage 2 Archaeological Assessment of additional lands affected by the proposed MET tower locations and the proposed alternate transmission route. A copy of this report is provided in Appendix C. Site investigations associated with the Stage 2 Archaeological Assessment occurred between December 18, 2015 and February 6, 2016 for the proposed MET Tower and alternate transmission line route Modifications, respectively.

No archaeological finds were identified for the MET Tower locations. One archaeological find was identified during the Stage 2 Archaeological Assessment of the proposed alternate transmission route, consisting of one piece of Onondaga chert chipping detritus, identified as a pre-contact Aboriginal artifact. Given the isolated nature of the chipping detritus recovered at Location 1, the cultural heritage value or interest of Location 1 is judged to be sufficiently documented and no further archaeological assessment is required for this isolated find spot. As a result, no further archaeological assessment is required for the Modifications.

Based on the results of the Stage 2 Archaeological Assessment, it is recommended that no further archaeological assessment of the study area is required. See Appendix C for correspondence with the MTC and a copy of the Stage 2 Archaeological Assessment.

3.1.6 Noise Impact Assessment

The Project Location associated with the Modifications, was previously assessed as part of the Noise Assessment that was submitted as part of the original REA Application and was accepted by the MOECC. MET towers and transmission lines are not considered noise sources. A minor administrative update to the Acoustic Assessment Report was made to reflect a change for POR 1628, the new private lands to be used for the new transmission route, from a non-participating to a participating (i.e. from O_1628 to P_1628) receptor. There were no other technical changes to the Acoustic Assessment Report and accordingly there are no changes to the results, recommendations or conclusions.

It was concluded that the Modifications will not result in any potential effects not previously identified and mitigated in the Noise Impact Assessment. See Appendix D for the Niagara Region Wind Farm Acoustic Assessment Report – REA Amendment.

3.1.7 Summary of Impacts/Changes to REA Reports and Studies

The following table provides a list of the REA reports and studies that were reviewed by MOECC in their issuance of the REA, and notes whether changes to the reports are required due to the Modifications proposed. As well, an outline of the specific changes, or the justification for no change being required, is provided. Any changes to the reports have been addressed by issuance of this Modification Report and its appendices.

Table 1: Summary of Impacts/Changes to REA Reports & Studies

REA Reports & Studies	Change (Yes/No)	Figure No.	Discussion of Change / Justification for 'No' Changes
REA REPORTS			
Project Description Report	Yes	1, 2.21, 2.43, 2.47, 2.56	Figures have been updated to display new MET tower locations and new transmission line route near Buckner Road. Section 1.1: text would be updated to include MET towers as other Project components. Section 3.2: an additional section 3.2.6 for MET towers would be added, providing MET tower installation, size, foundation design, and access for installation. Section text would read as follows: The proposed MET towers will be approximately 120 m in height and will consist of a center lattice tower supported by three guy wires. The lattice tower supports meteorological instrumentation located at multiple elevations for the measurement of wind speed, wind direction, temperature and other atmospheric parameters. The tower will be installed on a concrete foundation designed by a qualified engineer. Each of the three guy wires will be secured to the ground surface by a concrete anchor. The tower foundation and concrete anchors will be installed using standard construction equipment including an excavator or backhoe, and light duty trucks. Section 3.5: text would be updated to indicate 3 MET towers would be installed. Section 3.7: an additional Section 3.7.4 for MET towers Staging Areas would be added, providing MET tower information on temporary work area required for the installation of MET towers. Section text would read as follows: The installation of each MET towers will utilize the temporary staging area adjacent the closest turbine. After construction the staging areas will be returned to their original land use at conditions that are either the same or better than original conditions. Section 5.1: Table 5.1 would be updated to include "Installation and erection of MET towers" under Construction, and "removal of MET towers" under Decommissioning.

Table 1: Summary of Impacts/Changes to REA Reports & Studies

REA Reports & Studies	Change (Yes/No)	Figure No.	Discussion of Change / Justification for 'No' Changes
Construction Plan Report	Yes	1, 2.21, 2.43, 2.47, 2.56	Figures have been updated to display new MET tower locations and new transmission line route near Buckner Road. Section 1.1: text would be updated to include MET towers as other Project components. Section 2.0: in Table 2.1: • The "Meteorological Towers & SODAR Units" row would be deleted. • The "Delivery of Project Materials" row would be updated by adding: Sections of the MET tower(s) will be delivered to the site by truck and would be installed using standard construction equipment such as an excavator and crane. Excavations will be back filled and compacted with select fill and native subsoil. • A new "MET towers" row would be added with the following text: o Description of Activities: The proposed MET towers will be approximately 120 m in height and will consist of a center lattice tower supported by three guy wires. The lattice tower supports meteorological instrumentation located at multiple elevations for the measurement of wind speed, wind direction, temperature and other atmospheric parameters. The tower will be installed on a concrete foundation designed by a qualified engineer. Each of the three guy wires will be secured to the ground surface by a concrete anchor. The tower foundation and concrete anchors will be installed using standard construction equipment including an excavator or backhoe, and light duty trucks. o Construction Vehicles: Light duty trucks. o Materials Required: Excavator, Backhoe, Center lattice tower, Guy wires, Meteorological instrumentation, Concrete foundation, and Concrete anchors. Section 2.4: (a) update text to include staging area for MET Towers. The text would be updated as follows: Staging areas required for the installation of the MET towers will be the within the MET tower footprint and the same staging areas constructed for the

Table 1: Summary of Impacts/Changes to REA Reports & Studies

REA Reports & Studies	Change (Yes/No)	Figure No.	Discussion of Change / Justification for 'No' Changes
			adjacent turbine.
Design & Operations Report	Yes	1, 2.21, 2.43, 2.47, 2.56	Figures have been updated to display new MET tower locations and new transmission line route near Buckner Road. Section 1.1: update text to include MET tower(s) as 'other Project components'. Section 3.1: Table 3.1 - amend text to indicate MET towers will be installed and provide description. Text would read as follows: The proposed MET tower(s) will be approximately 120 m in height and will consist of a center lattice tower supported by three guy wires. The lattice tower supports meteorological instrumentation located at multiple elevations for the measurement of wind speed, wind direction, temperature and other atmospheric parameters. The tower will be installed on a concrete foundation designed by a qualified engineer. Each of the three guy wires will be secured to the ground surface by a concrete anchor. The tower foundation and concrete anchors will be installed using standard construction equipment including an excavator or backhoe, and light duty trucks. Section 4.7: amend text to indicate that MET tower(s) will be installed within the Project Study Area for the purpose of monitoring meteorological data.
Decommissioning Plan Report	Yes	n/a	Section 1.1: text would be updated to include MET towers as other Project components. Section 3.3: (a) update text in 3.3.4 to indicate that turbine laydown/staging areas will be used during MET tower(s) decommissioning; and (b) include an additional Section (3.3.6) providing a description for dismantling and removal of MET tower(s). Section 3.3.6 would read as follows: The MET tower(s) would be disassembled and removed by truck from the site. Foundations would be partially removed to a depth of approximately 1 m below grade. The site(s) would be accessed using the same route as in the construction phase. Section 3.5: update Table 3.1 to include MET tower(s) mode of disposal (recycle).
Consultation Report	Yes	1	Figures have been updated to display new MET tower locations and new transmission line route near Buckner Road.

Table 1: Summary of Impacts/Changes to REA Reports & Studies

REA Reports & Studies	Change (Yes/No)	Figure No.	Discussion of Change / Justification for 'No' Changes
			Section 1.1: text would be updated to include MET towers as other Project components. Consultation with government representatives (MOECC, MNRF and MTCS) has been undertaken for the proposed Modifications to the Project, and the mechanism to update the project documents and communicate these changes to stakeholders is described in Section 4 of this Modification Document.
ADDITIONAL REPORTS			
Natural Heritage Assessment Report and EIS	Yes	1, 2.21, 2.43, 2.47, 2.56, 3.21, 3.43, 3.47, 3.56, 4.21, 4.43, 4.47, 4.56, 5.21, 5.43, 5.47, 5.56, 6.21, 6.43, 6.47, 6.56, 7.21, 7.43, 7.47, 7.56	An addendum to the NHA/EIS has been prepared (see Appendix B) and identifies changes required to the wording of the NHA/EIS. Figures have been updated to display new MET tower locations and new transmission line route near Buckner Road. These figures are in the NHA/EIS Addendum (see Appendix B).
Water Assessment and Water Body Report	Yes	1, 2b, 2c, 2d, 2e, 3.21, 3.43, 3.47, 3.56	Figures have been updated to display new MET tower locations and new transmission line route near Buckner Road. Section 1.1: text would be updated to include MET towers as other Project components. Section 3.0: Table 3.2 would be updated to include MET towers as a column under "w/in 120 m". In the updated table, the following Station(s) would be checked off: T0072-1 (re: MM_Center), T005-1 and T005-2 (re: MM_South). Section 4.1.4: Table 4.5 should be updated to include 'MET tower(s) within 120 m of a water body' under the 'Proposed Works' column, in the 'T072-1' row. Section 4.2: Table 4.10 should be updated to include 'MET tower(s) within 120 m of a water body' under the 'Proposed Works' column, in the 'T005-1' row.
Stage 1 Archaeological Assessment	No	Original figures as submitted to the MTCS will not be changed.	No edits are required to the text of the report.
Stage 2 Archaeological	Yes	Original figures as	See Appendix C for a copy of the Stage 2 Archaeological Assessment that includes the

Table 1: Summary of Impacts/Changes to REA Reports & Studies

REA Reports & Studies	Change (Yes/No)	Figure No.	Discussion of Change / Justification for 'No' Changes
Assessment		submitted to the MTCS will not be changed. Nine additional figures have been created to address the Modifications.	new MET tower locations and transmission line route near Buckner Road that was not included in the original Stage 2 Archaeological Assessment submitted to the MTCS.
Heritage Assessment Report	No	Original figures as submitted to the MTCS will not be changed. Four additional figures have been created to address the Modifications.	Two addendums to the Heritage Assessment Report addressing the Modifications have been prepared and submitted to the MTCS. See Appendix C for a copy of the letters/addendums sent to the MTCS and the responses received.
Protected Properties Assessment	No	Original figures as submitted to the MTCS will not be changed.	No edits are required to the text of the report.
Wind Turbine Specifications Report	Yes	n/a	Section 1.1: text would be updated to include MET towers as other Project components.
Noise Assessment Report *(Appendix C of the Design & Operations Report)*	No	1.1, 2.1a, 2.1b, 2.1c, 2.1d, 6.1, A1, B1	Figures to be updated to display new MET tower locations and new transmission line route near Buckner Road. Figures to be updated to reflect the change in receptor 1628 from non-participating (green box) to participating (red box). Executive Summary, Section 4.2 and Appendix C updated to note status change for POR 1628 from non-participating to participating (i.e. from O_1628 to P_1628). A few additional improvements to presentation/formatting of a few tables (Table 6.3, Appendix C, Appendix E, and Appendix F), and grammar throughout the body text made. See Appendix D for the revised Niagara Region Wind Farm Acoustic Assessment Report – REA Amendment.

Table 1: Summary of Impacts/Changes to REA Reports & Studies

REA Reports & Studies	Change (Yes/No)	Figure No.	Discussion of Change / Justification for 'No' Changes
Property Line Setback Assessment *(Appendix D of the Design & Operations Report)*	Yes	1.5, 1.11, 1.12, 1.13, 1.35, 1.45, 1.46, 1.5, 1.59, 1.73	Figures to be updated to display new MET tower locations and new transmission line route near Buckner Road. Section 1.1: text would be updated to include MET towers as other Project components.
Environmental Effects Monitoring Plan *(Appendix E of the Design & Operations Report)*	Yes	1, 2, 3, 4, 5, 6, 7, 8	Figures to be updated to display new MET tower locations and new transmission line route near Buckner Road. Section 2.0: text would be updated to include MET towers as other Project components.
Project Summary Report	Yes	1, 2.21, 2.43, 2.47, 2.56	Figures to be updated to display new MET tower locations and new transmission line route near Buckner Road. Section 1.1: text would be updated to include MET towers as other Project components. Section 2.2.5: text would be updated to provide MET tower installation, size, foundation design, and access for installation. Section text would read as follows: The proposed MET towers will be approximately 120 m in height and will consist of a center lattice tower supported by three guy wires. The lattice tower supports meteorological instrumentation located at multiple elevations for the measurement of wind speed, wind direction, temperature and other atmospheric parameters. The tower will be installed on a concrete foundation designed by a qualified engineer. Each of the three guy wires will be secured to the ground surface by a concrete anchor. The tower foundation and concrete anchors will be installed using standard construction equipment including an excavator or backhoe, and light duty trucks. Section 3.0: Table 3.1 would be updated to include "Installation and erection of MET towers" under Construction, and "removal of MET towers" under Decommissioning.

4.0 CONSULTATION

Consultation regarding the proposed Modifications was undertaken with the MOECC, MNRF, MTCS, and will be undertaken with municipalities, stakeholders and local Aboriginal communities. Details are provided in the subsequent sections.

4.1 GENERAL STAKEHOLDER CONSULTATION

FWRN LP will provide notification to stakeholders included on the Project distribution list regarding the proposed Modifications and application to the MOECC for an amendment to the Project's REA. A Notice of Proposed Change to a Renewable Energy Project will be distributed, and will provide an overview of the proposed change, notification that a Modification Report to amend the Project's REA has been submitted to the MOECC for review, and information regarding availability of the Modification Report on the Project website.

The Notice and Modification Report will be posted on the Project website, to ensure the community is adequately informed of the proposed change. The Notice will be mailed to agencies, municipalities, Aboriginal communities, and community members that are on the Project distribution list. The Notice will also be published on at least two separate days in newspapers with general circulation in the Project area.

4.2 AGENCY CONSULTATION

- The Notice of Project Change was provided to the MOECC on April 6, 2016.
- The MNRF was advised of the proposed Modifications through a letter addendum to the NHA/EIS (Appendix B). Written confirmation that the MNRF is satisfied that the NHA requirements of Ontario Regulation 359/09 have been met was received on April 29, 2016 (Appendix B).
- The MTCS was advised of the proposed Modifications via submission of a Stage 2 Archaeological Assessment for the previously un-assessed areas, and two Addendums to the Heritage Assessment Report that was previously submitted (Appendix C). MTCS provided confirmation that they were satisfied with the MET Tower Heritage Addendum and the Stage 2 Archaeological Assessment on January 5, 2016 and March 16, 2016, respectively (Appendix C). Written confirmation from MTCS regarding the Transmission Line Route Heritage Addendum was received on April 5, 2016 (Appendix C).

4.3 MUNICIPAL CONSULTATION

A hard and/or soft copy of this Modification Document was provided to the following municipalities:

- Township of West Lincoln;
- Township of Wainfleet;
- Township of Pelham;
- Town of Grimsby;
- Town of Lincoln;
- Niagara Region; and
- Haldimand County.

4.4 ABORIGINAL COMMUNITY ENGAGEMENT

A hard and/or soft copy of the Modification Document was provided to:

- Six Nations of the Grand River;
- Six Nations of the Grand River Haudenosaunee Confederacy Chiefs Council (via HDI);
- Mississaugas of the New Credit First Nation; and
- Métis Nation of Ontario/Niagara Region Métis Council.

5.0 CLOSURE

The proposed Modifications to install three MET towers and the addition of an alternate transmission route to avoid pole placement along the Hwy 3 MTO right of way to address recent comments received from the MTO has been adequately assessed in accordance with Ontario Regulation 359/09 and the MOECC's Technical Guide (2014). It has been determined that the Modifications would not result in new net negative environmental effects or associated mitigation measures beyond those identified as part of the original REA for the Project.

This report has been prepared by Stantec for the sole use of FWRN, and may not be used by any third party without the express written consent of FWRN. 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.

STANTEC CONSULTING LTD.

Prepared by: _____
(signature)

Tanya Turk
Environmental Planner

Reviewed by: _____
(signature)

Bryan Tripp
Project Manager

6.0 REFERENCES

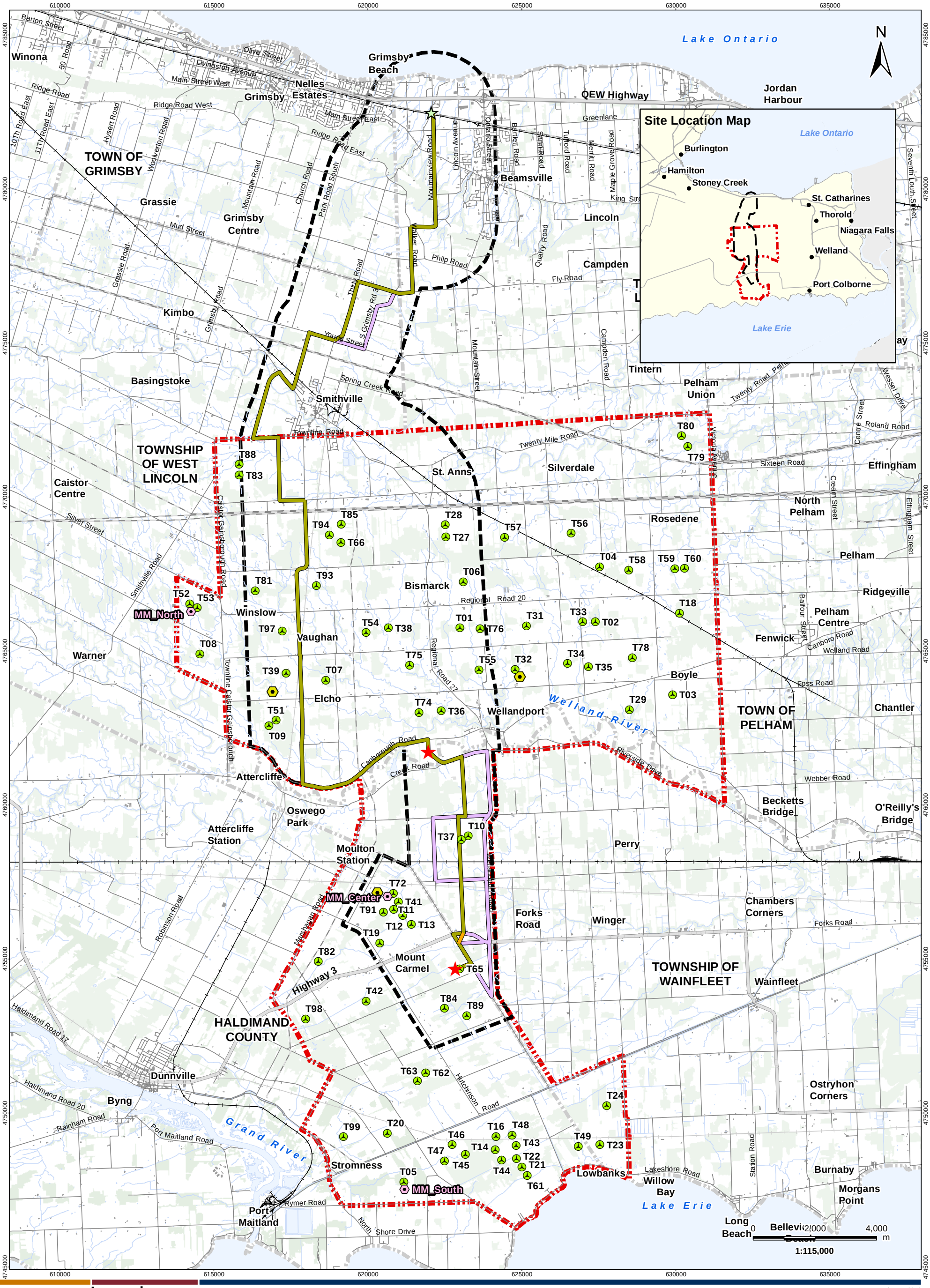
Land Information Ontario (LIO). 2015. Digital mapping. Available online: https://www.ontario.ca/page/make-natural-heritage-area-map. Accessed: November 2015.

Natural Heritage Information Centre (NHIC). 2015. Natural Areas and Species records search. Biodiversity explorer, available online: http://www.ontario.ca/page/natural-heritage-information-centre. Ministry of Natural Resources and Forestry, Peterborough.

Ontario Ministry of the Environment. 2013. *Technical Guide to Renewable Energy Approvals*. Queen's Printer for Ontario, 2013.

APPENDIX A: FIGURES

Updated Figures for the Project Description Report, Construction Plan Report, Design and Operations Report and Project Summary Report (Figure 1 also applies to the Consultation Report)



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Transformer Substation
- Proposed MET Tower Locations
- Tap-in Location
- Existing Met Tower
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier

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.

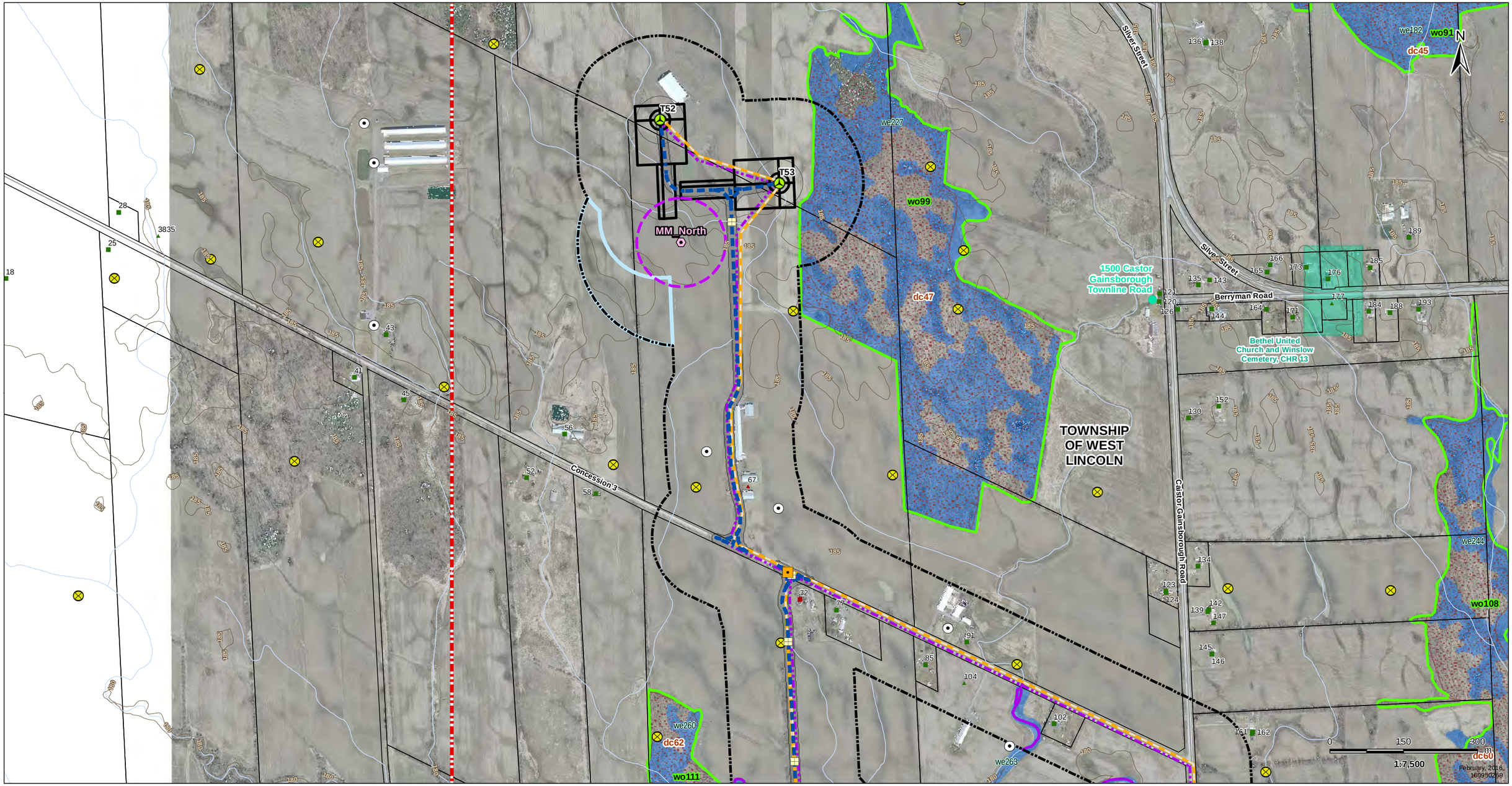
Stantec

Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1

Title
Draft Site Plan Overview Revised

February 2016
160950269



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Revised: 2016-02-17 By: tcowper

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
  - Area Added
- Proposed Project Components
  - Proposed Turbine Location
  - Turbine Blade Length
  - Junction Box
  - Proposed Culvert
  - Proposed MET Tower Locations
  - Proposed MET Tower Support Cables (90m)
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Existing Features
  - Road
  - Topographic Contour (mAMSL)
  - Watercourse (MNR)
  - Waterbody (Stantec)
  - Property Boundary
- Deer Congregation Areas (MNR) (Generalized)
- Significant Natural Features
  - Woodland Communities
  - Wetland Communities
  - Cultural Heritage Resource
  - 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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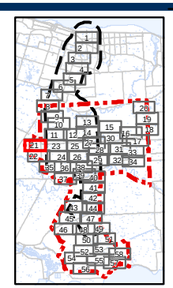
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.
4. Petroleum Well source: © Ontario Oil, Gas and Salt Resource Library, 2010.
5. MOE Water well locations are approximate 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
FWRN LP
Niagara Region Wind Farm

Figure No.
2.21

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

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Revised: 2016-02-17 By: tcowper

Stantec

Legend

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

Zone of Investigation Adjustments
- Area Added

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area

Existing Features
- Road
- Abandoned Railway
- Existing Transmission Line
- Topographic Contour (mAMSL)
- Watercourse (MNR)
- Waterbody (Stantec)
- Property Boundary
- Municipality Lower Tier

Significant Wildlife Habitat
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Deer Congregation Areas (MNR) (Generalized)

Significant Natural Features
- Woodland Communities
- Wetland Communities
- Petroleum Well (OGSR) [4]
- Water Well (MOE) [5]

Non-participating Receptors [5]
- Occupied
- Vacant

Participating Noise Receptors [5]
- Occupied

Notes

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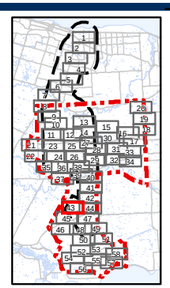

Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
2.43

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

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Revised: 2016-04-06 By: bcowper

HALDIMAND COUNTY

TOWNSHIP OF WAINFLEET

Highway 3

Buckner Road

Wellandport Road

Hendershot Road

Townline Dunnville-Wainfleet

Jenny Jump Road

South Transformer Substation

T65

AH49

44088 Hendershot Road

44067 Hendershot Road

we376 we377 we380 we381 we382

wo156 wo160 wo163 wo213

dc95 dc96 dc97 dc124

N

0 150 300 m

1:7,500

April 4, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
  - Area Added
- Proposed Project Components
  - Proposed Turbine Location
  - Turbine Blade Length
  - Transformer Substation Location
  - Junction Box
  - Proposed Culvert
  - Preferred Transmission Line Route (REA)
  - Alternate Transmission Line Route
  - Modified Alternate Transmission Route
  - Temporary Laydown Area
  - Collector Lines – Underground or Overhead
  - Fibre Optic Line
  - Potential Access Road
  - Access Road 20m Construction Area
  - Transformer Substation
- Existing Features
  - Road
  - Expressway / Highway
  - Topographic Contour (mAMSL)
  - Watercourse (MNR)
  - Waterbody (Stantec)
  - Property Boundary
  - Municipality Lower Tier
  - Deer Congregation Areas (MNR) (Generalized)
  - Woodland Amphibian Breeding Habitat
- Significant Natural Features
  - Woodland Communities
  - Wetland Communities
  - 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
FWRN LP
Niagara Region Wind Farm

Figure No.
2.47

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

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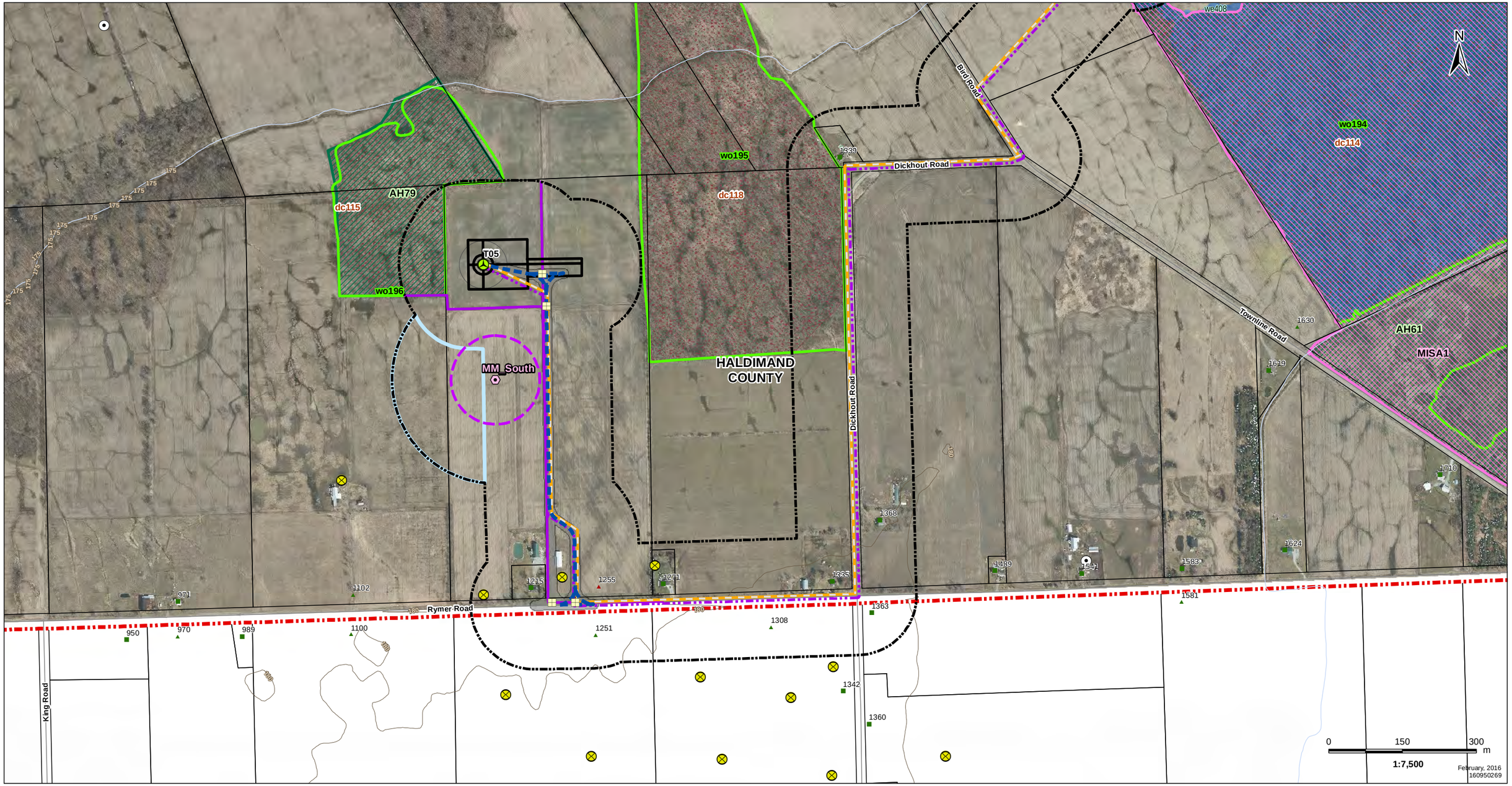

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
  - Area Added
- Proposed Project Components
  - Proposed Turbine Location
  - Turbine Blade Length
  - Proposed Culvert
  - Proposed MET Tower Locations
  - Proposed MET Tower Support Cables (90m)
  - Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Existing Features
  - Road
  - Topographic Contour (mAMSL)
  - Watercourse (MNR)
  - Waterbody (Stantec)
  - Property Boundary
- Deer Congregation Areas (MNR) (Generalized)
- Woodland Amphibian Breeding Habitat
- Landbird Migratory Stopover
- Significant Natural Features
  - Woodland Communities
  - Wetland Communities
  - Petroleum Well (OGSR) [4]
  - Water Well (MOE) [5]
- Non-participating Receptors [5]
  - Occupied
  - Vacant
- Participating Noise Receptors [5]
  - Vacant

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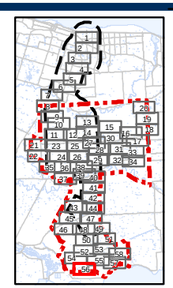
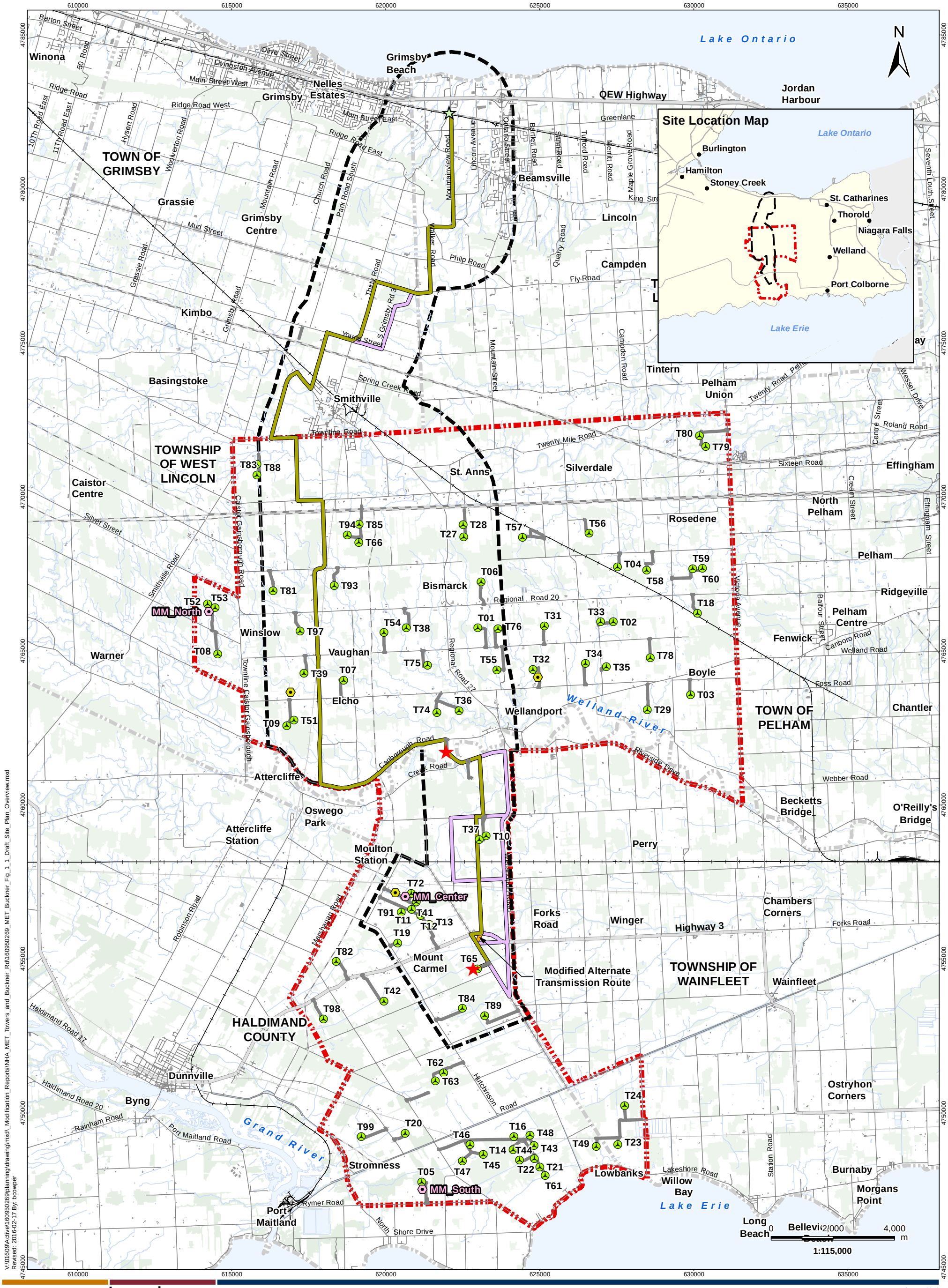


Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
2.56

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

Updated Figures for the Natural Heritage Assessment and Environmental Impact Study



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Revised: 2016-02-17 By: bcowper

Legend

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

Notes

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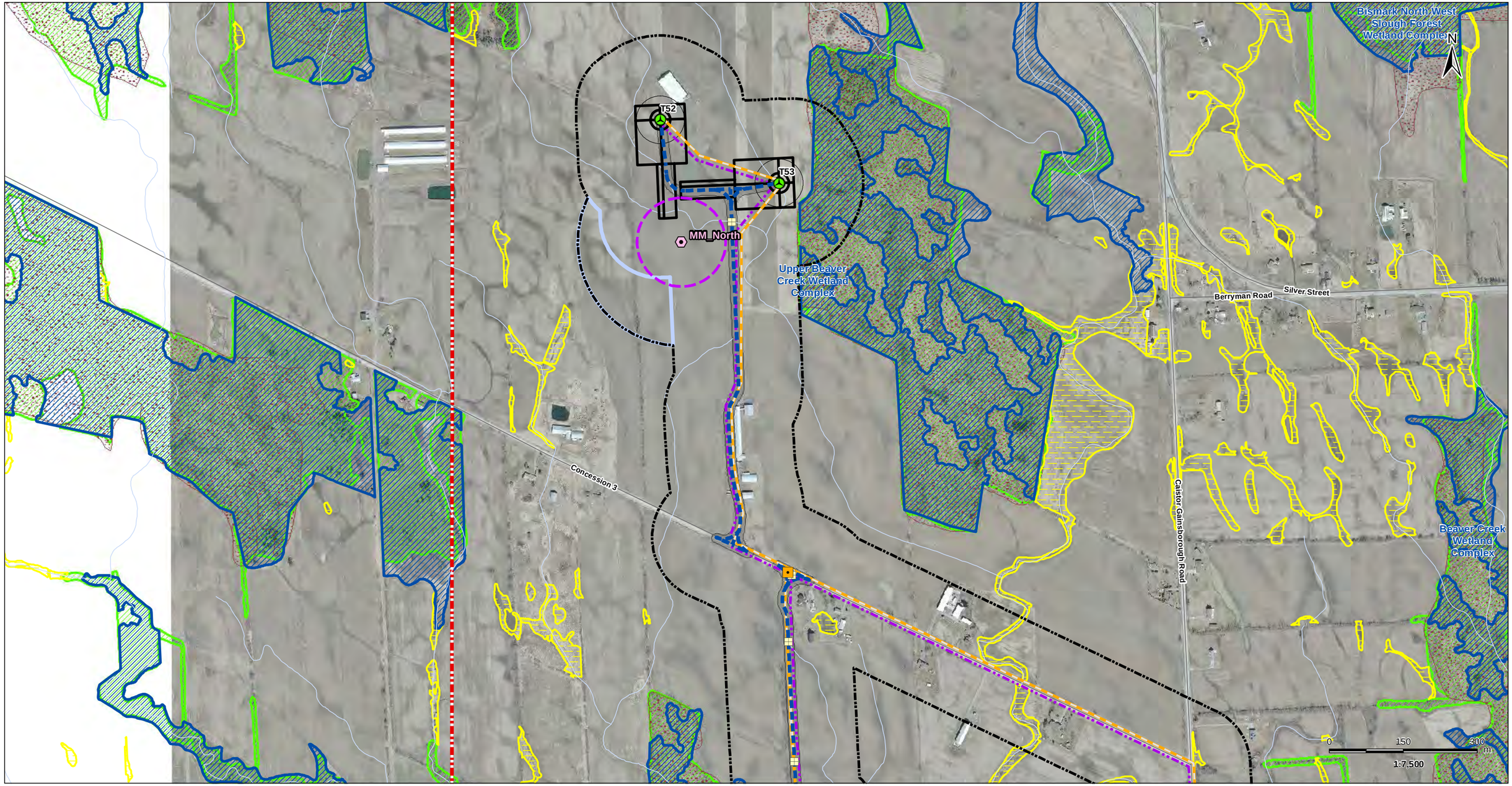
Client/Project
FWRN LP
Niagara Region Wind Farm

February 2016
160950269

Figure No.
1

Title
Draft Site Plan Overview Revised



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Revised: 2016-02-17 By: bcowper

February, 2016
160950269

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
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- Proposed MET Tower Locations
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- Access Road 20m Construction Area
- Unevaluated Wetland (NPCA)
- Woodland (MNR)
- Provincially Significant Wetland (MNR)
- Deer Wintering Yard (MNR)

Notes

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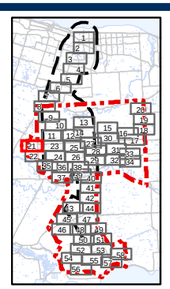

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.21

Title
Records Review - Natural Features Figure 2.21 Revised

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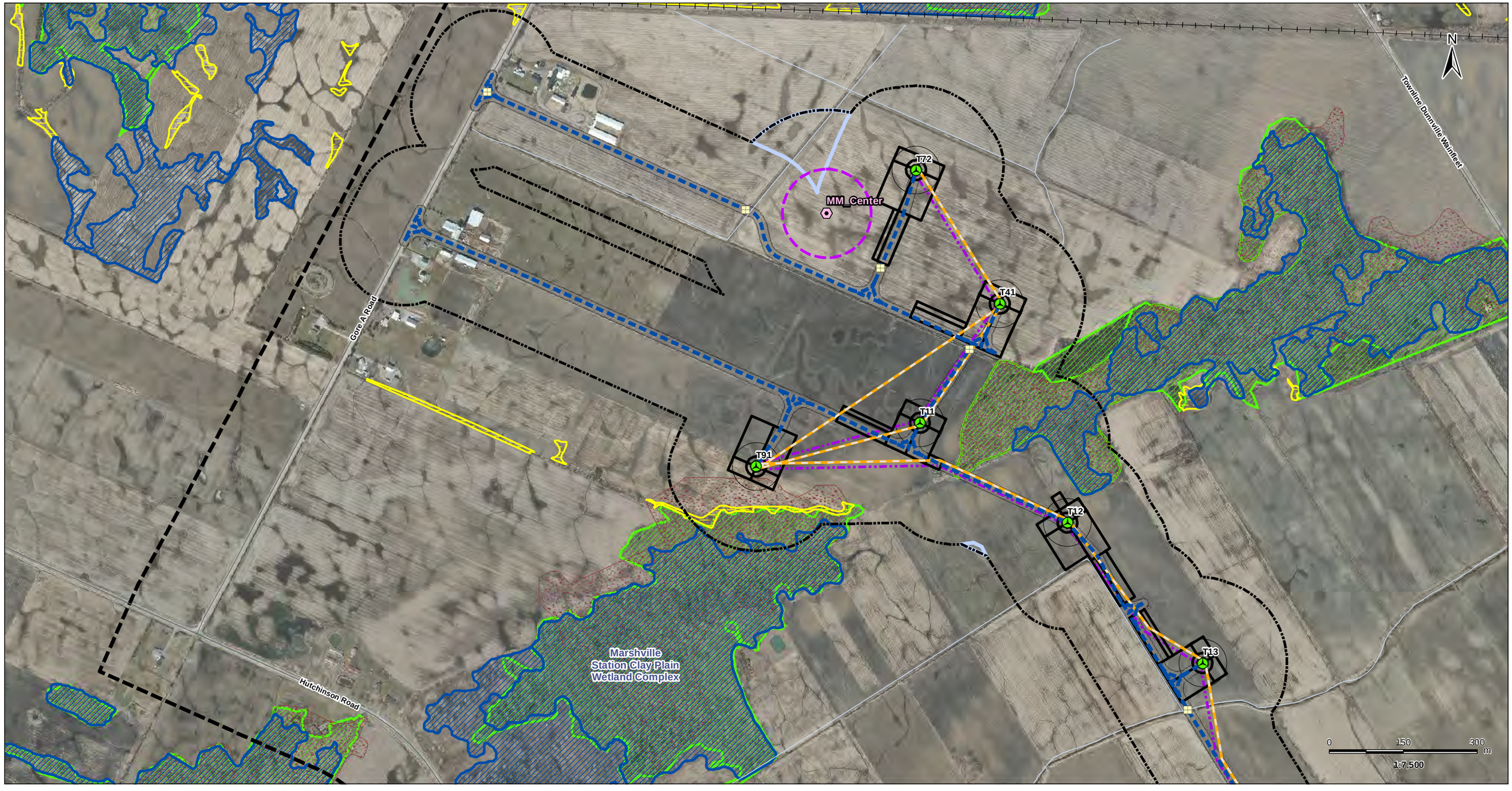
Revised: 2016-02-16 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation
- Area Added
- Proposed Turbine Location
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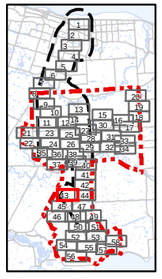
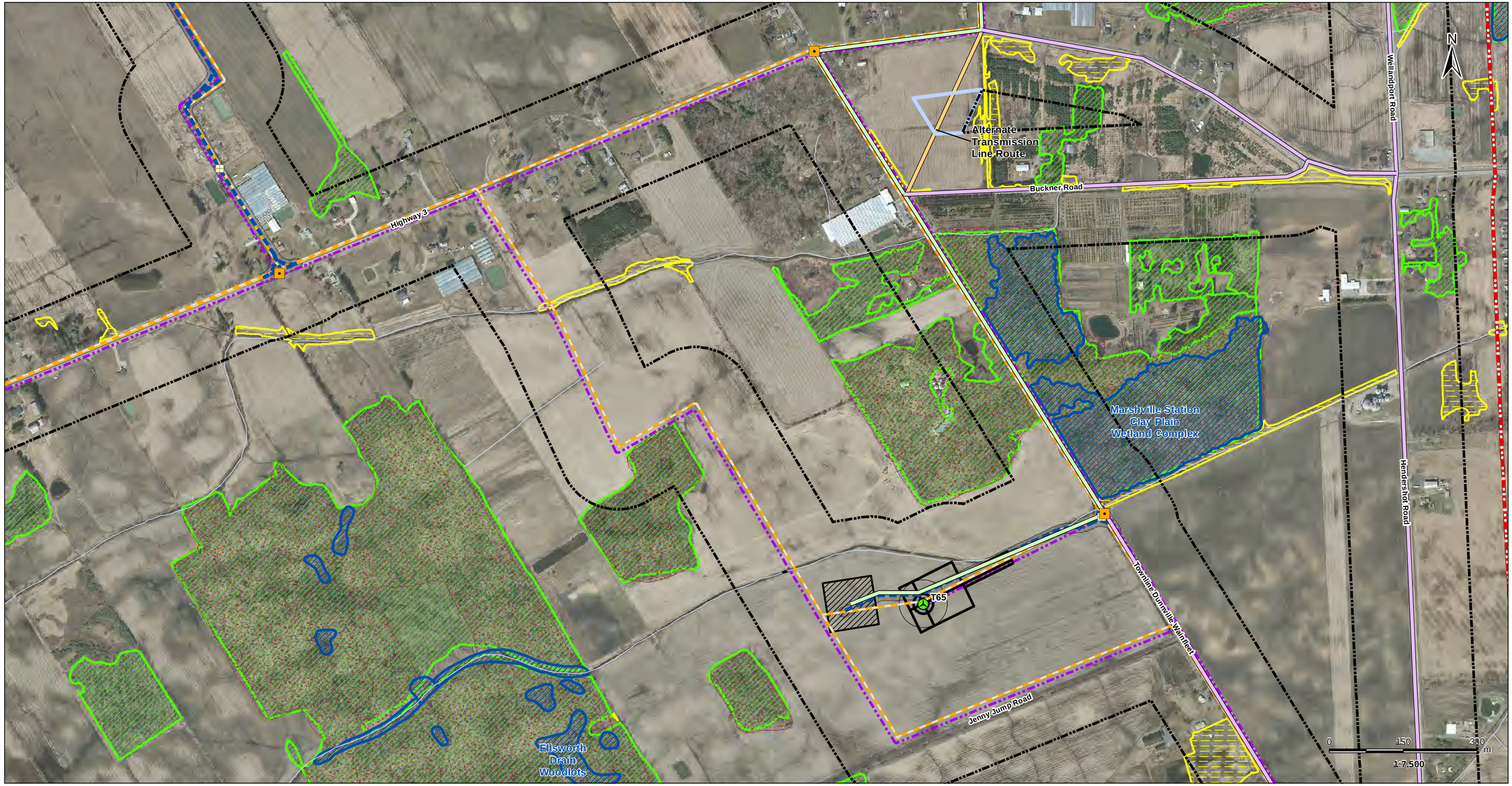


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.43

Title
Records Review - Natural Features Figure 2.43 Revised



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Revised: 2016-03-28 By: bcowper

March, 2016
160950269

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation
- Area Added
- Potential Transmission Route (REA)
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- Provincially Significant Wetland (MNR)
- Deer Wintering Yard (MNR)

Notes

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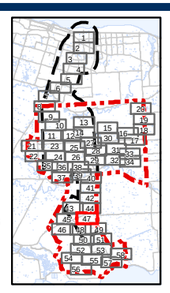
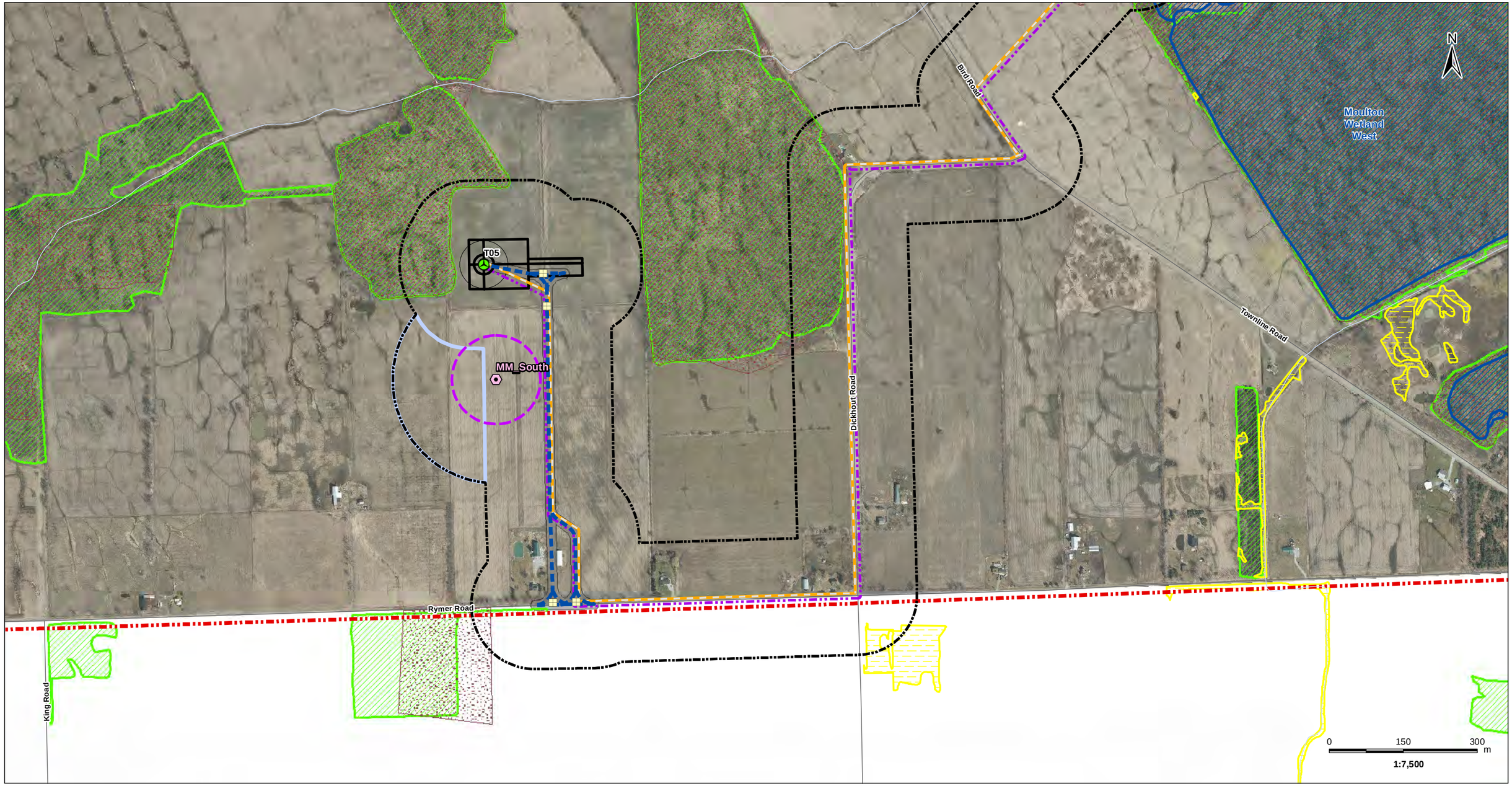


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.47

Title
Records Review - Natural Features Figure 2.47 Revised



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Revised: 2016-02-16 By: bcowper

February, 2016
160950269

Legend

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- 120m Zone of Investigation
- Zone of Investigation
  - Area Added
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- Proposed MET Tower Support Cables (90m)
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- Woodland (MNR)
- Provincially Significant Wetland (MNR)
- Deer Wintering Yard (MNR)

Notes

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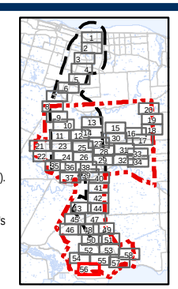
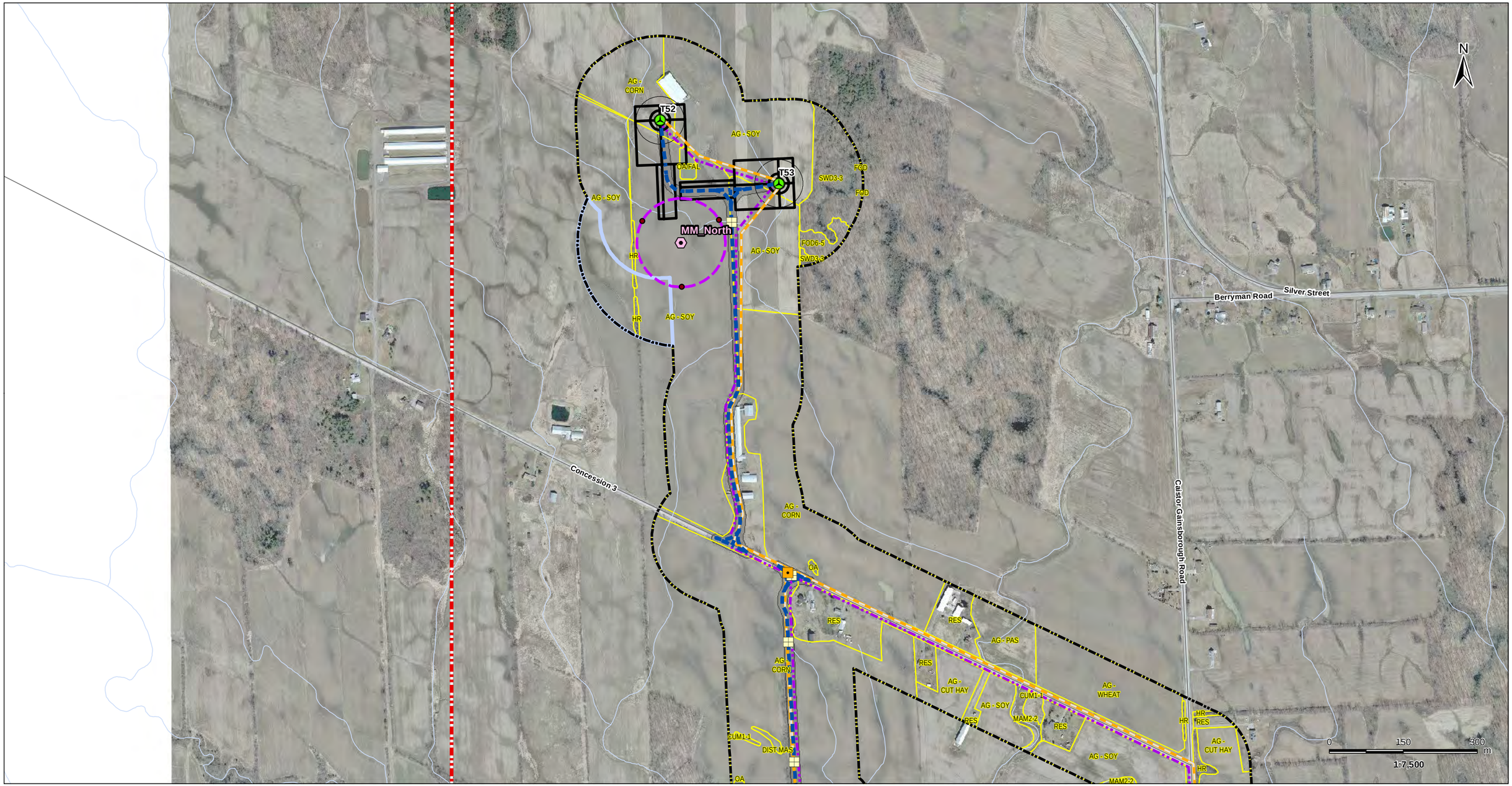


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.56

Title
Records Review - Natural Features Figure 2.56 Revised



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Revised: 2016-02-17 By: bcowper

February, 2016
160950269

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- ELC Boundary
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Collector Lines – Underground or Overhead
- Temporary Laydown Area
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Notes

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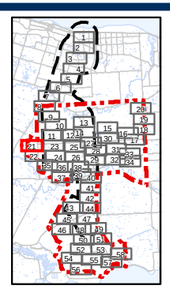
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.
3. Orthoimagery source: First Base Solutions, Date Spring 2010.



Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
3.21

Title
ELC Vegetation Communities - Figure 3.21 Revised

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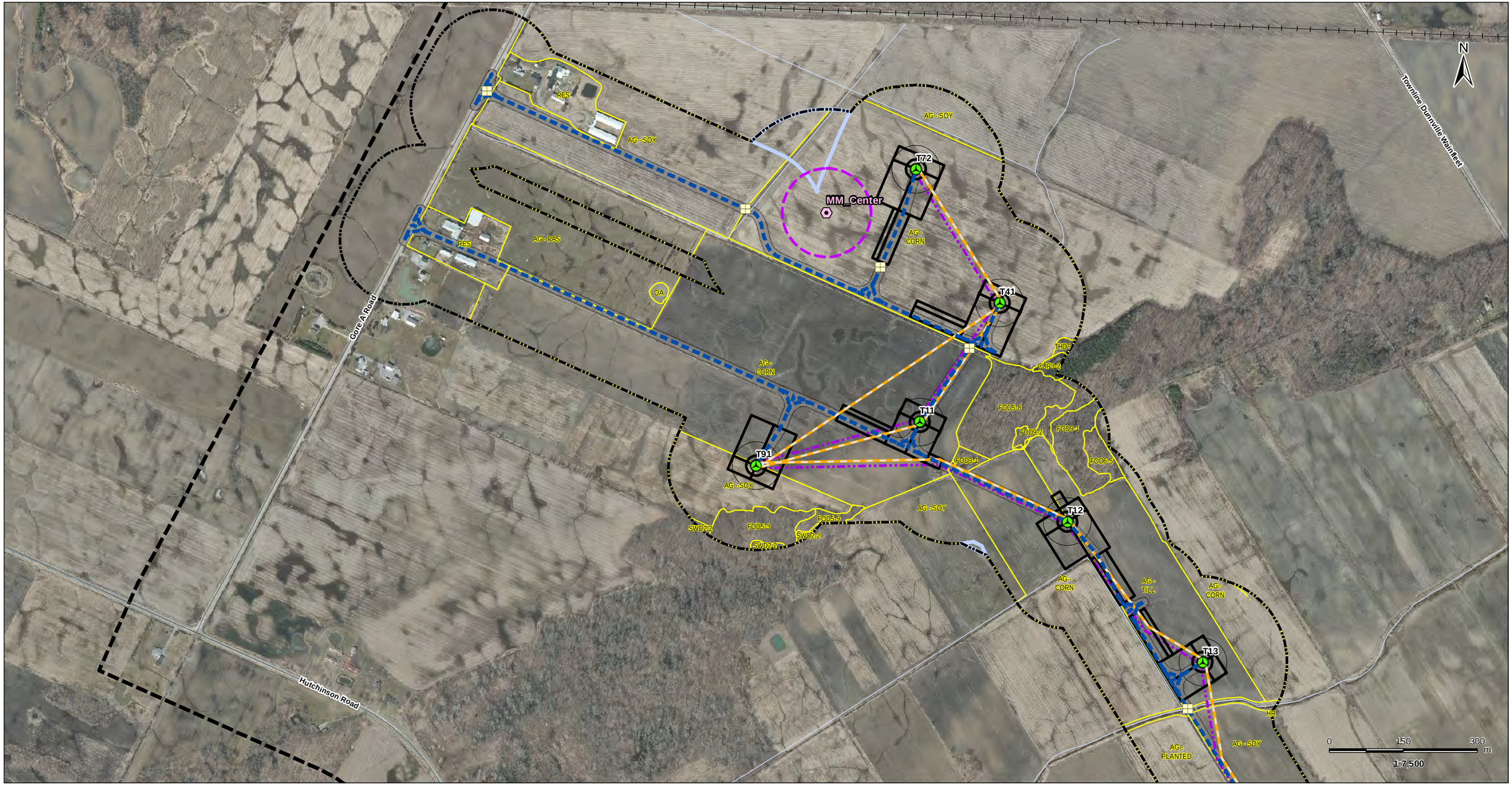
Revised: 2016-02-10 By: bcowper



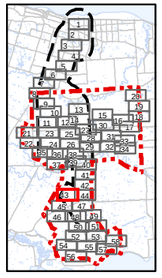
February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
  - Area Added
  - ELC Boundary
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Collector Lines – Underground or Overhead
- Temporary Laydown Area
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

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.



Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
3.43

Title
ELC Vegetation Communities - Figure 3.43 Revised

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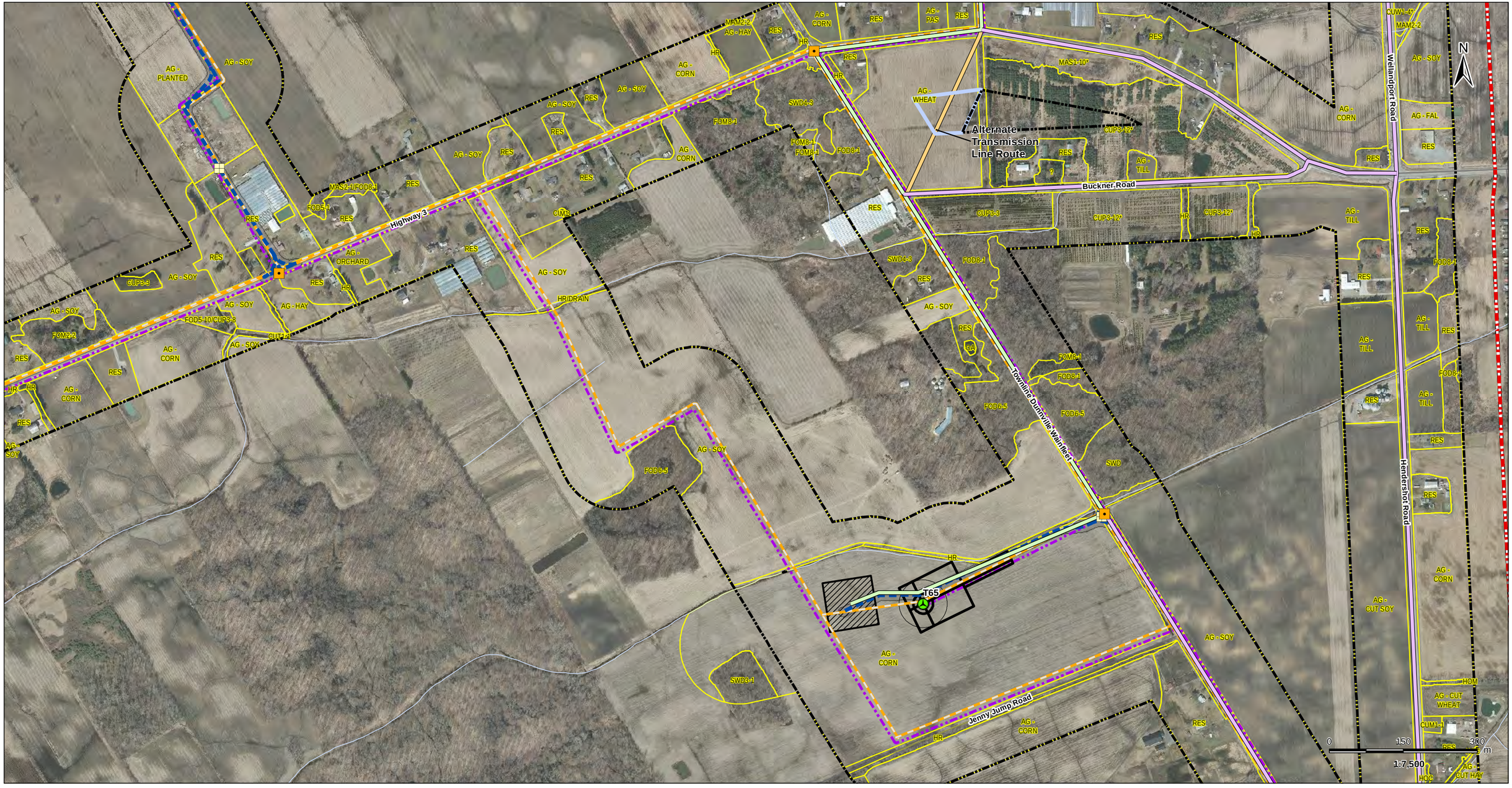
Revised: 2016-03-28 By: bcowper



March, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- ELC Boundary
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Preferred Transmission Line Route
- Alternate Transmission Route
- Modified Alternate Transmission Route
- Collector Lines – Underground or Overhead
- Temporary Laydown Area
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Transformer Substation

Notes

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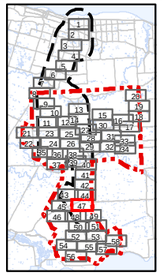

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
3.47

Title
ELC Vegetation Communities - Figure 3.47 Revised

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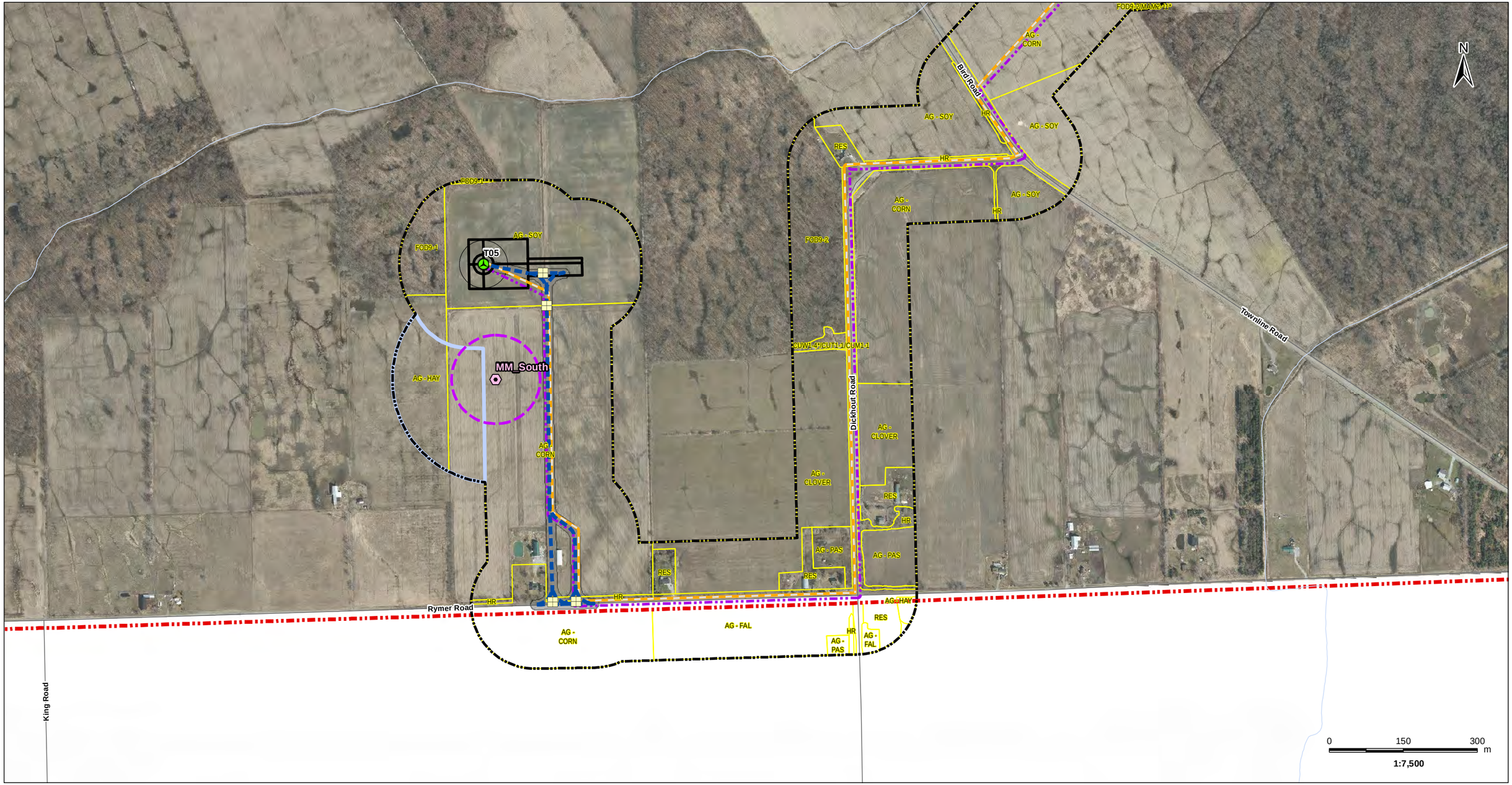
Revised: 2016-02-10 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- ELC Boundary
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Collector Lines – Underground or Overhead
- Temporary Laydown Area
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Notes

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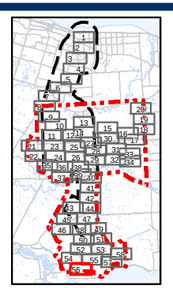

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
3.56

Title
ELC Vegetation Communities - Figure 3.56 Revised

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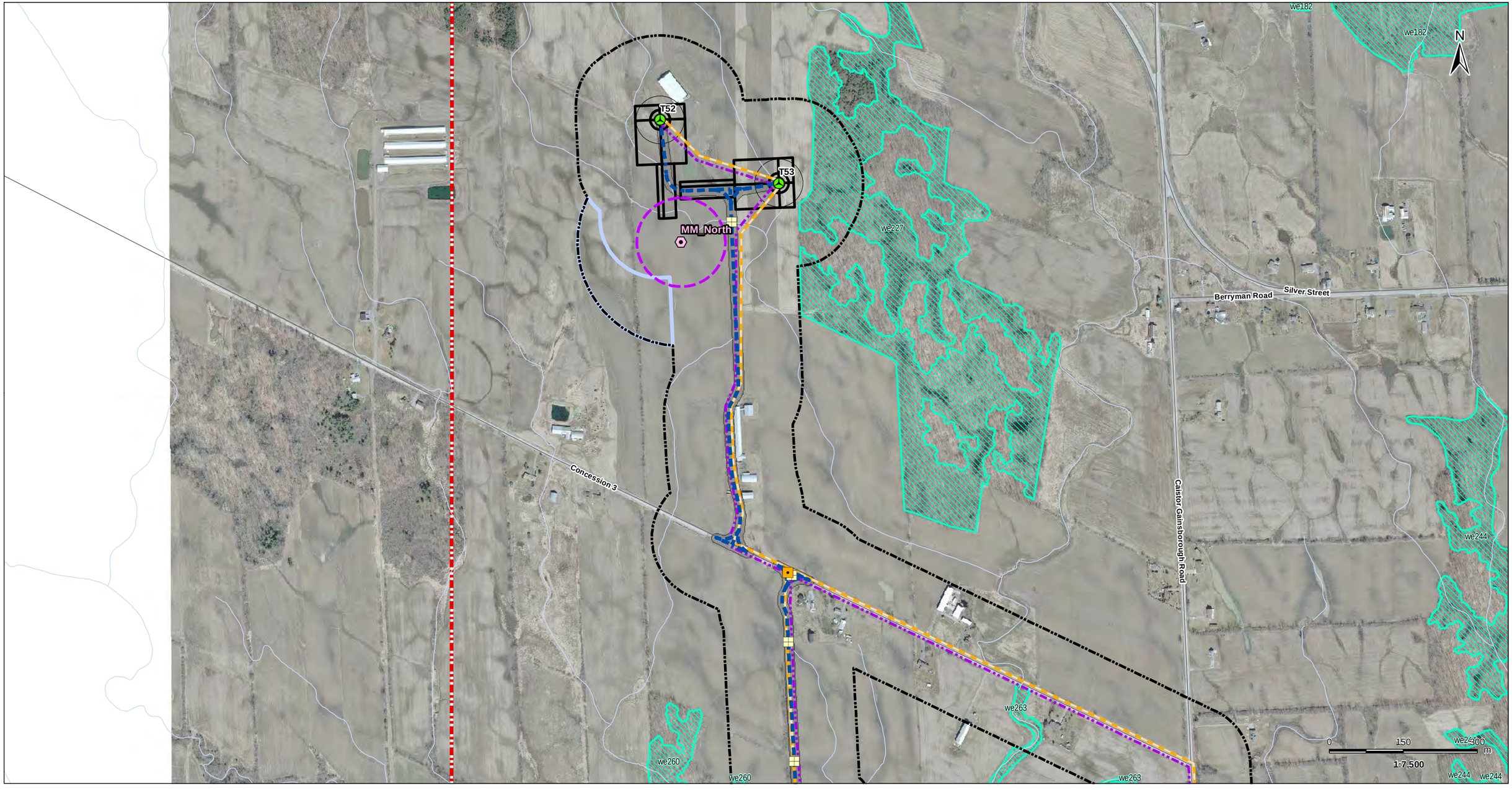
Revised: 2016-02-17 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Wetland Communities

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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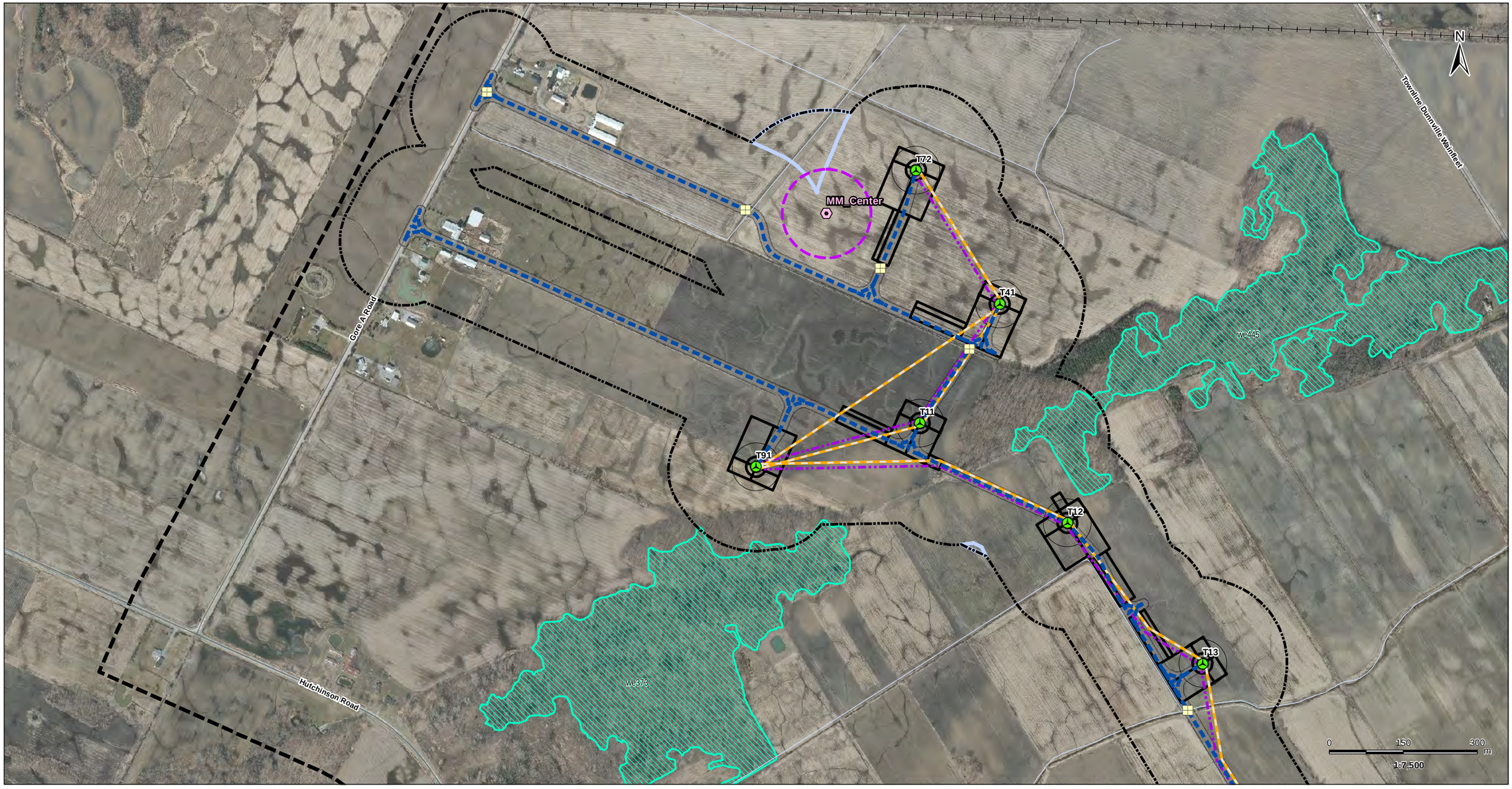
Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.21

Title
Wetland Communities
Figure 4.21
Revised



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Revised: 2016-02-10 By: bcowper

February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Wetland Communities

Notes

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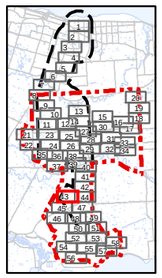

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.43

Title
Wetland Communities
Figure 4.43
Revised

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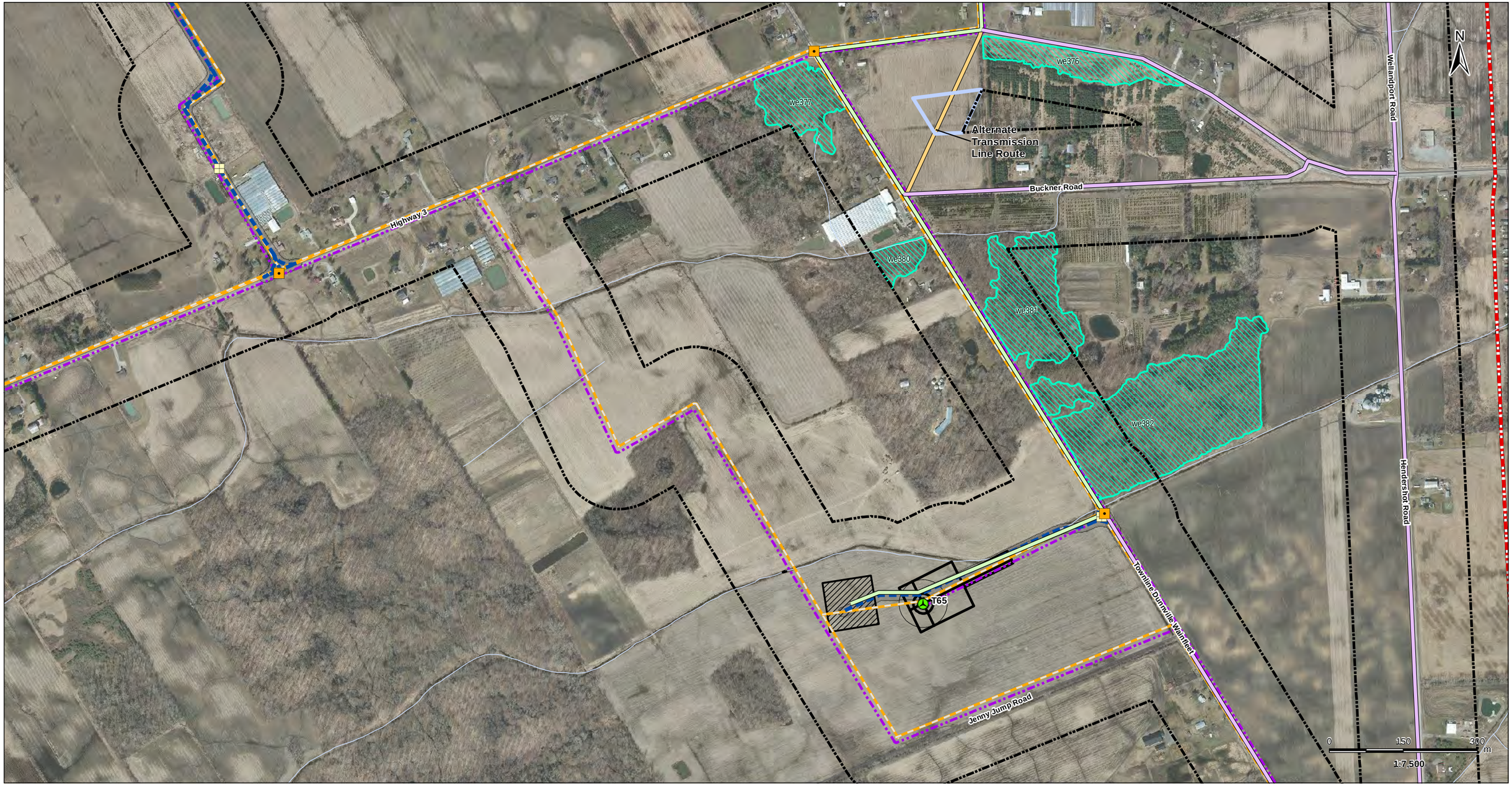
Revised: 2016-03-28 By: tcowper



March, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Modified Alternate Transmission Route
- Potential Transmission Route (REA)
- Alternate Tranmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Transformer Substation
- Wetland Communities

Notes

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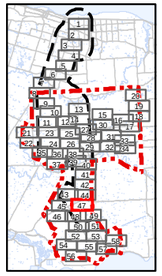

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.47

Title
Wetland Communities
Figure 4.47
Revised

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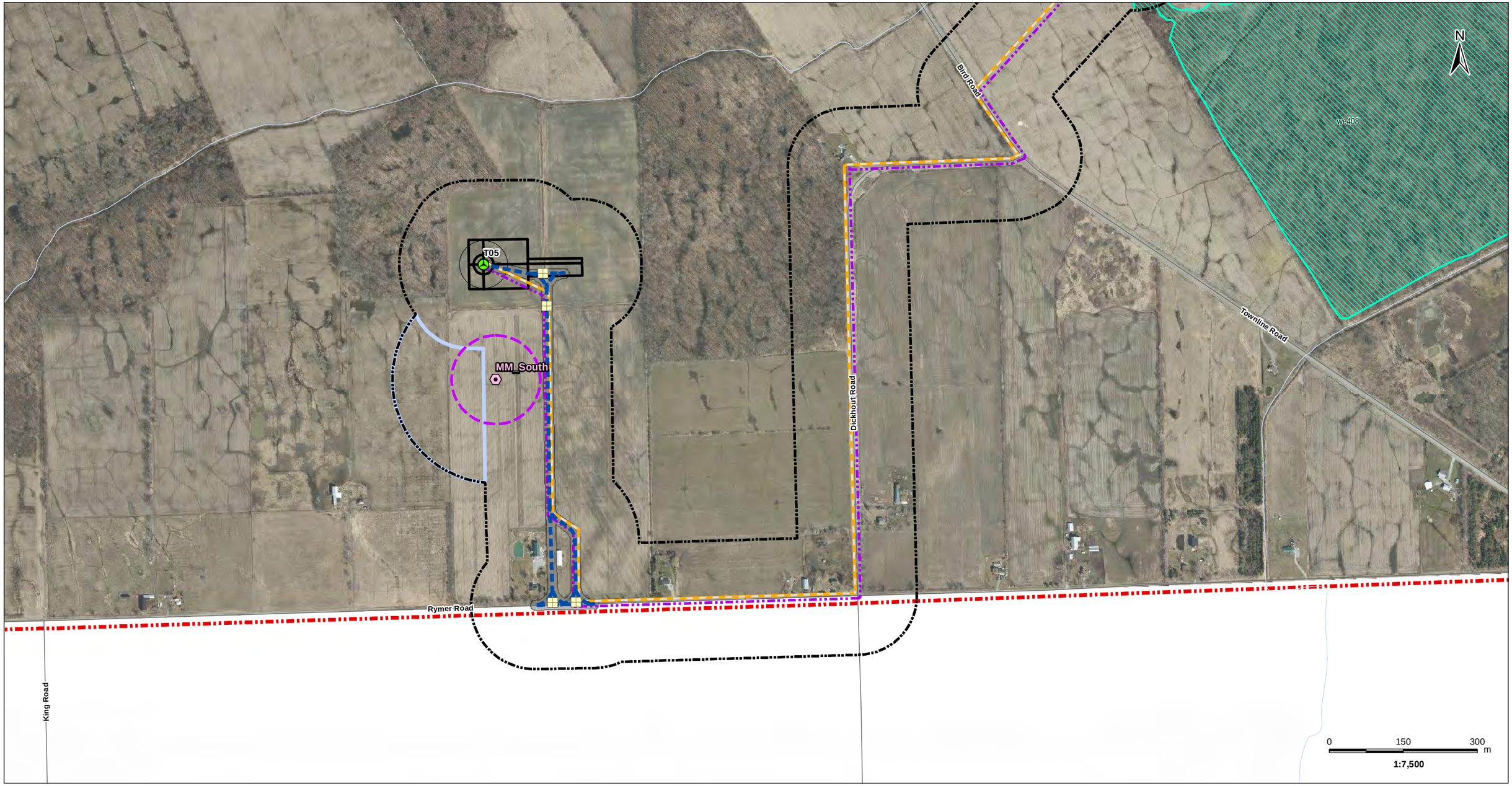
Revised: 2016-02-10 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Wetland Communities

Notes

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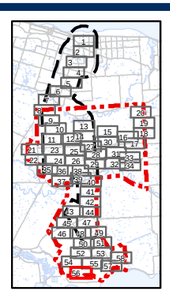

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.56

Title
Wetland Communities
Figure 4.56
Revised

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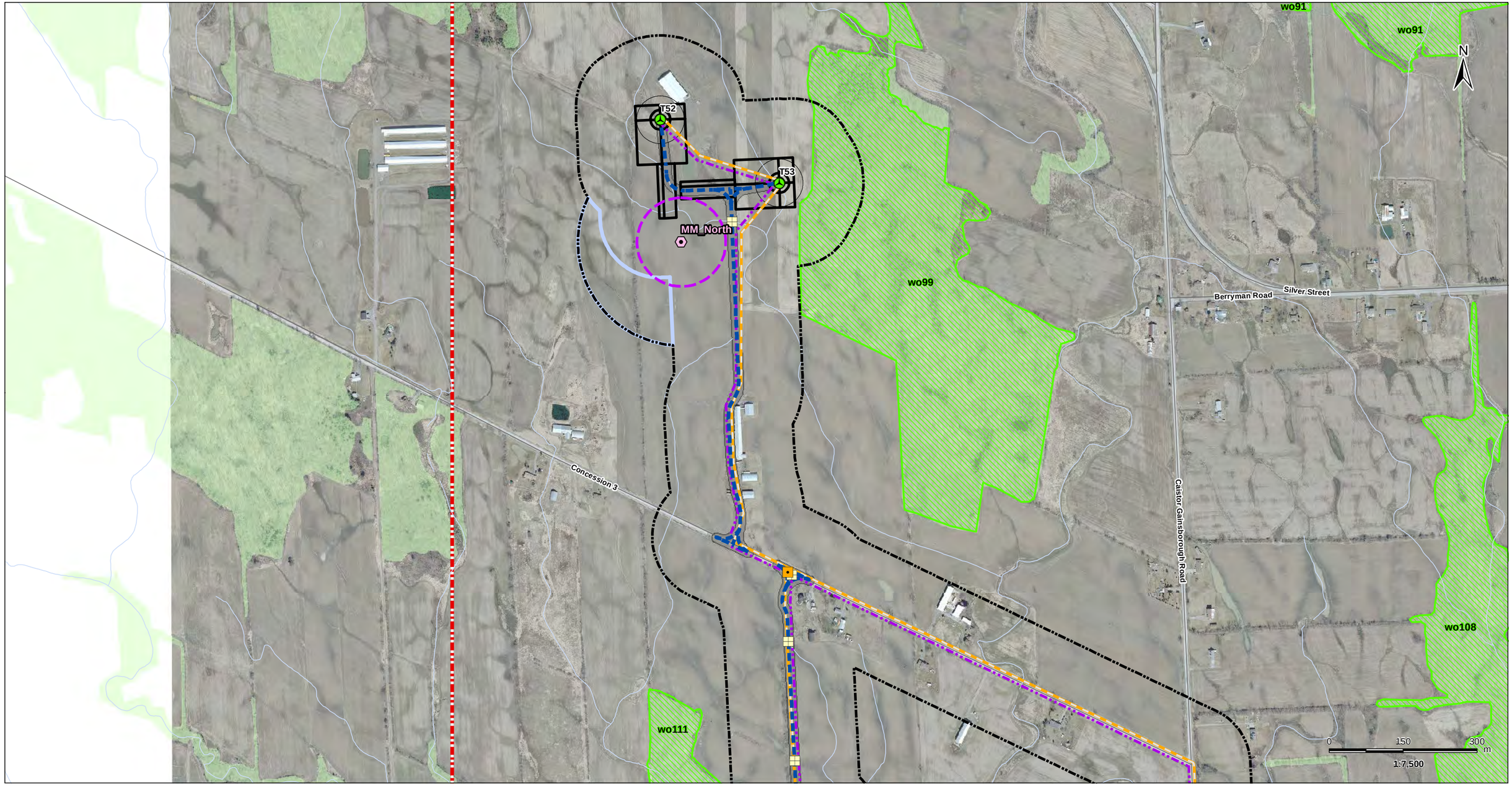
Revised: 2016-02-17 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Woodland Communities
- MNR Wooded Area

Notes

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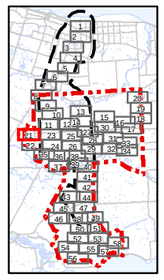

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FWRN LP
Natural Heritage Assessment Report

Figure No.
5.21

Title
Woodland Communities
Figure 5.21
Revised

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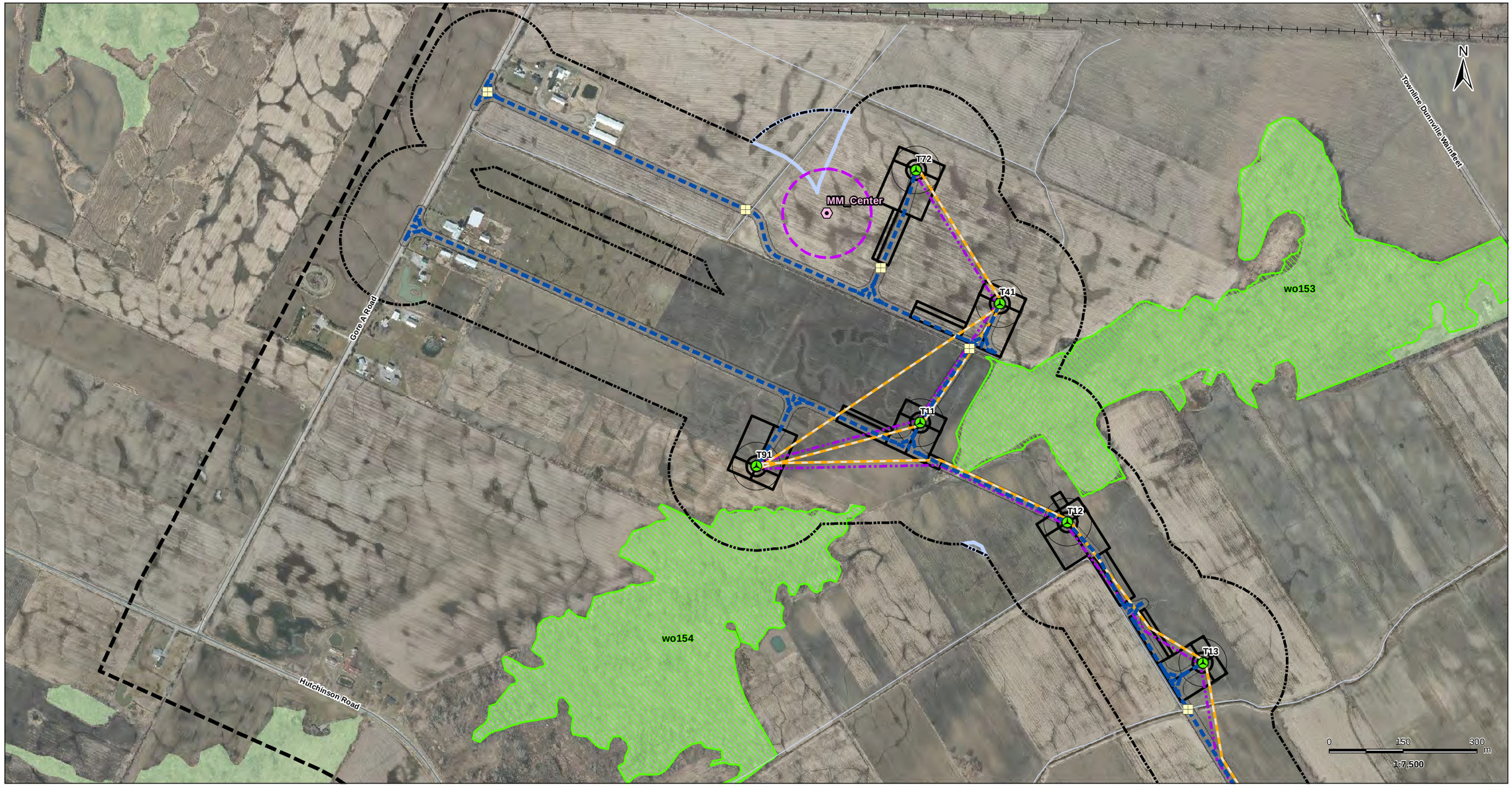
Revised: 2016-02-16 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Woodland Communities
- MNR Wooded Area

Notes

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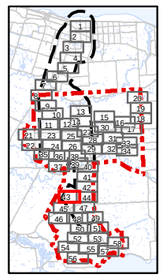

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
5.43

Title
Woodland Communities
Figure 5.43
Revised

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Revised: 2016-03-28 By: bcowper

March, 2016
160950269

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Modified Alternate Transmission Route
- Preferred Transmission Route
- Alternate Tranmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Transformer Substation
- Woodland Communities
- MNR Wooded Area

Notes

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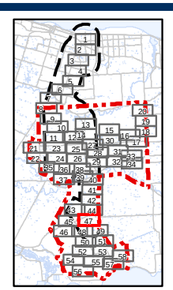
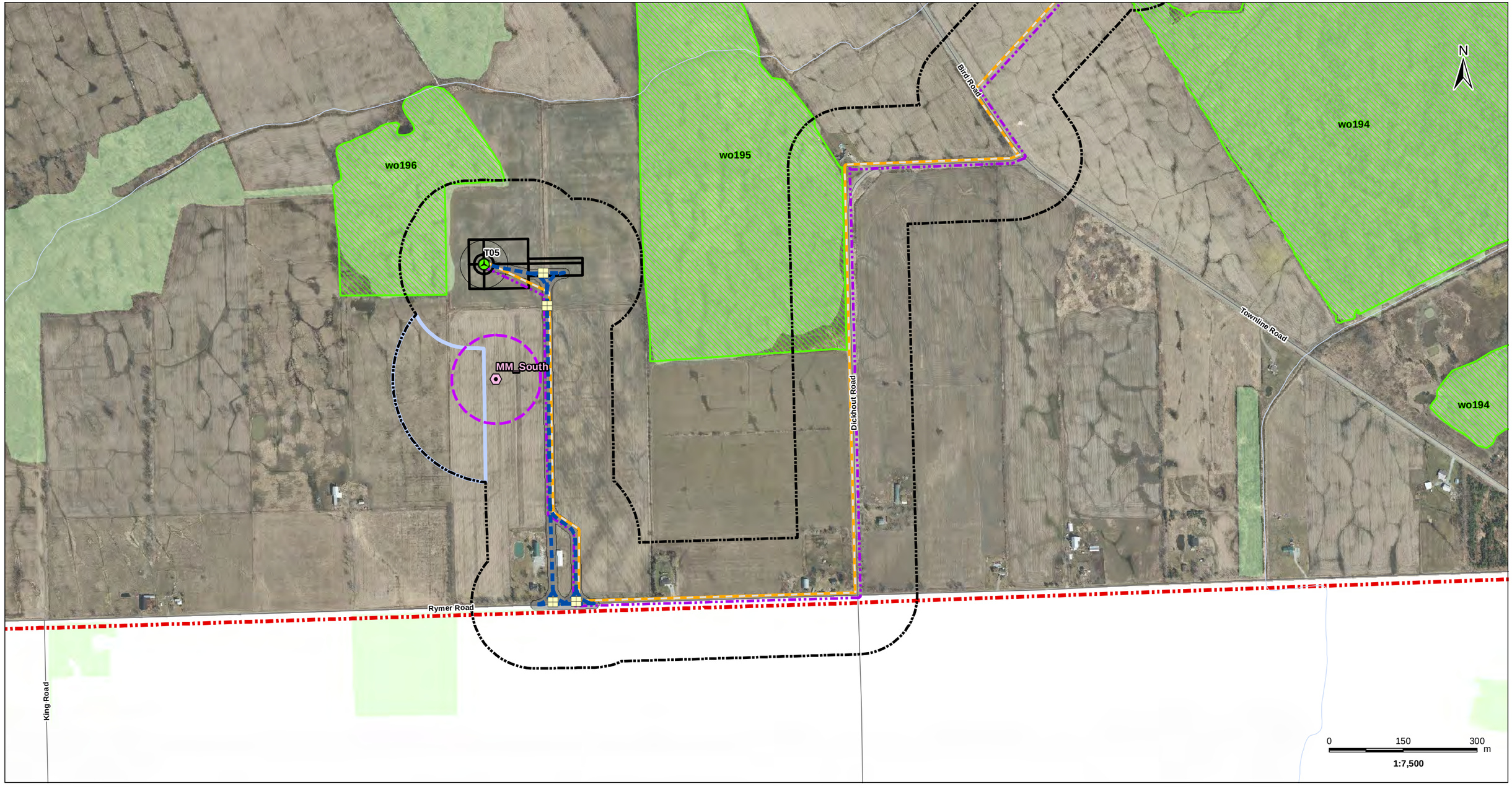


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
5.47

Title
Woodland Communities
Figure 5.47
Revised



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Woodland Communities
- MNR Wooded Area

Notes

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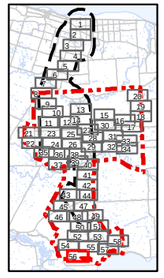

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FWRN LP
Natural Heritage Assessment Report

Figure No.
5.56

Title
Woodland Communities
Figure 5.56
Revised

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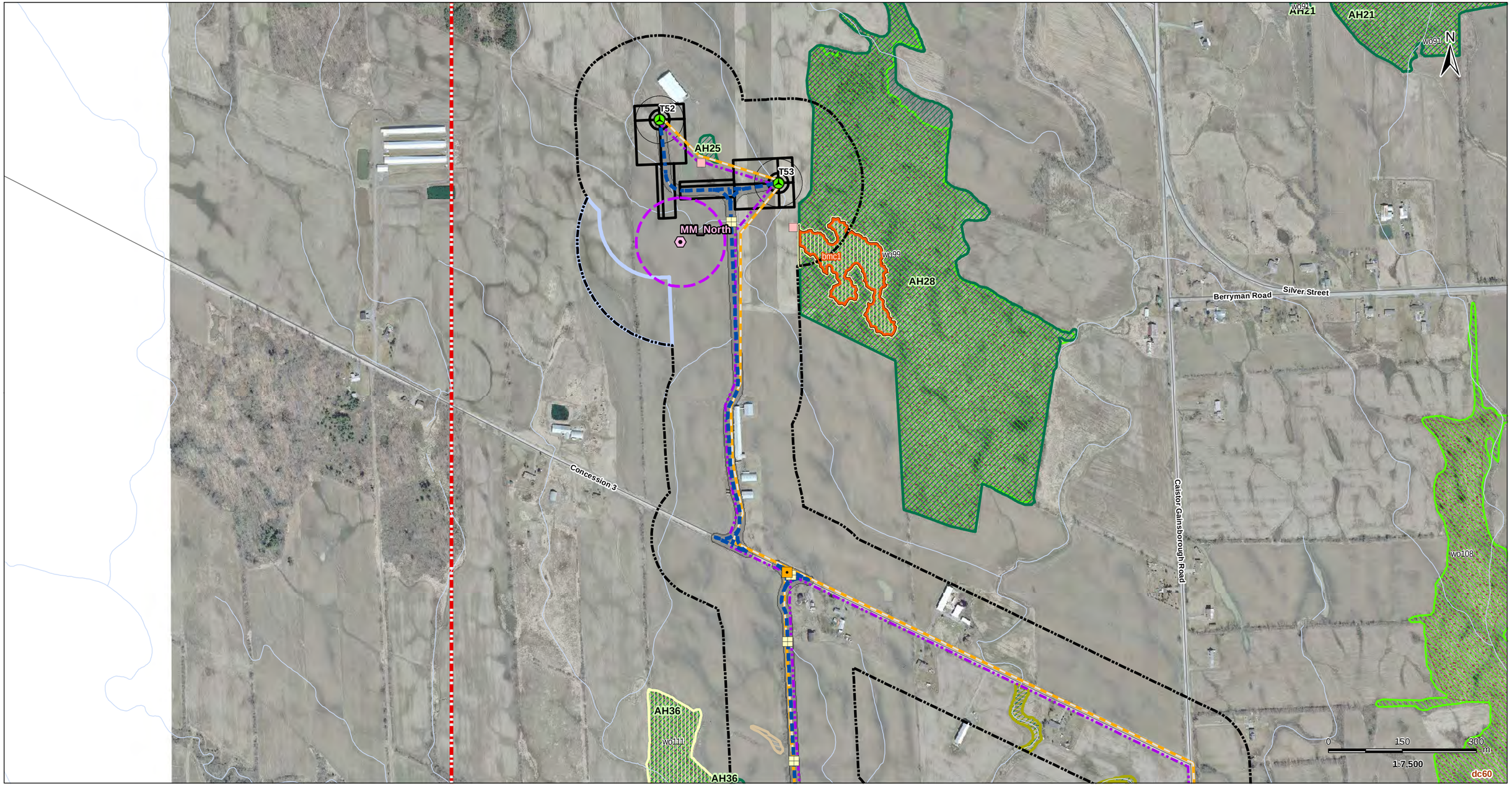

February, 2016
160950269

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Amphibian Breeding Stations
- Woodland Communities
- Deer Congregation Areas (MNR)
- Amphibian Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat
- Bat Maternity Colonies

Notes

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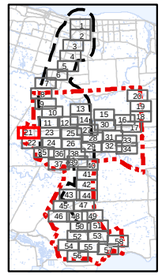

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FWRN LP
Natural Heritage Assessment Report

Figure No.
6.21

Title
Candidate Significant Wildlife Habitat Figure 6.21 Revised

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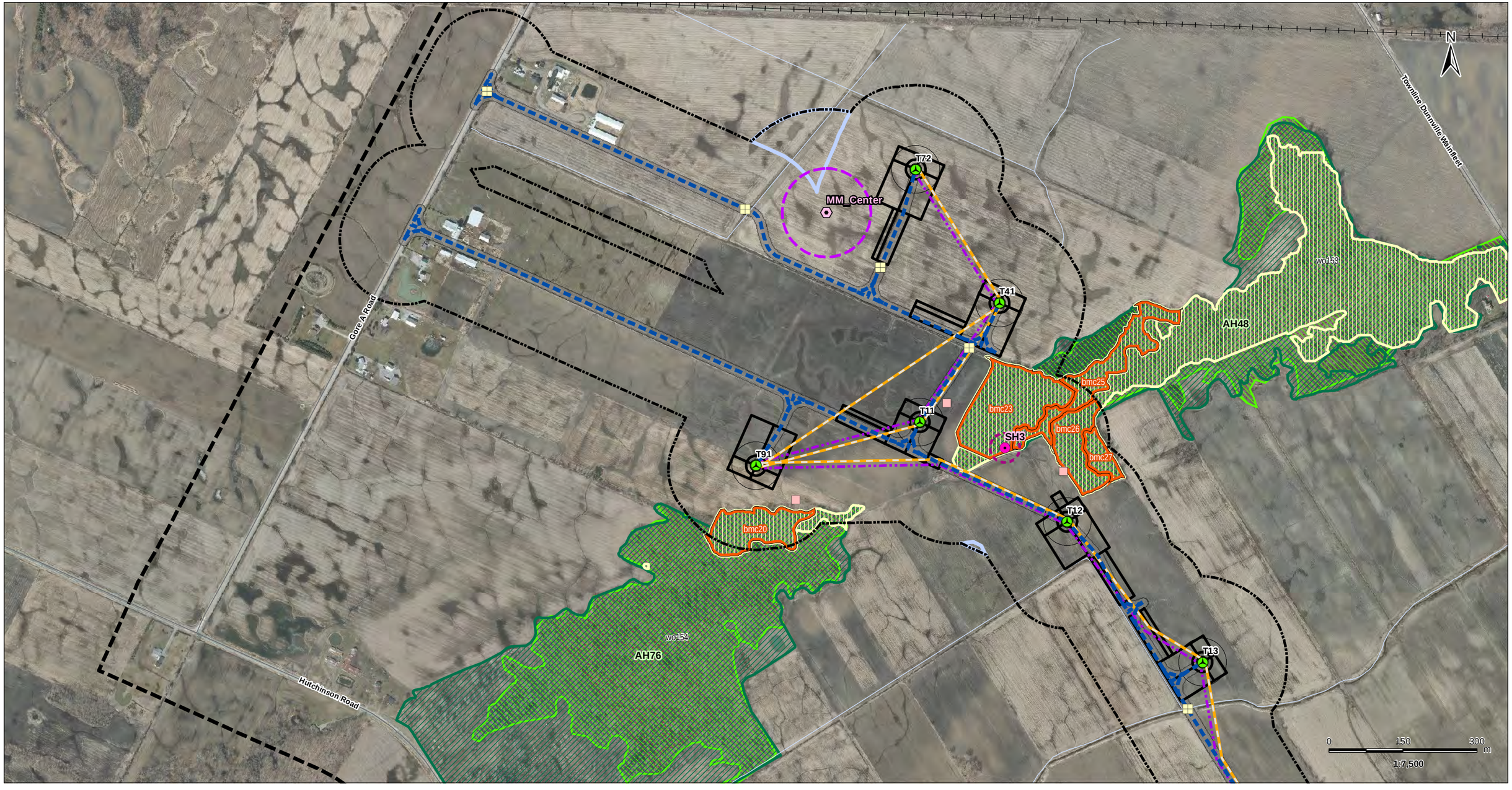
Revised: 2016-02-10 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Amphibian Breeding Stations
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Woodland Communities
- Deer Congregation Areas (MNR)
- Amphibian Breeding Habitat
- Woodland Vole Habitat
- Bat Maternity Colonies

Notes

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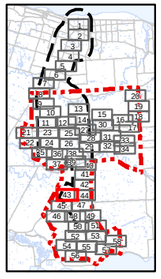

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.43

Title
Candidate Significant Wildlife Habitat Figure 6.43 Revised

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Revised: 2016-03-28 By: bcowper

March, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Potential Transmission Route (REA)
- Alternate Tranmission Route
- Modified Alternate Transmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Transformer Substation
- Amphibian Breeding Stations
- Woodland Communities
- Deer Congregation Areas (MNR)
- Amphibian Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat

Notes

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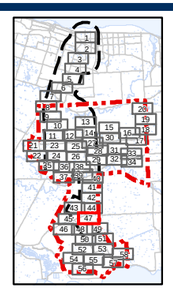
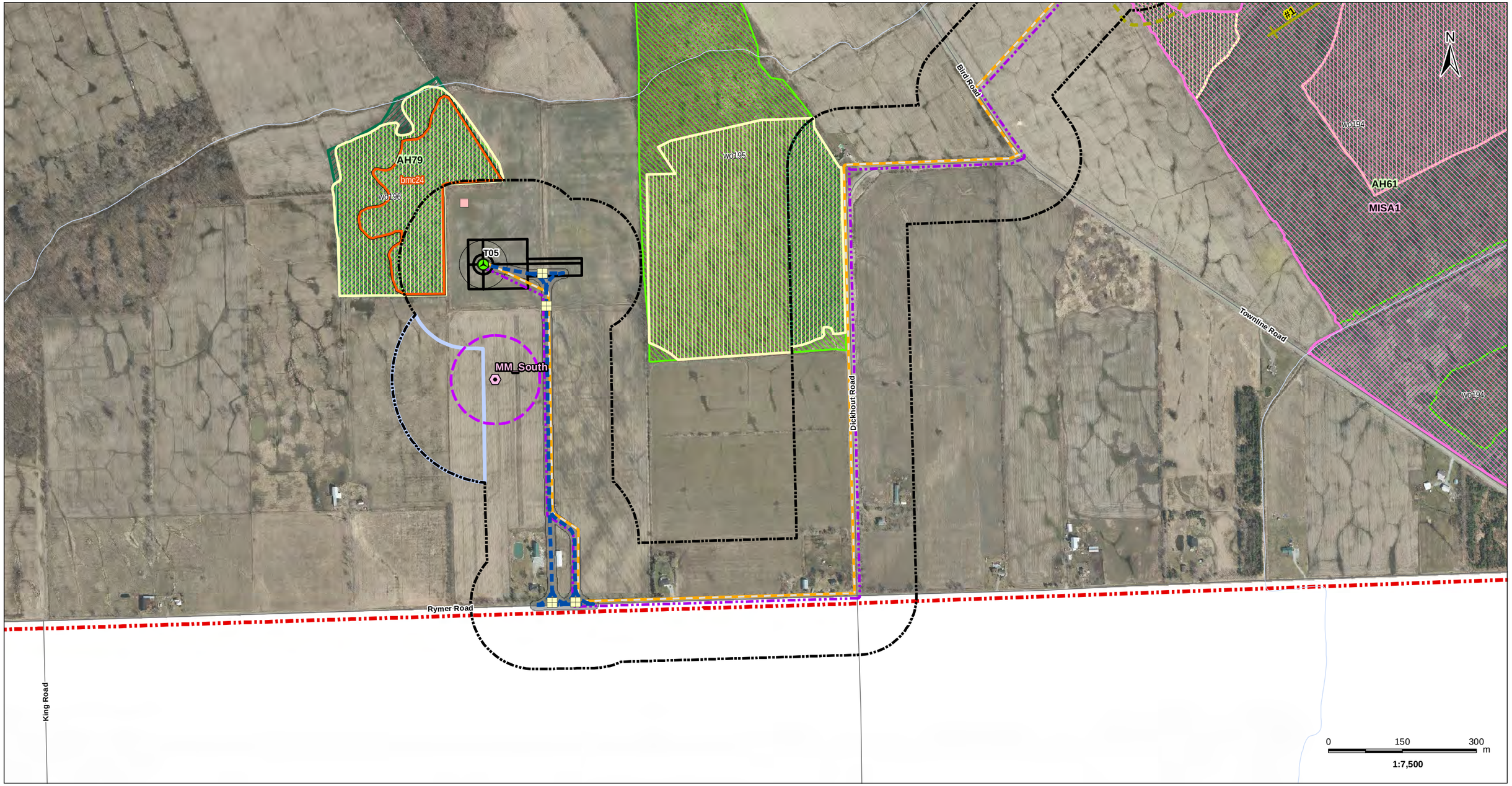


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.47

Title
Candidate Significant Wildlife Habitat Figure 6.47 Revised

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\NHA_MET_Towers_and_Buckner_Figure_6_Candidate_Significant_Wildlife_Habitat_Mapbook.mxd
Revised: 2016-02-10 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Amphibian Breeding Stations
- Migratory Bird Transect
- Woodland Communities
- Deer Congregation Areas (MNR)
- Landbird Migratory Stopover
- Amphibian Breeding Habitat
- Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat
- Turtle Habitat 30m Buffer
- Bat Maternity Colonies

Notes

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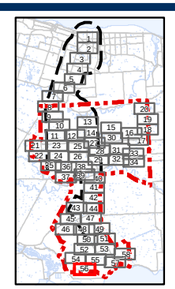

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.56

Title
Candidate Significant Wildlife Habitat Figure 6.56 Revised

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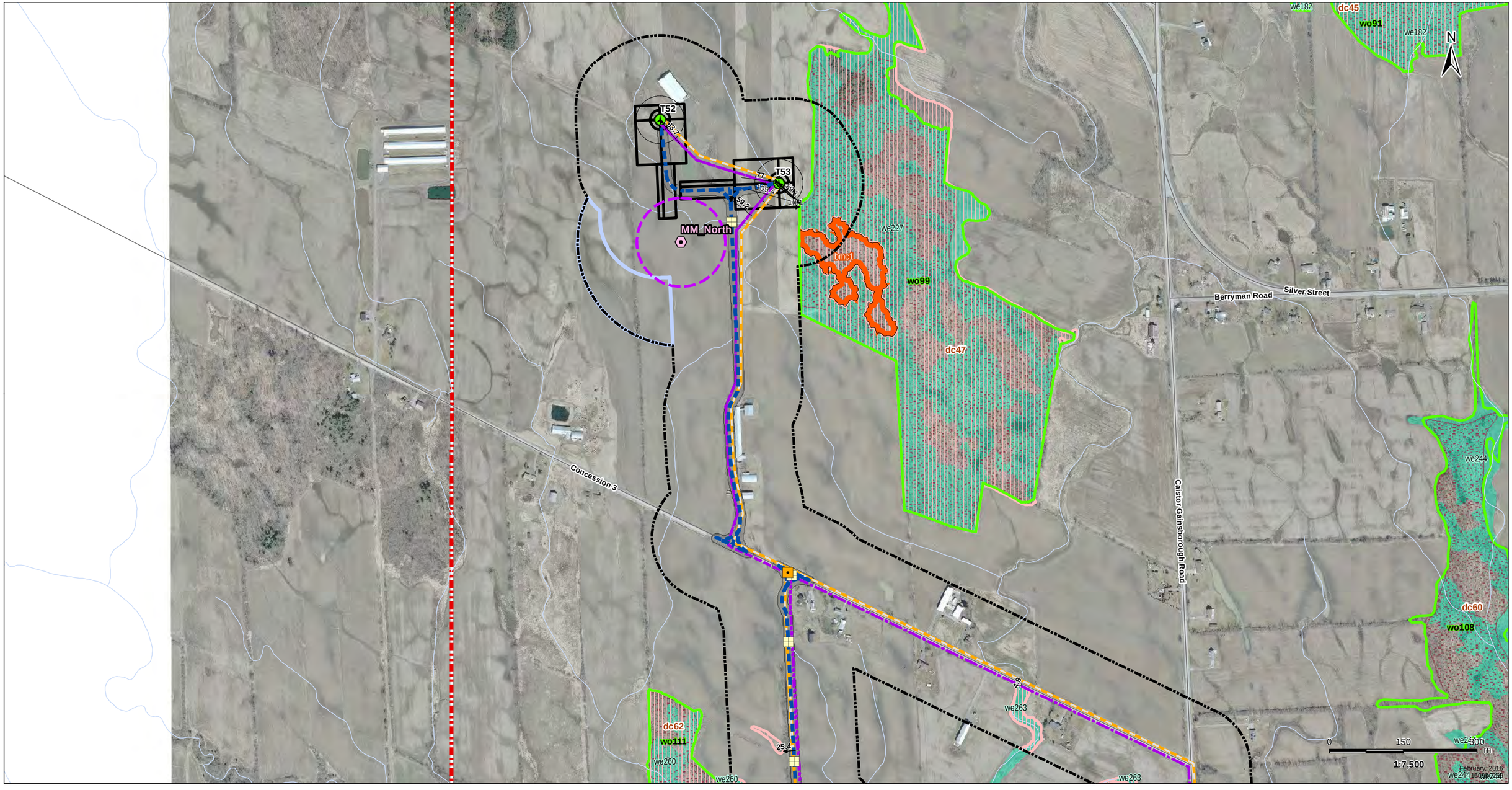
Revised: 2016-02-17 By: bcowper



Legend

- Project Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments

- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Significant Wildlife Habitat

- Snake Hibernacula
- Wetland Communities
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)
- Bat Maternity Colonies

Notes

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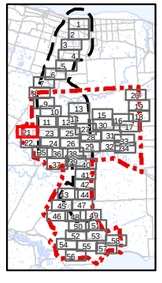
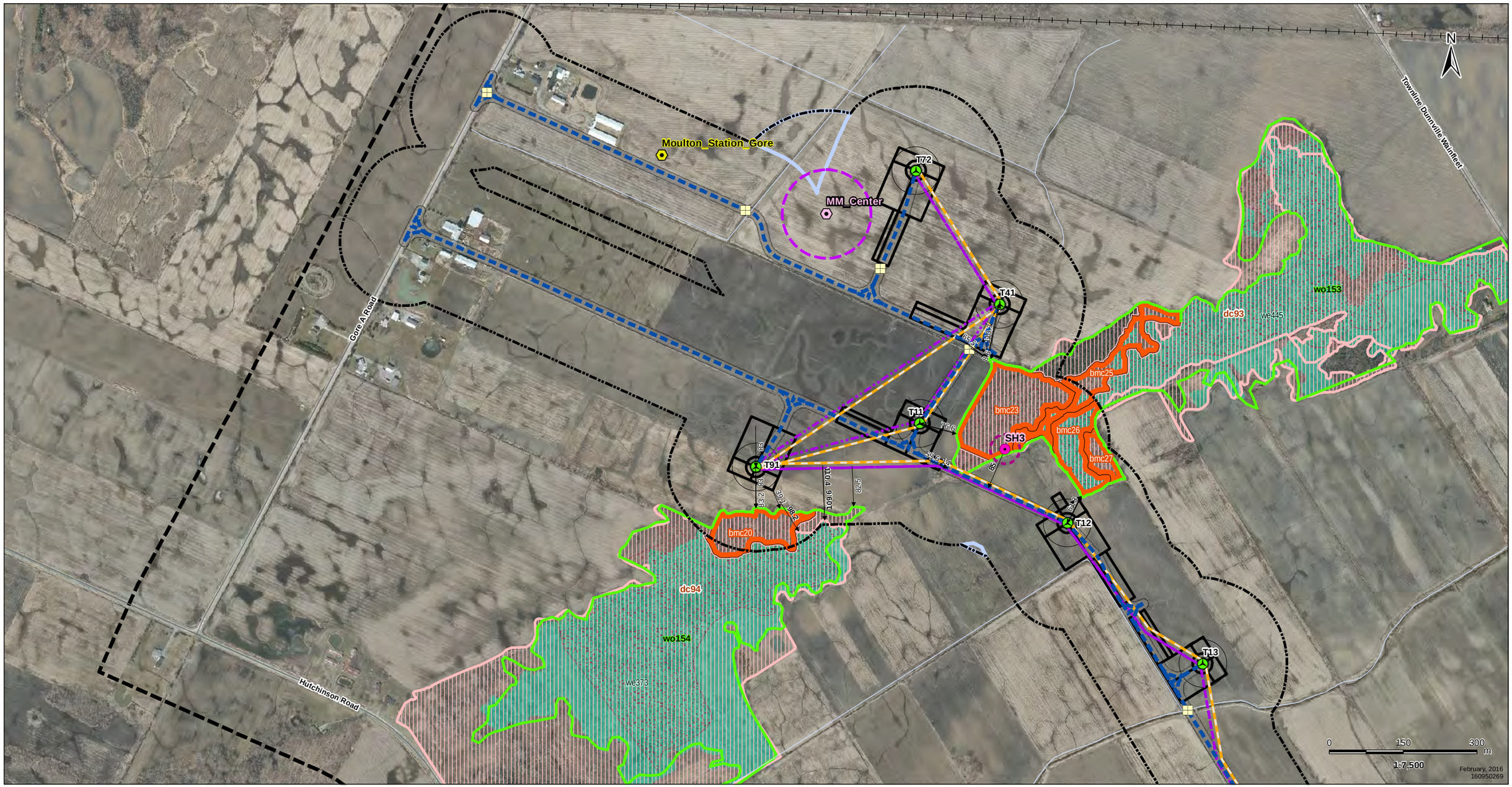


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.21

Title
Significant Natural Features - Figure 7.21 Revised



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Revised: 2016-02-17 By: bcowper

Stantec

Legend

- Existing MET Tower
- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments

- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Wetland Communities
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)
- Bat Maternity Colonies

Notes

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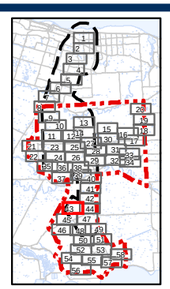
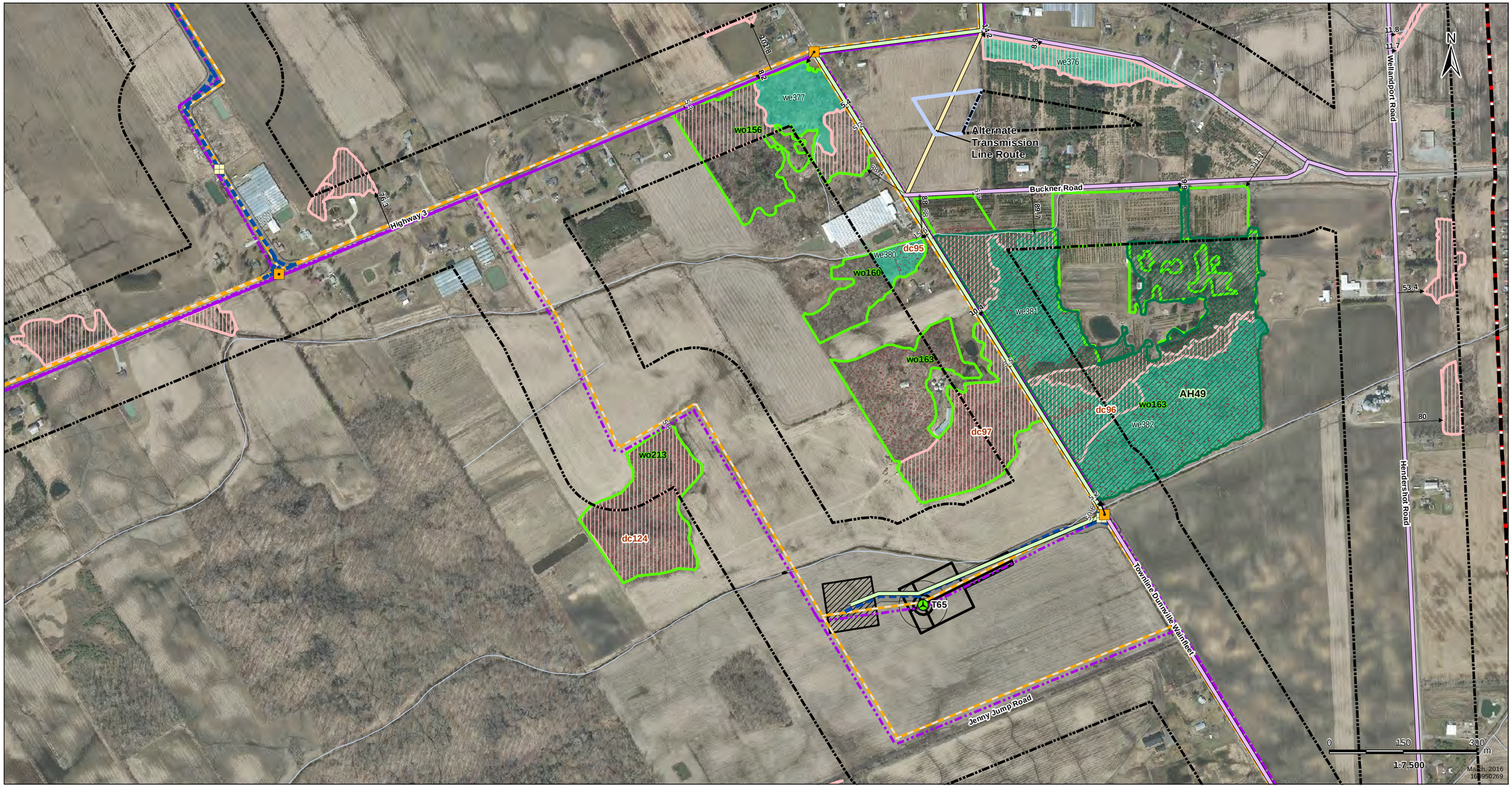


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.43

Title
Significant Natural Features - Figure 7.43 Revised



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Revised: 2016-03-28 By: bcowper

Stantec

Legend

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

Zone of Investigation Adjustments

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

Significant Wildlife Habitat

- Snake Hibernacula
- Wetland Communities
- Woodland Amphibian Breeding Habitat
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)

Notes

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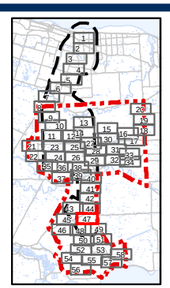
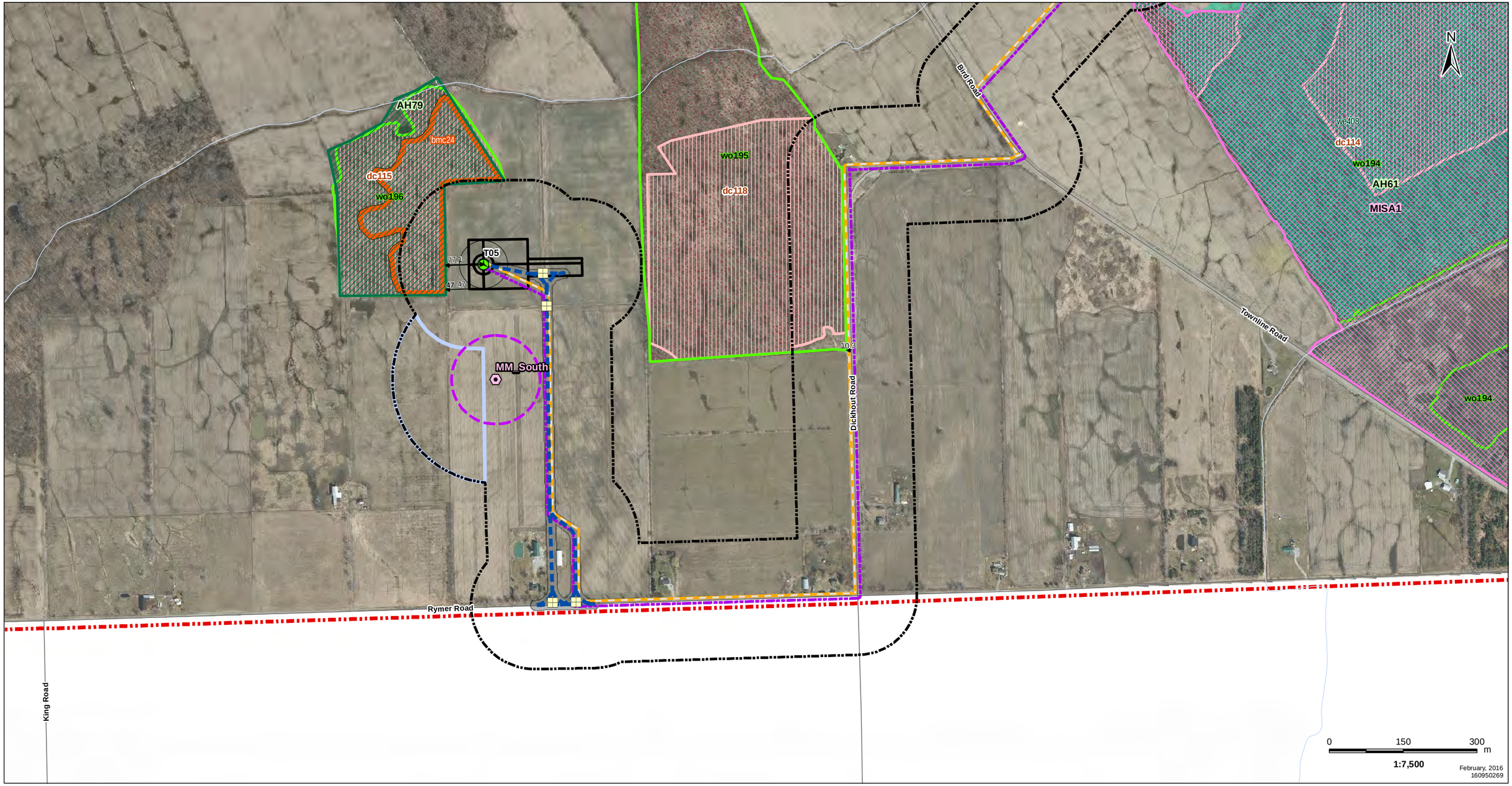


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.47

Title
Significant Natural Features - Figure 7.47 Revised



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments

- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Significant Wildlife Habitat

- Snake Hibernacula
- Landbird Migratory Stopover
- Wetland Communities
- Woodland Amphibian Breeding Habitat
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)
- Bat Maternity Colonies

Notes

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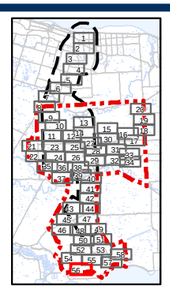
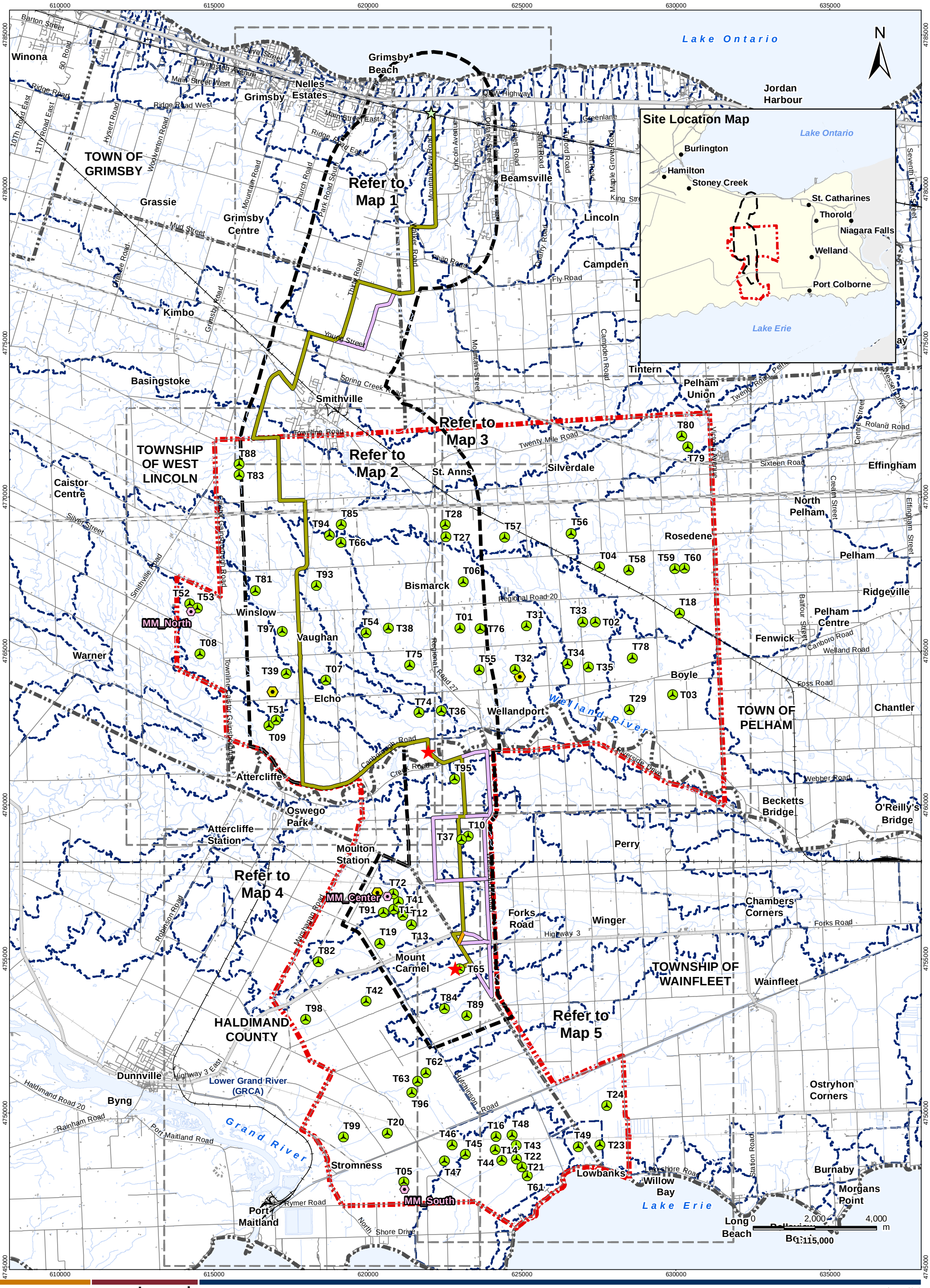


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.56

Title
Significant Natural Features - Figure 7.56 Revised

Updated Figures for the Water Assessment and Water Body Report



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Revised: 2016-02-17 By: bcowper

Legend

Notes

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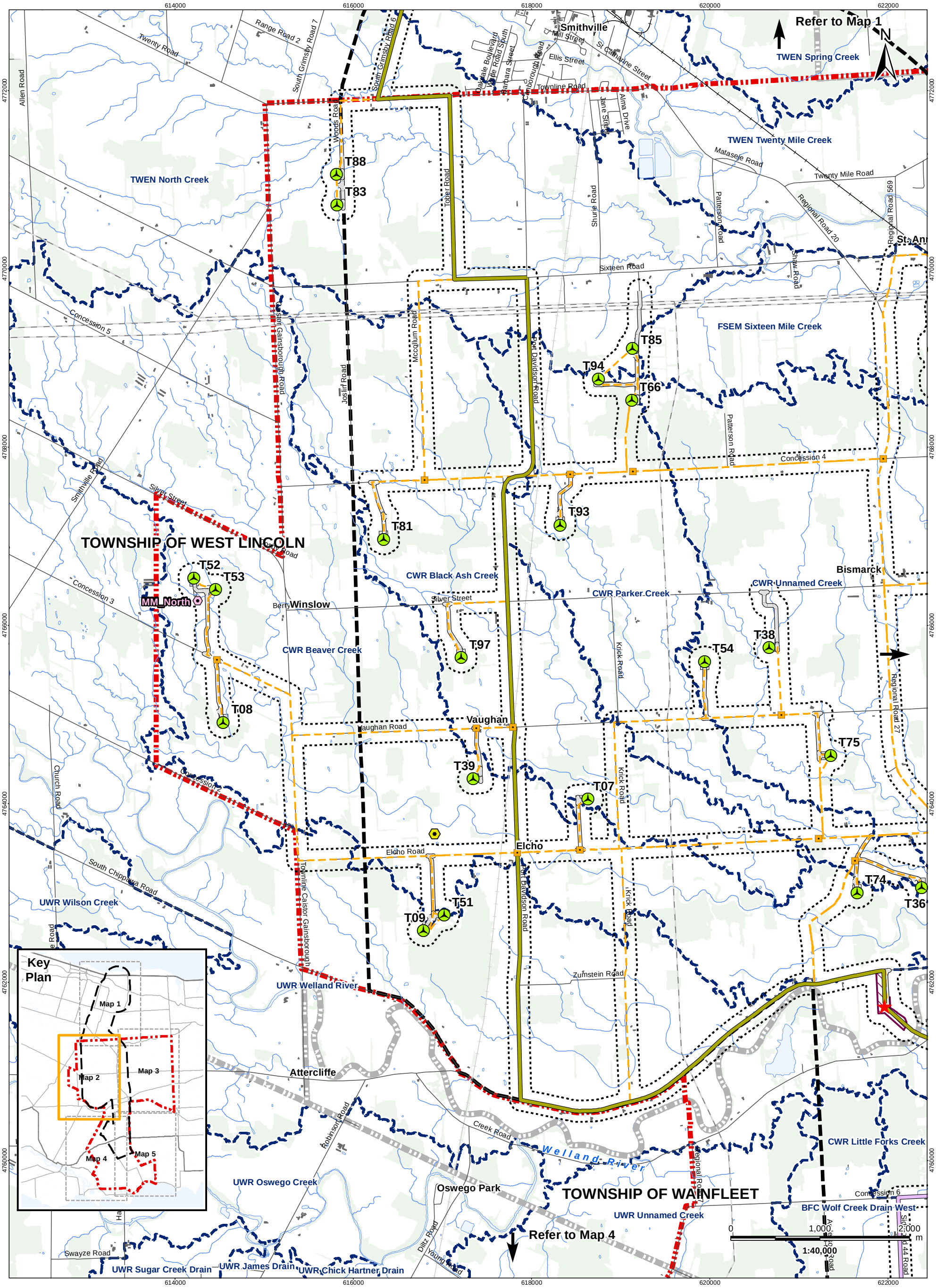
Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

February 2016
160950269

Figure No.
1

Title
Location of Study Area Revised



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Proposed Turbine Location
- Transformer Substation
- Potential Acesss Road
- Collector Lines – Underground or Overhead
- Preferred Transmission Route (REA)
- Alternate Tranmission Route (REA)
- Junction Box
- Proposed MET Tower Locations
- Existing Met Tower
- Potential Construction Laydown Area
- Road
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Subwatershed (NPCA)

Notes

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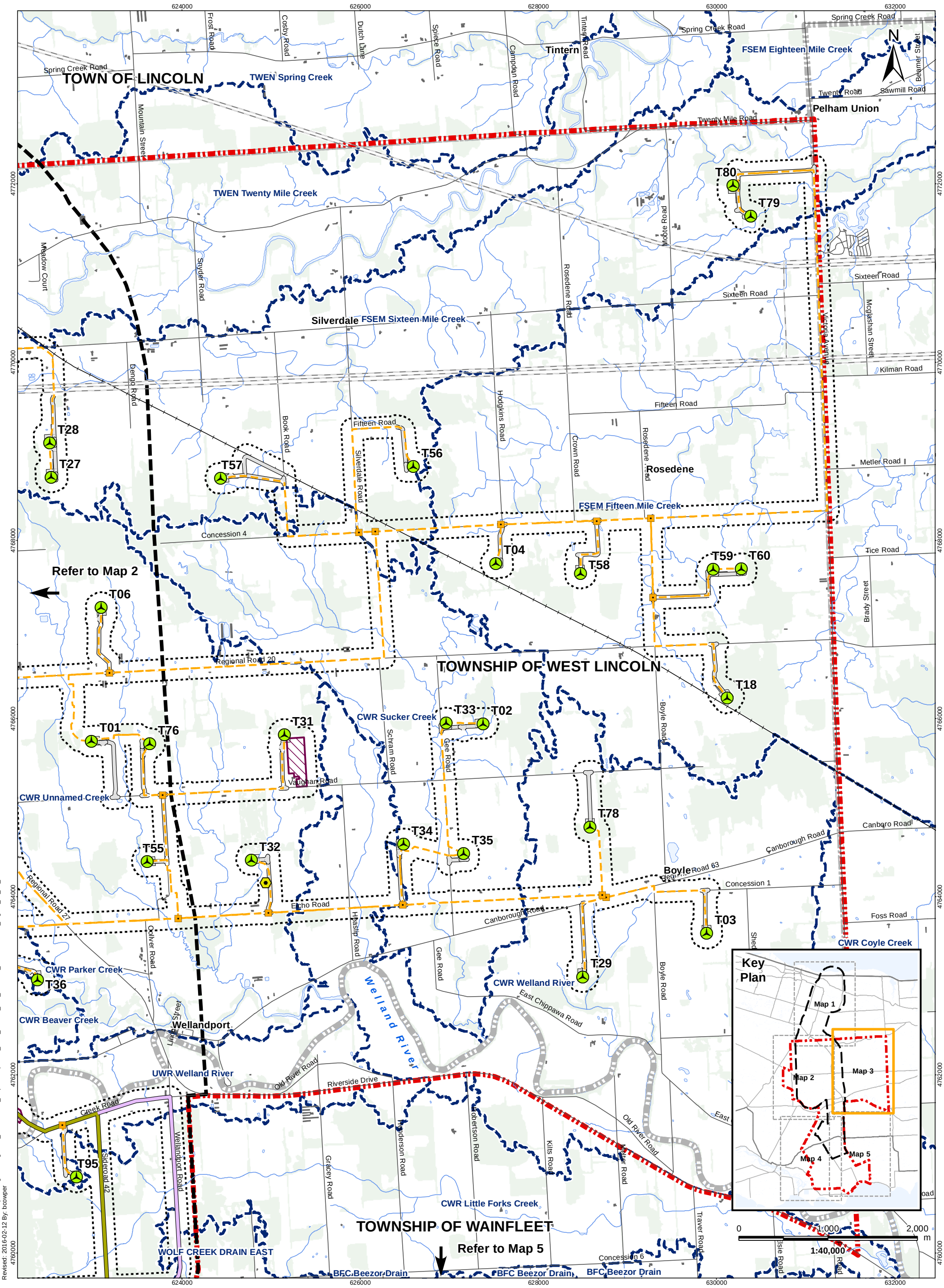
Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

February 2016
160950269

Figure No.
2b

Title
Subwatersheds
Map 2 of 5



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Revised: 2016-02-12 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Proposed Turbine Location
- Potential Acesss Road
- Collector Lines – Underground or Overhead
- Preferred Transmission Route (REA)
- Alternate Tranmission Route (REA)
- Junction Box
- Existing Met Tower
- Potential Construction Laydown Area
- Road
- Active Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Subwatershed (NPCA)

Notes

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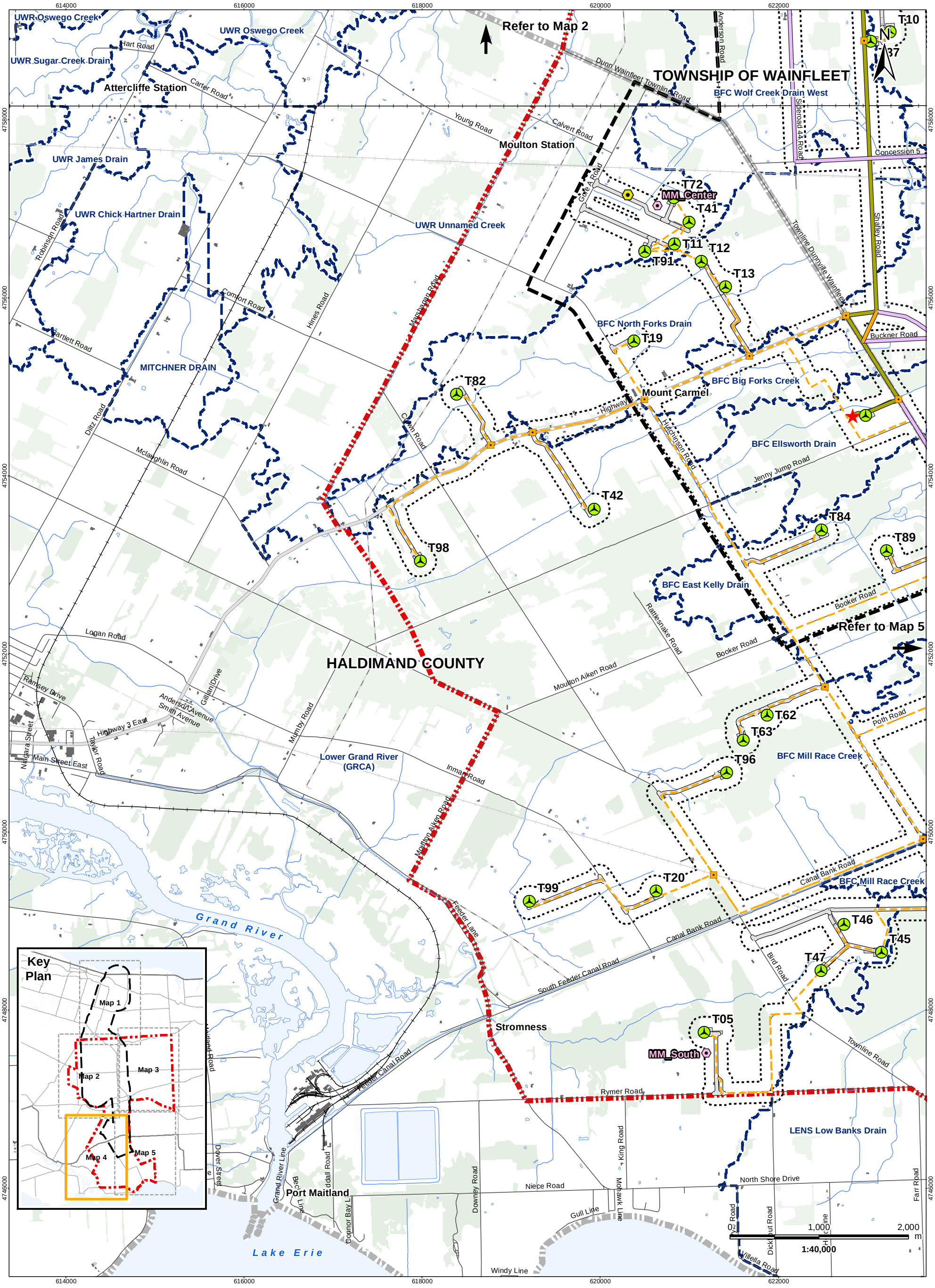
Niagara Region Wind Farm
Water Assessment and Waterbody Report

February 2016
160950269

Figure No.
2c

Title
Subwatersheds
Map 3 of 5



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Revised: 2016-02-12 By: bcowper

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Proposed Turbine Location
- Transformer Substation
- Potential Acesss Road
- Collector Lines – Underground or Overhead
- Preferred Transmission Route (REA)
- Alternate Tranmission Route (REA)
- Modified Alternate Transmission Route
- Junction Box
- Proposed MET Tower Locations
- Existing Met Tower
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Subwatershed (NPCA)

Notes

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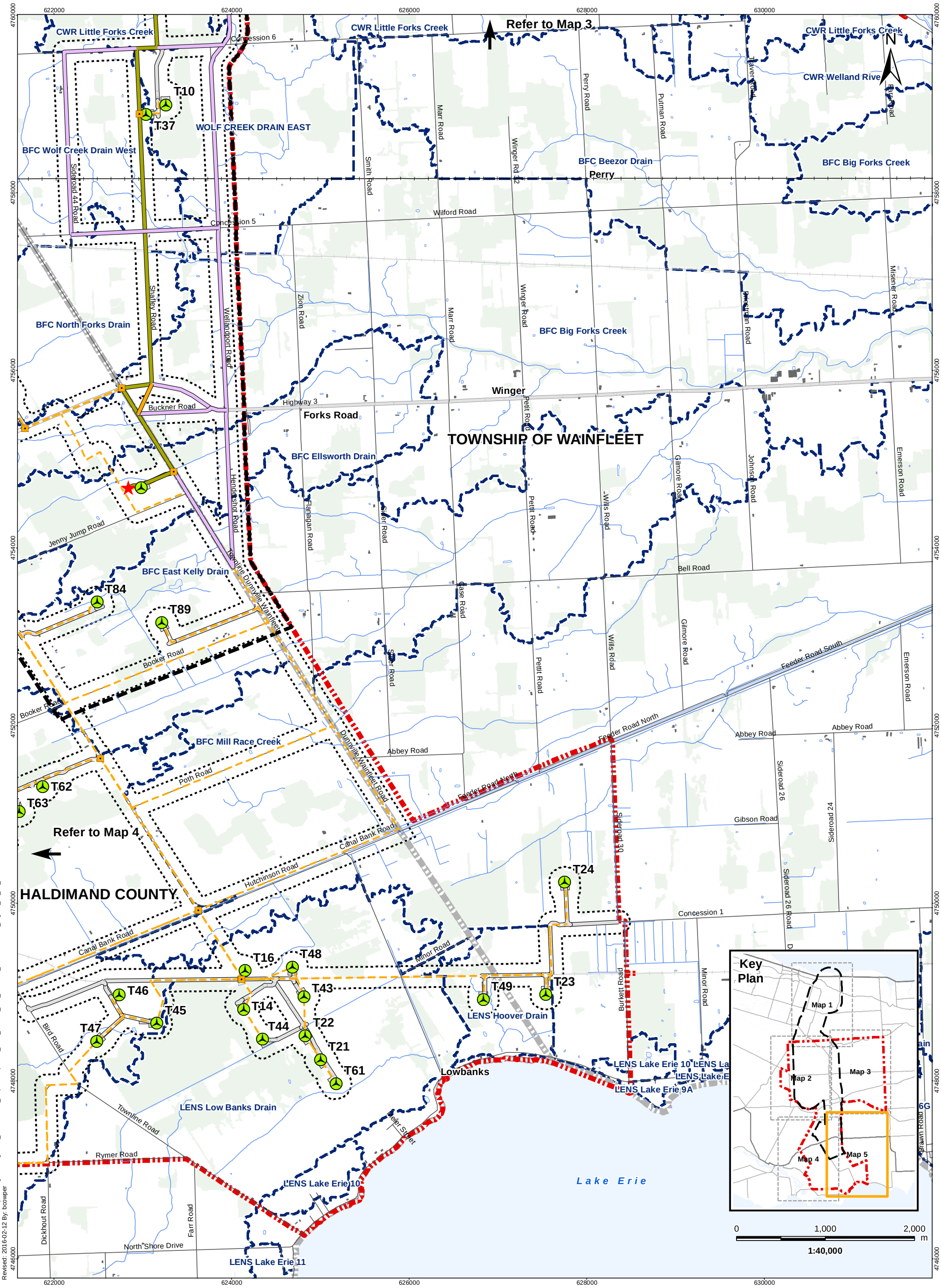
Water Assessment and Waterbody Report

February 2016
160950269

Figure No.
2d

Title
Subwatersheds
Map 4 of 5



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Revised: 2016-02-12 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Proposed Turbine Location
- Transformer Substation
- Potential Acesss Road
- Collector Lines – Underground or Overhead
- Preferred Transmission Route (REA)
- Alternate Tranmission Route (REA)
- Modified Alternate Transmission Route
- Junction Box
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Subwatershed (NPCA)

Notes

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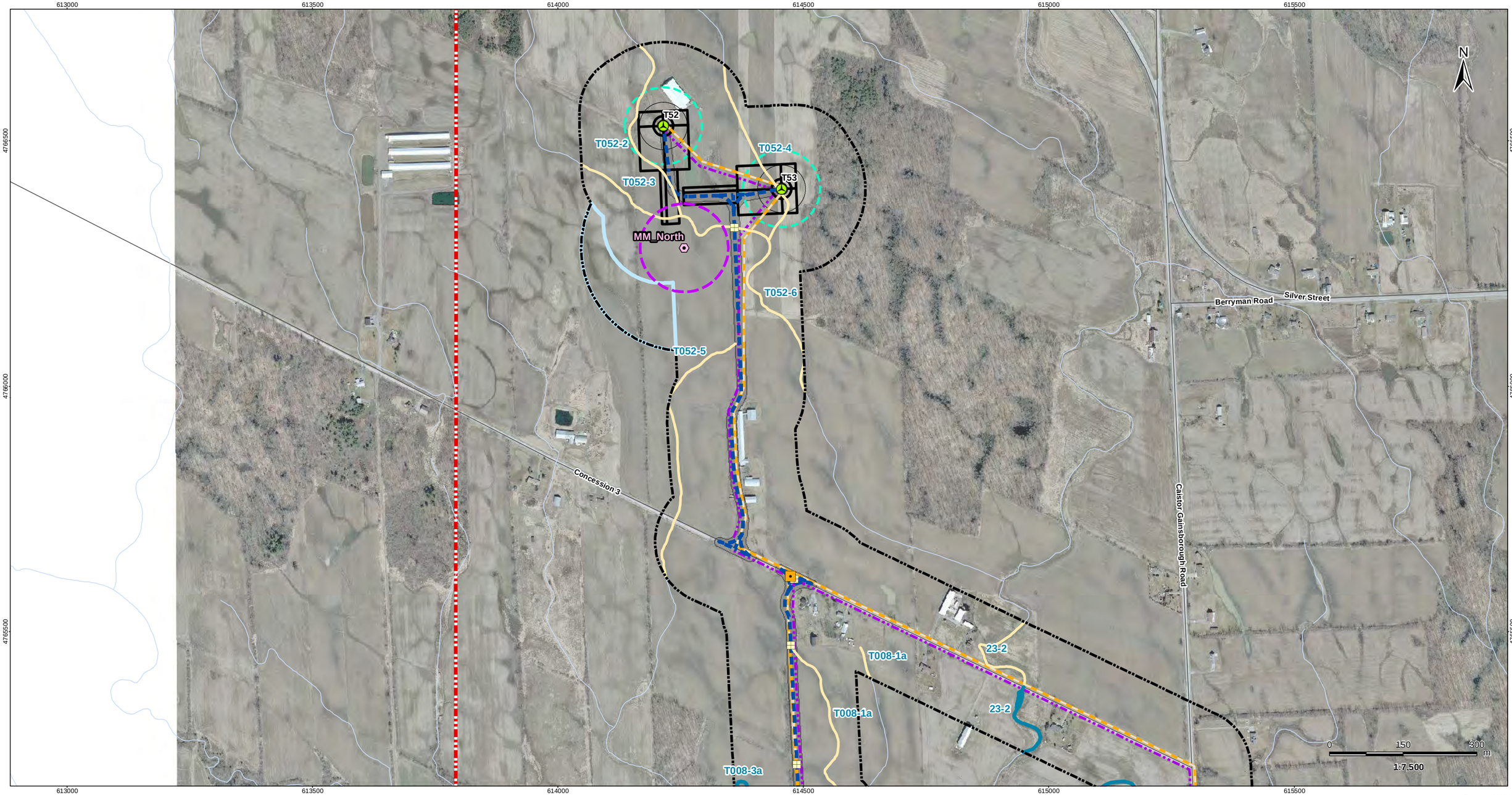
Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

February 2016
160950269

Figure No.
2e

Title
Subwatersheds
Map 5 of 5



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Revised: 2016-02-17 By: bcowper

February, 2016
160950269

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Area Added
- Watercourse (MNR)
- Waterbody
- Non-waterbody
- Proposed Turbine Location
- Turbine Blade Length 30m Buffer
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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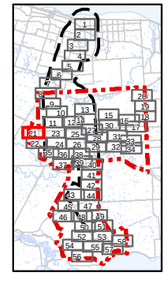
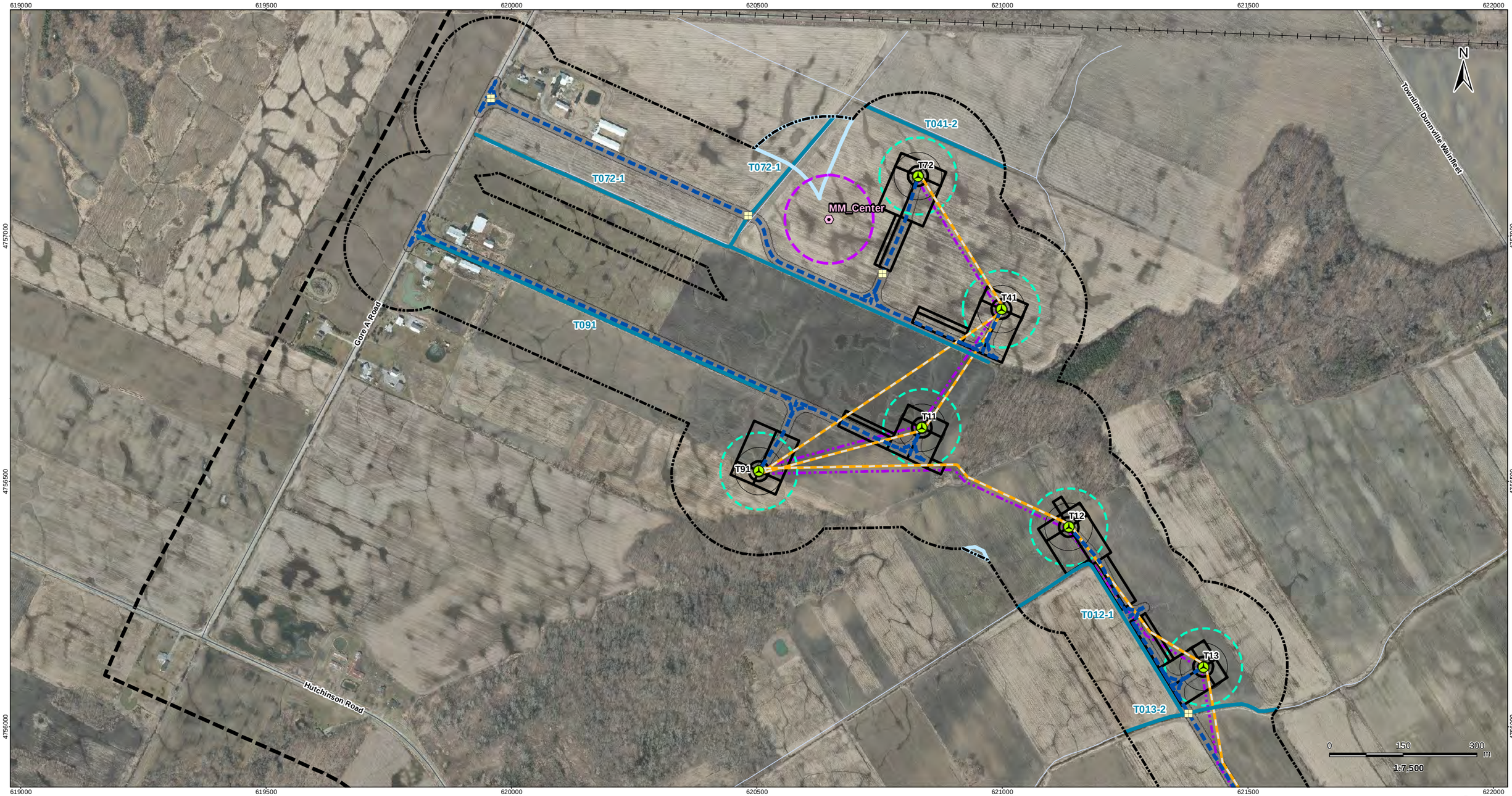
3. Orthoimagery source: First Base Solutions, Date Spring 2010.



Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

Figure No.
3.21

Title
Water Bodies
Figure 3.21
Revised



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Revised: 2016-02-12 By: bcowper

February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Area Added
- Watercourse (MNR)
- Waterbody
- Proposed Turbine Location
- Turbine Blade Length 30m Buffer
- Turbine Blade Length
- Proposed Culvert
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area

Notes

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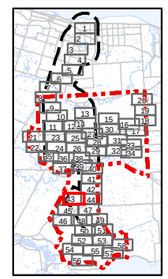

Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

Figure No.
3.43

Title
Water Bodies
Figure 3.43
Revised

621500 622000 622500 623000 623500 624000

4755500 4755000 4754500

Modified Alternate Transmission Route

Highway 3

Buckner Road

Wellandport Road

Hendershot Road

Townline Dunnville Wainfleet

Jenny Jump Road

11-3

70-1

T013-3

69-1

TO13-4

71-1

T065-1

South Transformer

T65

12-2

N

0 150 300 m

1:7,500

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Revised: 2016-03-31 By: bcowper

March, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- Preferred Transmission Line Route (REA)
- Alternate Tranmission Route
- Modified Alternate Transmission Route
- 120m Zone of Investigation
- Area Added
- Watercourse (MNR)
- Waterbody
- Non-waterbody
- Proposed Turbine Location
- Turbine Blade Length 30m Buffer
- Turbine Blade Length
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Transformer Substation
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area

Notes

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Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

Figure No.
3.47

Title
Water Bodies
Figure 3.47
Revised

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Revised: 2016-02-12 By: bcowper

620500 621000 621500 622000 622500 623000

4748000 4747500 4747000

T05
T005-2
T005-2
MM_South
T005-1
80-1
Bird Road
Dickhout Road
Townline Road
Rymer Road
King Road
N
0 150 300 m
1:7,500

February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Area Added
- Watercourse (MNR)
- Waterbody
- Non-waterbody
- Proposed Turbine Location
- Turbine Blade Length 30m Buffer
- Turbine Blade Length
- Proposed Culvert
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area

Notes

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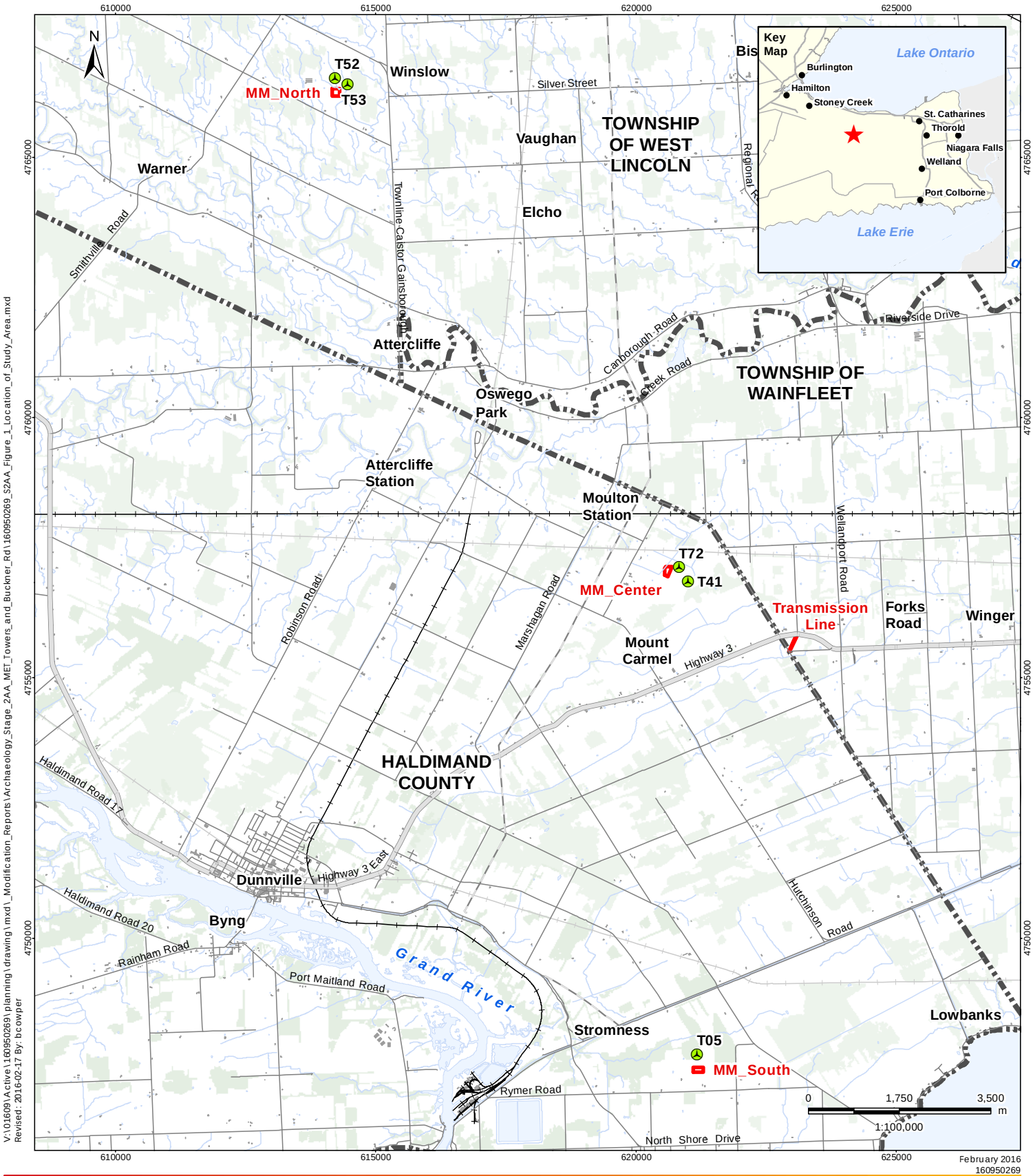
Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm
Water Assessment and Waterbody Report

Figure No.
3.56

Title
Water Bodies
Figure 3.56
Revised

Updated Figures for the Stage 2 Archaeological Assessment



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Revised: 2016-02-17 By: bcowper

February 2016
160950269

Stantec

Legend

- Study Area
- Proposed Turbine Location
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier

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, 2013.

Client/Project

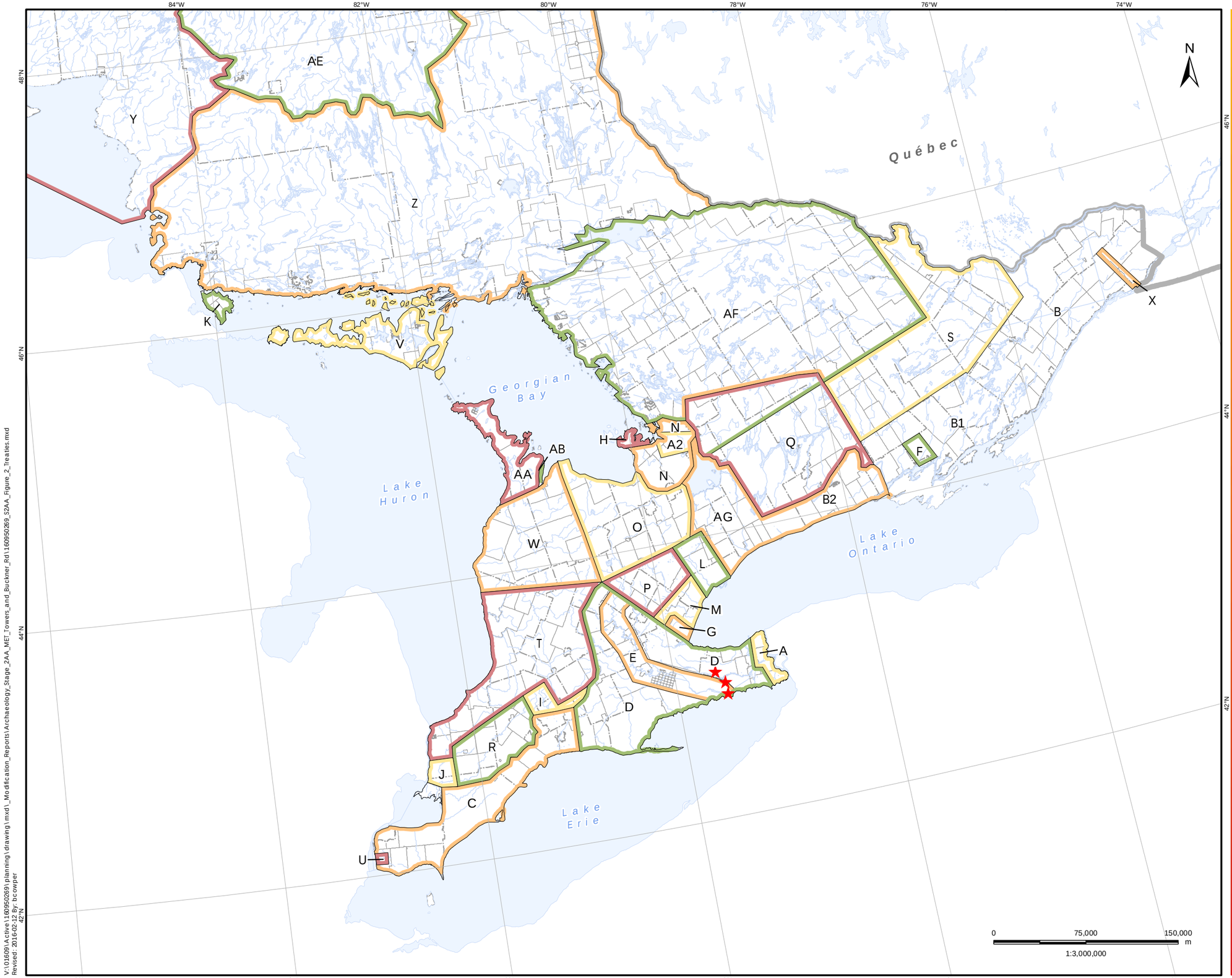
FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

1

Title

Location of Study Areas



Stantec

Legend

- Study Area
- Municipal Boundary - Upper Tier
- Municipal Boundary - Lower or Single Tier
- Watercourse
- Waterbody

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2 John Collins' Purchase, 1785 (Chippewa)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract:from the Crown to the Mohawk, 1793
F Tyendinaga:from the Crown to theMohawk, 1793
G Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
U Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No.16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AF Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG Williams Treaty, October 31st, 1923 (Chippewa)

Notes

1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.
3. Treaty boundaries adapted from MNR July 1980, based on map compiled by J.L. Morris 2 March 1943. For cartographic representation only.

February 2016
160950269

Client/Project

Niagara Region Wind Corporation
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

2

Title

Treaties and Purchases
(Adapted from Morris 1943)

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Archaeology_Stage_2AA_MET_Towers_and_Buckner_Rd\160950269_S2AA_Figure_2_Treaties.mxd
Revised: 2016-02-12 By: bcowper

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Revised: 2016-02-18 By: bcowper

February 2016
160950269

Stantec

Legend

Study Property

Client/Project

FWRN-LP (formerly Niagara Region Wind Corporation)
Niagara Region Wind Farm

Figure No.

3

Title

Portion of 1876 Historic Map of Caistor Township

Notes

1. Historic Map reference: Page, H.R. and Co. 1876. Illustrated Historical Atlas of the Counties of Lincoln and Welland, Ontario. Toronto: H.R. Page and Co.
2. Not to Scale.

V:\01609\Active\160950269\ planning\ drawing\ mxd\ _Modification_Reports\Archaeology_Stage_2AA_MEI_Towers_and_Buckner_Rd\160950269_S2AA_Figure_4_Moulton_Historic_Map.mxd
Revised: 2016-02-18 By: bcowper

February 2016
160950269

Stantec

Legend

Study Property

Notes

1. Historic Map reference: Illustrated Historical Atlas of the County of Haldimand, Ont. Toronto: H.R. Page & Co., 1879.
2. Not to Scale

Client/Project

FWRN-LP (formerly Niagara Region Wind Corporation)
Niagara Region Wind Farm

Figure No.

4

Title

Portion of 1879 Historic Map of Moulton and Sherbrooke Townships

V:\01609\Active\160950269\ planning\ drawing\ mxd\ _Modification_Reports\Archaeology_Stage_2AA_MEI_Towers_and_Buckner_Rd\160950269_S2AA_Figure_5_Wainfleet_Historic_Map.mxd
Revised: 2016-02-18 By: bcowper

February 2016
160950269

Stantec

Legend

Study Area

Notes

1. Historic Map reference: Page, H.R. and Co. 1876. Illustrated Historical Atlas of the Counties of Lincoln and Welland, Ontario. Toronto: H.R. Page and Co.
2. Not to Scale.

Client/Project

FWRN-LP (formerly Niagara Region Wind Corporation)
Niagara Region Wind Farm

Figure No.

5

Title

Portion of 1876 Historic Map of Wainfleet Township

614000

614500

N

T53

MM_North

1

2

0 30 60 m

1:1,750

614000

614500

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Archaeology_Stage_2AA_MET_Towers_and_Buckner_Rd\160950269_S2AA_Figure_6-9_Survey_Methods_Results.mxd
Revised: 2016-02-17 By: bcowper

February 2016
160950269

Stantec

Legend

- Study Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Stage 2 Assessment

- Pedestrian Survey, at 5m Intervals
- Previously Surveyed (Stantec 2013)
- Photograph Location

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, 2010.
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Client/Project

FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.
6

DRAFT

Title

Stage 2 Results
MM_North

620500

621000

4757000

N

T72

3

4

MM_Center

T41

0 30 60 m

1:1,750

620500

621000

4757000

February 2016
160950269

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Archaeology_Stage_2AA_MET_Towers_and_Buckner_Rd\160950269_S2AA_Figure_6-9_Survey_Methods_Results.mxd
Revised: 2016-02-12 By: bcowper

Stantec

Legend

- Study Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Stage 2 Assessment

- Pedestrian Survey, at 5m Intervals
- Previously Surveyed (Stantec 2013)
- Photograph Location

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Client/Project

FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

7

DRAFT

Title

Stage 2 Results
MM_Center

621000

621500

4747500

MM_South

5

6

N

0 30 60 m

1:1,750

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Archaeology_Stage_2AA_MET_Towers_and_Buckner_Rd\160950269_S2AA_Figure_6-9_Survey_Methods_Results.mxd
Revised: 2016-02-12 By: bcowper

Stantec

Legend

- Study Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Stage 2 Assessment

- Pedestrian Survey, at 5m Intervals
- Previously Surveyed (Stantec 2013)
- Photograph Location

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

8

DRAFT

Title

Stage 2 Results
MM_South

February 2016
160950269

623000

Townline Dunnville Mainfect

Shatley Road

Highway 3

Buckner Road

8

7

N

0 40 80 m

1:2,000

4755500

623000

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Revised: 2016-02-17 by JoCarver

February 2016
160950269

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Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
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Legend
- Study Area
- Preferred Transmission Route (REA)
- Modified Alternate Transmission Route

Stage 2 Assessment
- Pedestrian Survey, at 5m Intervals
- Photograph Location

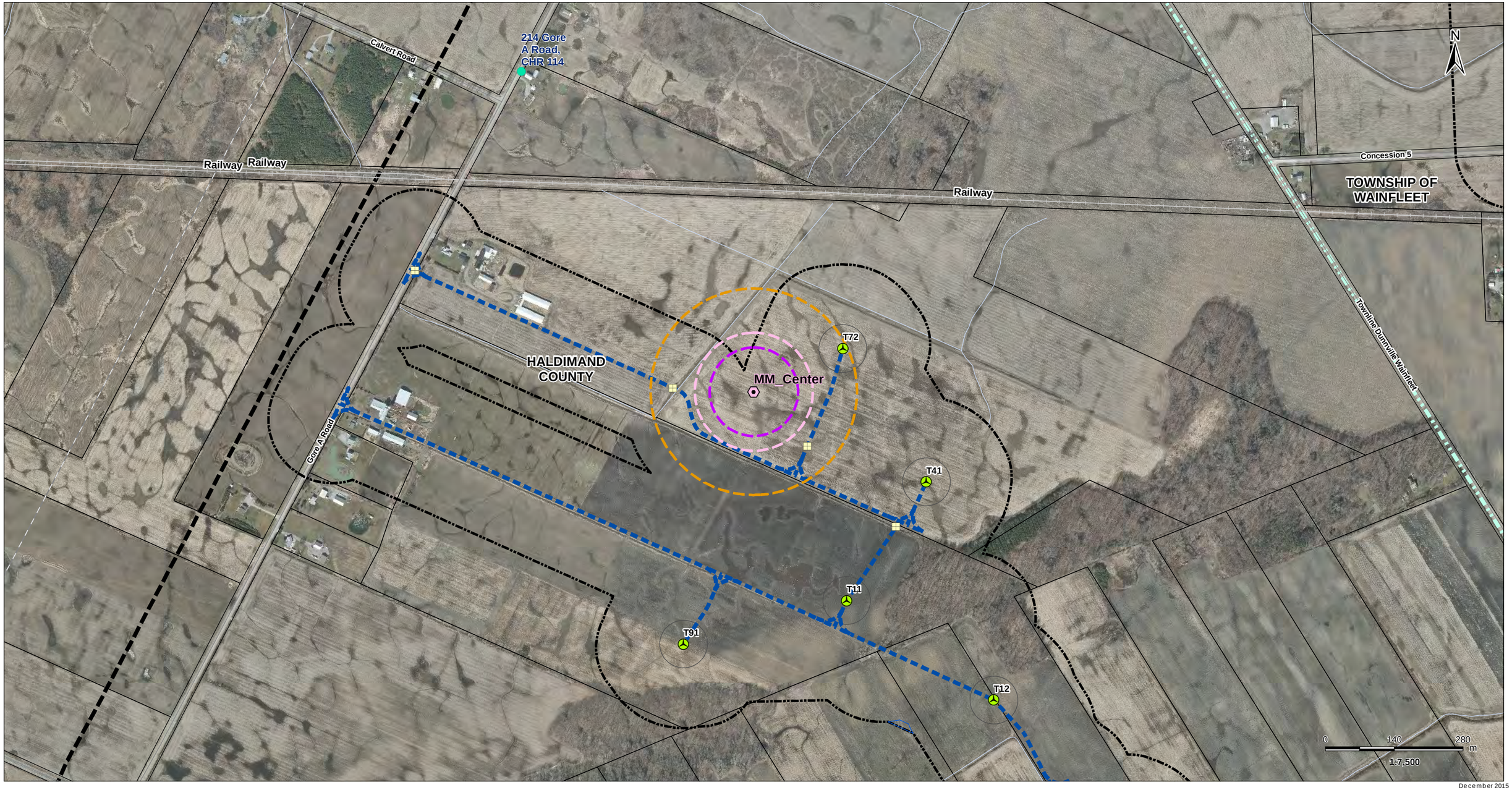
Client/Project
FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.
9

DRAFT

Title
Stage 2 Results
Transmission Line

Updated Figures for the Heritage Assessment Report



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Revised: 2015-12-11 By: bcowper

December 2015
160950269

Stantec

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, 2010.
3. Orthoimagery © First Base Solutions, 2010.

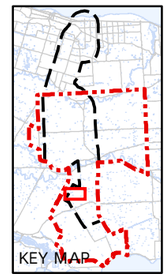
Legend

- Cultural Heritage Resource
- Proposed MET Tower Locations
- Proposed MET Tower 120m Buffer
- Proposed MET Tower Support Cables (90m)
- MET Tower Support Cables 120m Buffer
- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments
- Area Added

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Potential Access Road

Existing Features
- Road
- Abandoned Railway
- Existing Transmission Line
- Watercourse (MNR)
- Property Boundary
- Municipality Lower Tier

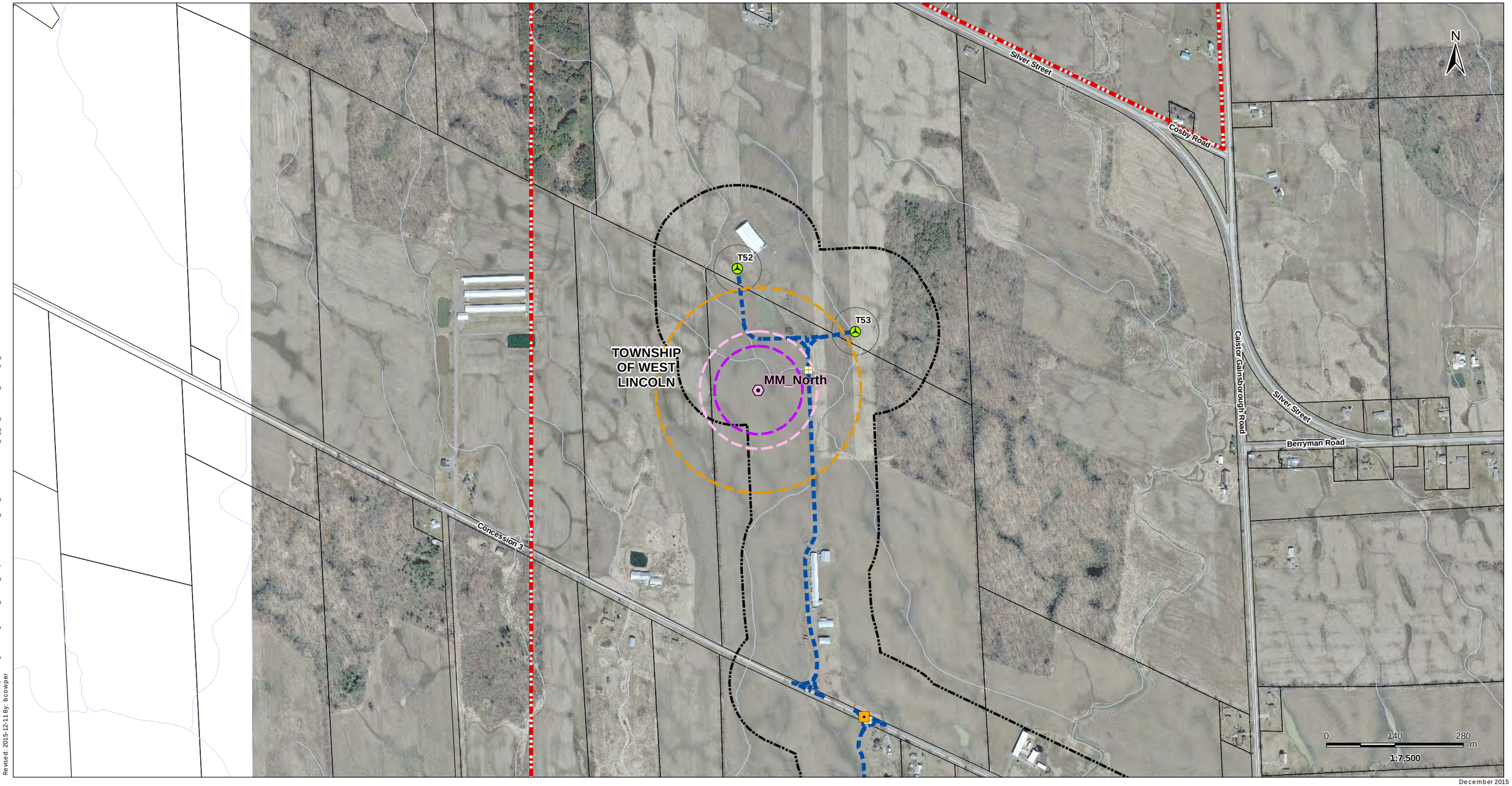


Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1.1

DRAFT

Title
Proposed MET and Heritage Resources



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Revised: 2015-12-11 By: bcowper

December 2015
160950269

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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, 2010.
3. Orthoimagery © First Base Solutions, 2010.

Legend

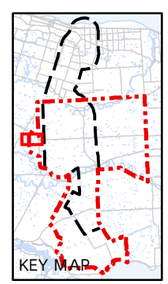
- Proposed MET Tower Locations
- Proposed MET Tower 120m Buffer
- Proposed MET Tower Support Cables (90m)
- MET Tower Support Cables 120m Buffer
- Project Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Potential Access Road

Existing Features

- Road
- Watercourse (MNR)
- Property Boundary



Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1.2

DRAFT

Title
Proposed MET and Heritage Resources

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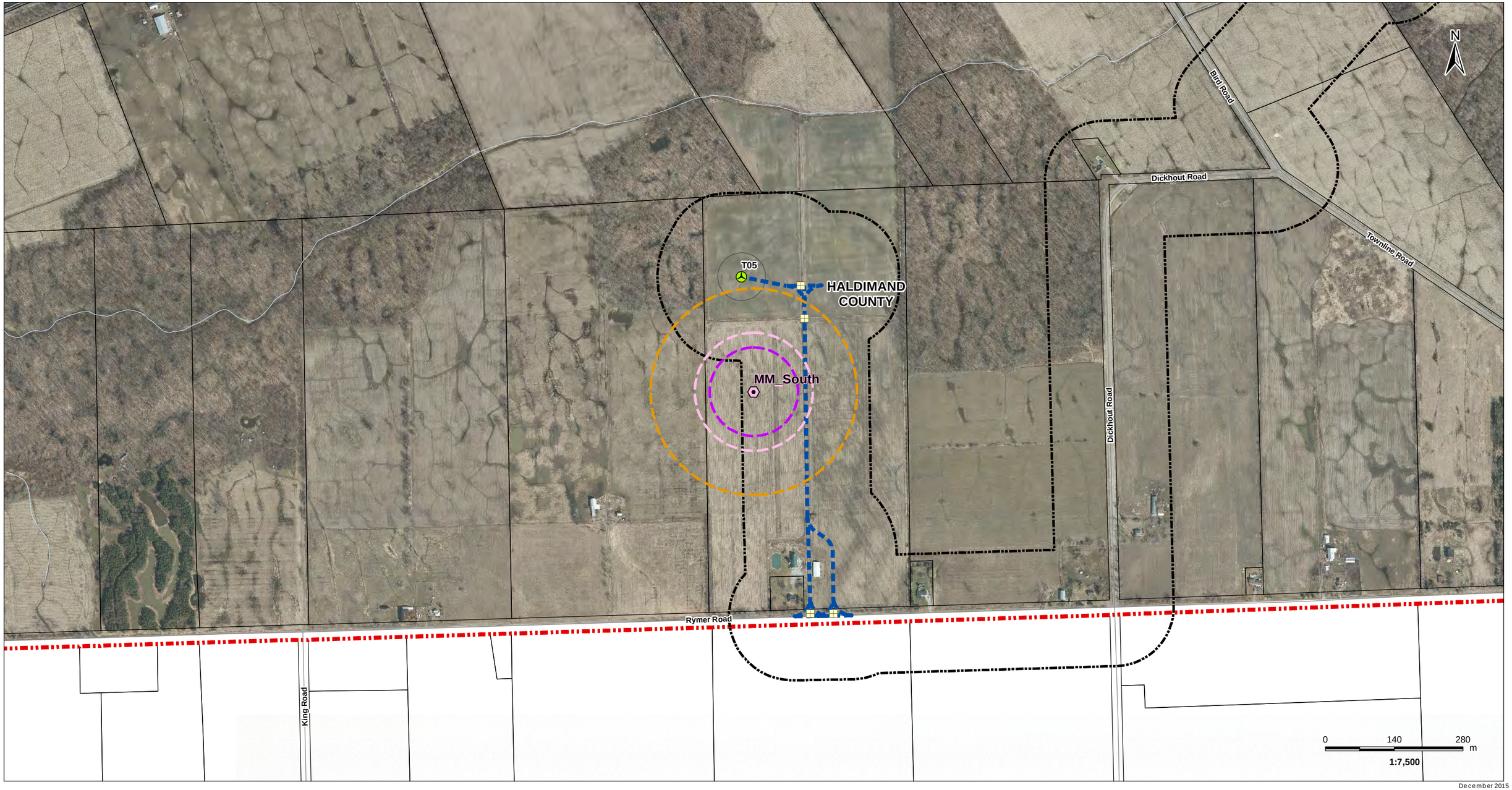
Revised: 2015-12-11 By: bcowper



December 2015
160950269

Stantec

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
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Legend

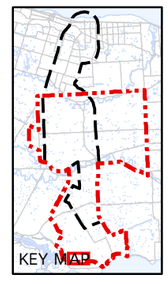
- Proposed MET Tower Locations
- Proposed MET Tower 120m Buffer
- Proposed MET Tower Support Cables (90m)
- MET Tower Support Cables 120m Buffer
- Project Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Potential Access Road

Existing Features

- Road
- Watercourse (MNR)
- Property Boundary

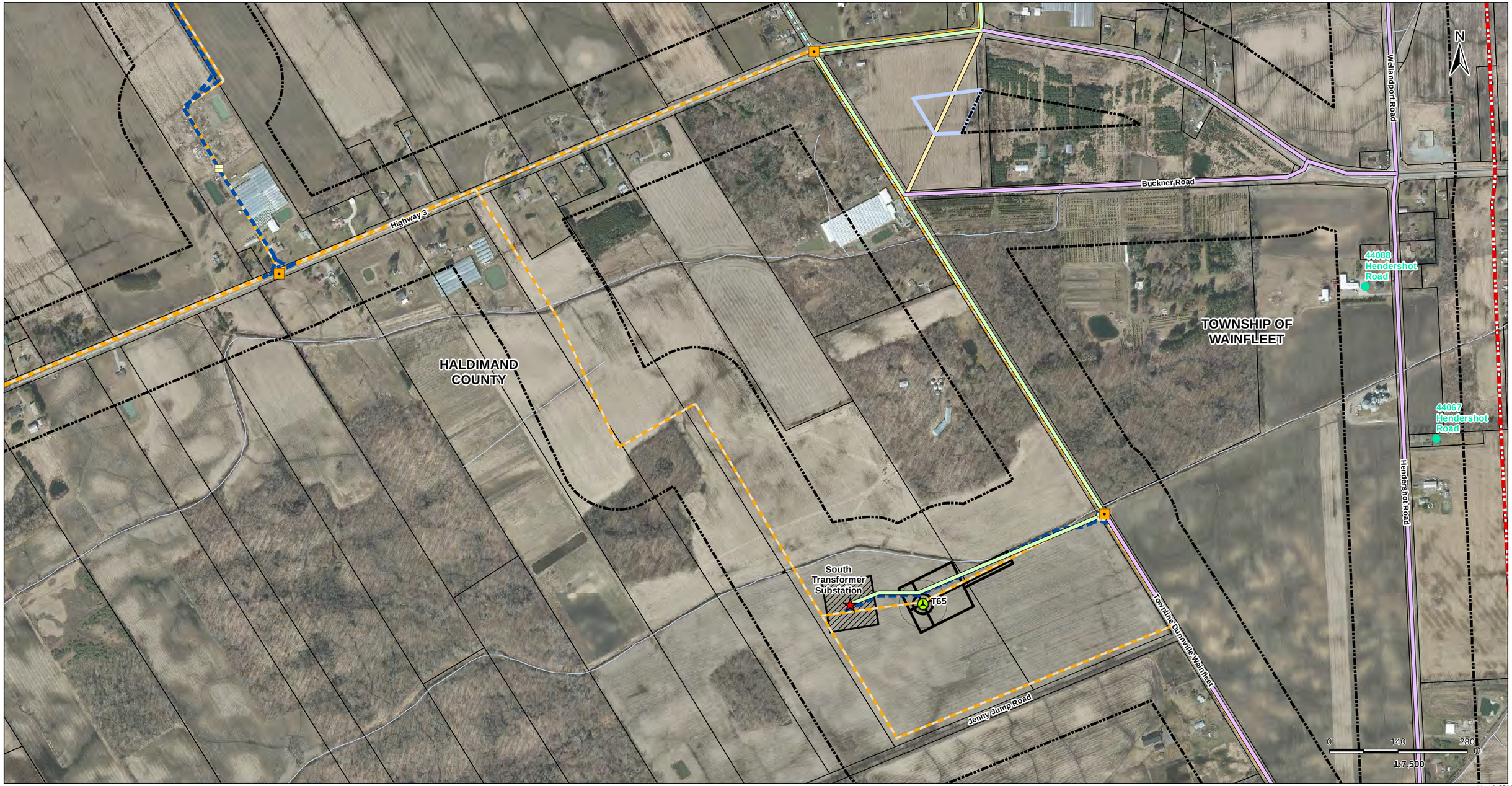


Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1.3

DRAFT

Title
Proposed MET and Heritage Resources



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Revised: 2016-03-31 By: bcowper

March 2016
160950269

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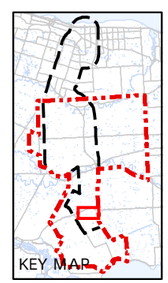
Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2010.
3. Orthoimagery © First Base Solutions, 2010.

Legend

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

Zone of Investigation Adjustments
- Area Added

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Modified Alternate Transmission Route
- Preferred Transmission Line Route (REA)
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Transformer Substation
- Roads
- Watercourse (MNR)
- Property Boundary
- Municipality Lower Tier



Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
2.3

Title
Identified Heritage Resources

Updated Figure for the Noise Assessment Report

615000 620000 625000 630000

4770000 4765000 4760000 4755000 4750000 4745000

Smithville
Spring Creek Road
TOWN OF LINCOLN
Pelham Union
N
Sixteen Road
Key Map
St. Anns
Silverdale
Rosedene
Victoria Avenue
TOWNSHIP OF WEST LINCOLN
Regional Road 20
TOWN OF PELHAM
MM_North
Winslow
Bismarck
Fenwick
Vaughan
Boyle
Elcho
Welland River
Wellandport
Canborough Road
Creek Road
Attercliffe
Oswego Park
Riverside Drive
Becketts Bridge
Robinson Road
Perry
Attercliffe Station
Moulton Station
MM_Center
HALDIMAND COUNTY
Forks Road
Winger
Mount Carmel
Highway 3 East
North Shore Drive
Grand River
Hutchinson Road
Port Maitland Road
Rymer Road
Stromness
MM_South
Lowbanks
Lakeshore Road
Station Road
Willow Bay
Long Beach
Lake Erie
Port Maitland

Site Location Map
Lake Ontario
Burlington
Hamilton
Stoney Creek
St. Catharines
Thorold
Niagara Falls
Welland
Port Colborne
Lake Erie

0 2,000 4,000 m
1:80,000

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Revised: 2016-02-17 By: bcowper

February 2016
160950269

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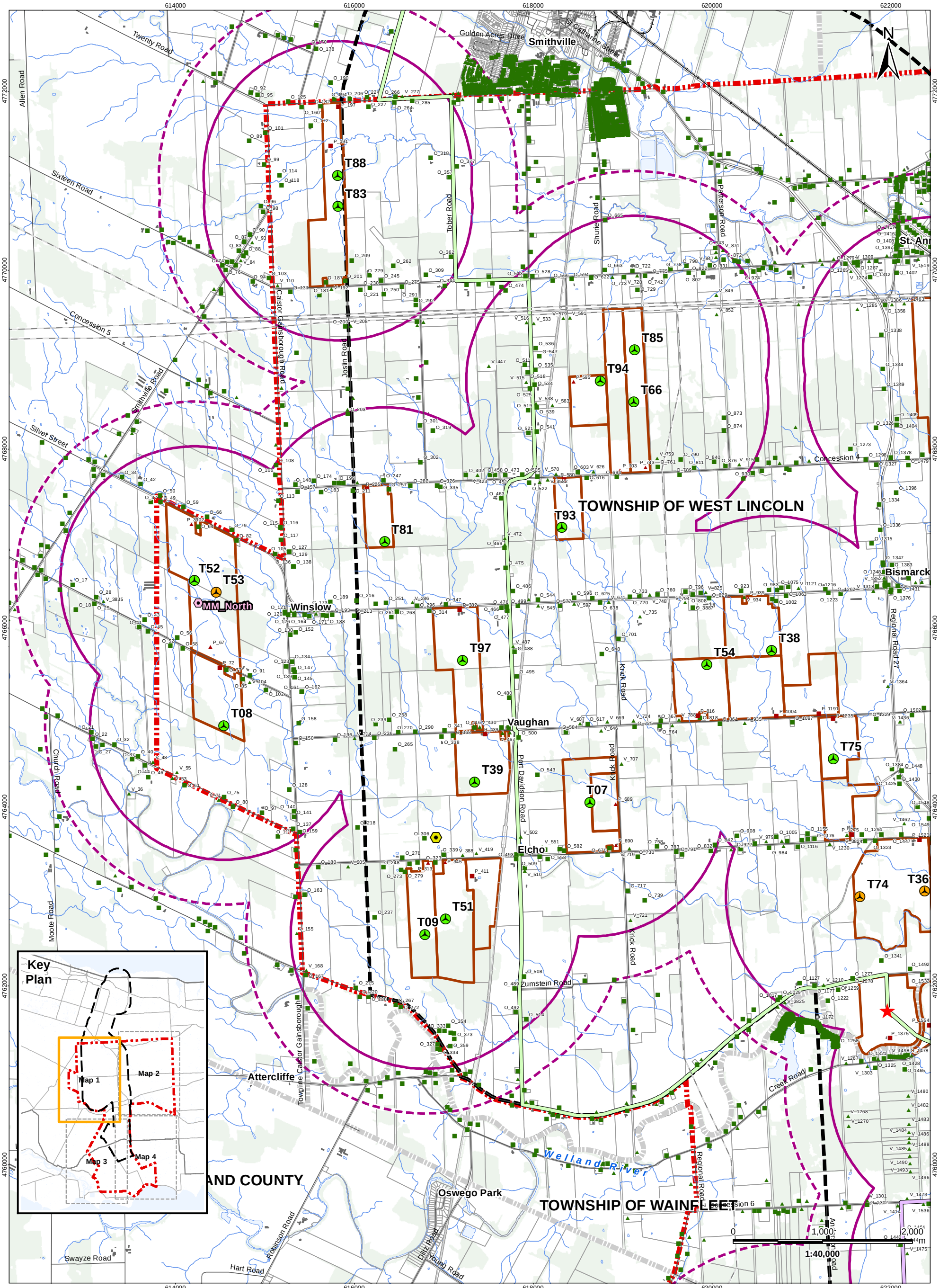
Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2011.

Legend
- Project Study Area
- Interconnector Study Area
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Participating Noise Receptors: Occupied
- Participating Noise Receptors: Vacant
- Non-participating Noise Receptors: Occupied
- Non-participating Noise Receptors: Vacant

Client/Project
FWRN LP
Niagara Region Wind Farm
Acoustic Assessment Report

Figure No.
1.1

Title
Study Area Overview



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Revised: 2016-04-06 By: bcowper

Stantec

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.
3. Scenario 1 – T36, T46, T53 are E82 model at hub height 135 metre; T18, T45, T47, T55, T60 and T74 are E101 model at hub height 135 metre and the rest are E101 model at hub height 124 metre.
   Scenario 2 - T36, T46, T53 are E82 model at hub height 135 metre; and the rest are E101 model at hub height 135 metre.

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location - E101 3.0 MW
- Proposed Turbine Location - E101 2.9 MW G2/G3
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- 1.5 km Radius from Proposed Turbine Centre Point
- 2km Radius from Proposed Turbine Centre Point
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Municipal Boundary
- Preferred Transmission Line Route (REA)
- Alternate Transmission Line Route (REA)
- Modified Alternate Transmission Route

Participating Noise Receptors
- Occupied
- Vacant

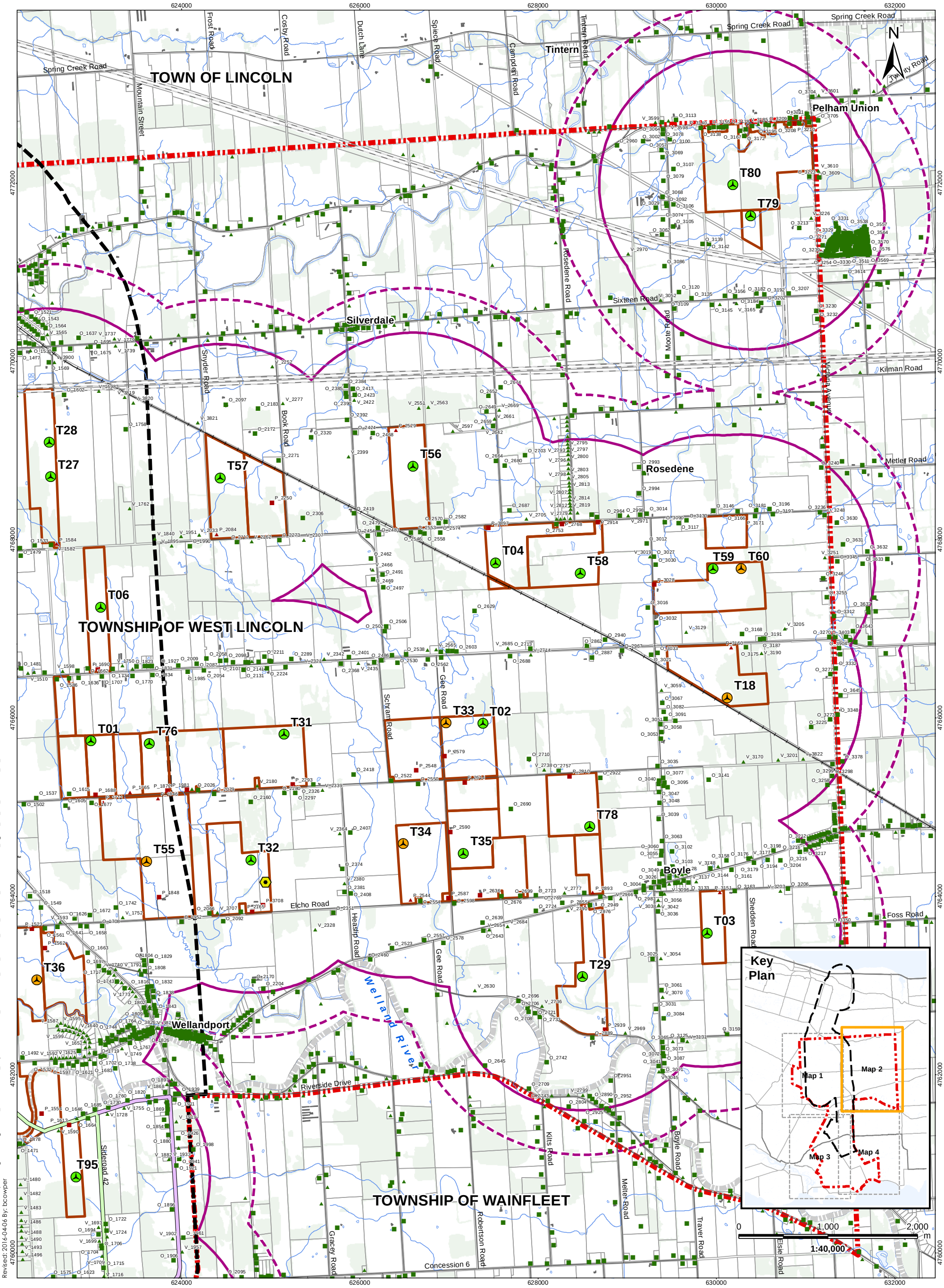
Non-participating Noise Receptors
- Occupied
- Vacant

April 2016
160950269

Client/Project
FWRN LP
Niagara Region Wind Farm
Acoustic Assessment Report

Figure No.
2.1a

Title
Locations of Project Infrastructure within Study Area: Map 1 of 4



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Revised: 2016-04-06 By: bcowper

Stantec

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.
3. Scenario 1 – T36, T46, T53 are E82 model at hub height 135 metre; T18, T45, T47, T55, T60 and T74 are E101 model at hub height 135 metre and the rest are E101 model at hub height 124 metre.
   Scenario 2 - T36, T46, T53 are E82 model at hub height 135 metre; and the rest are E101 model at hub height 135 metre.

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location - E101 3.0 MW
- Proposed Turbine Location - E101 2.9 MW G2/G3
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- 1.5 km Radius from Proposed Turbine Centre Point
- 2km Radius from Proposed Turbine Centre Point
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Municipal Boundary
- Preferred Transmission Line Route (REA)
- Alternate Transmission Line Route (REA)
- Modified Alternate Transmission Route

Participating Noise Receptors
- Occupied
- Vacant

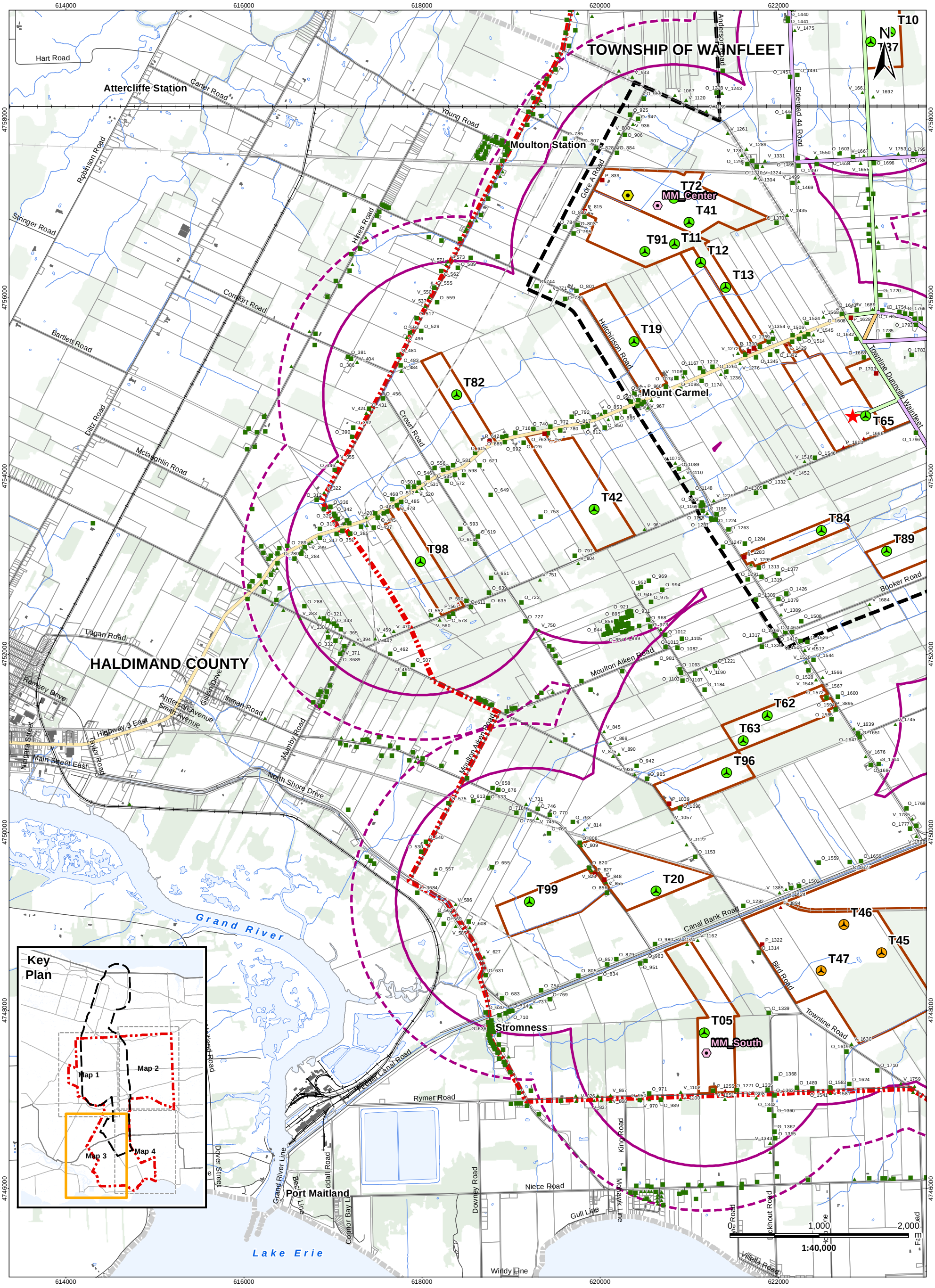
Non-participating Noise Receptors
- Occupied
- Vacant

April 2016
160950269

Client/Project
FWRN LP
Niagara Region Wind Farm
Acoustic Assessment Report

Figure No.
2.1b

Title
Locations of Project Infrastructure within Study Area: Map 2 of 4



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Revised: 2016-04-06 By: bcowper

Stantec

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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3. Scenario 1 – T36, T46, T53 are E82 model at hub height 135 metre; T18, T45, T47, T55, T60 and T74 are E101 model at hub height 135 metre and the rest are E101 model at hub height 124 metre.
   Scenario 2 - T36, T46, T53 are E82 model at hub height 135 metre; and the rest are E101 model at hub height 135 metre.

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location - E101 3.0 MW
- Proposed Turbine Location - E101 2.9 MW G2/G3
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- 1.5 km Radius from Proposed Turbine Centre Point
- 2km Radius from Proposed Turbine Centre Point
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Municipal Boundary
- Preferred Transmission Line Route (REA)
- Alternate Transmission Line Route (REA)
- Modified Alternate Transmission Route

Participating Noise Receptors
- Occupied
- Vacant

Non-participating Noise Receptors
- Occupied
- Vacant

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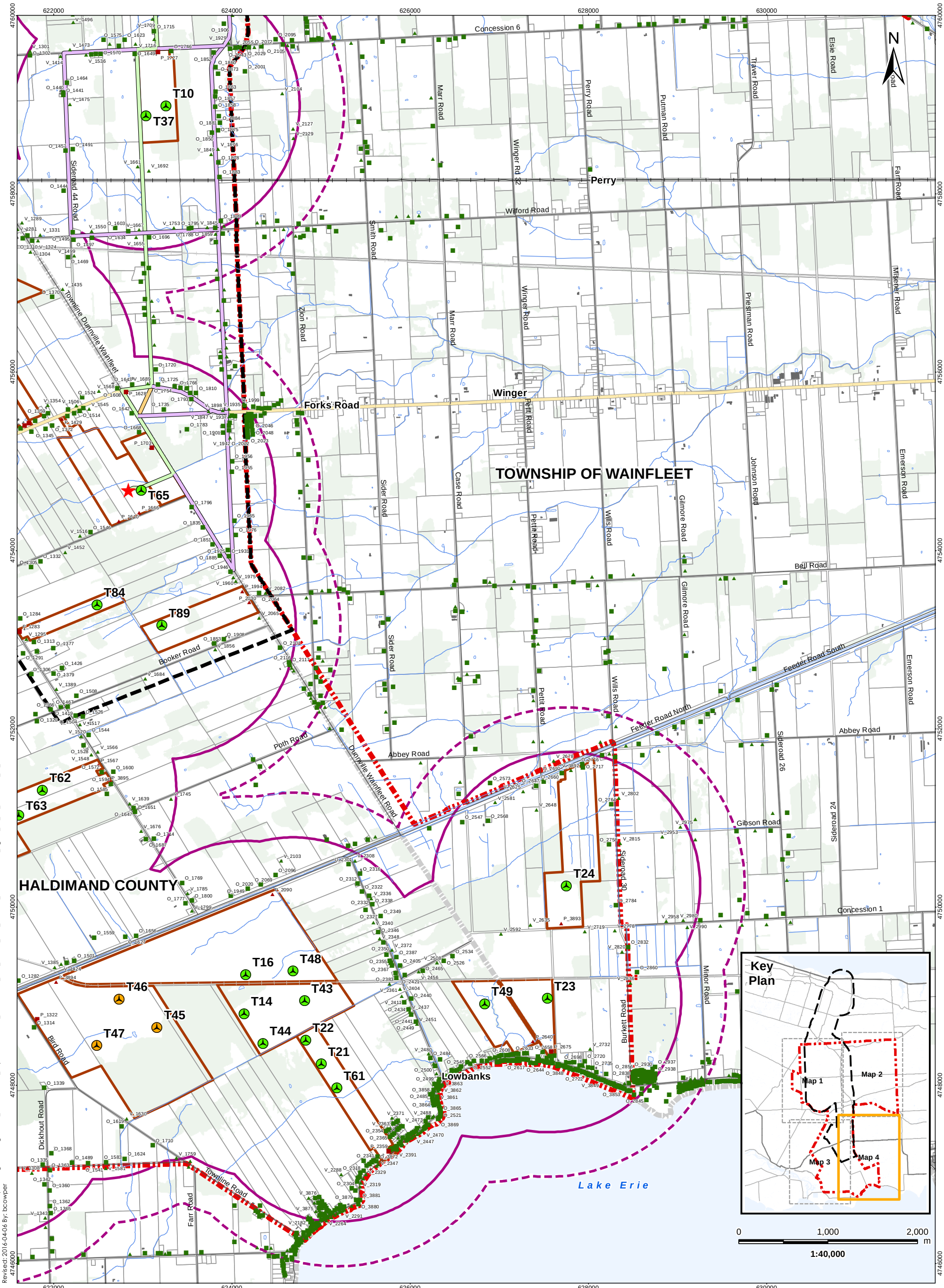
FWRN LP
Niagara Region Wind Farm
Acoustic Assessment Report

April 2016
160950269

Figure No.
2.1c

Title
Locations of Project Infrastructure within Study Area: Map 3 of 4



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Revised: 2016-04-06 By: bcowper

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Notes

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3. Scenario 1 – T36, T46, T53 are E82 model at hub height 135 metre; T18, T45, T47, T55, T60 and T74 are E101 model at hub height 135 metre and the rest are E101 model at hub height 124 metre.
   Scenario 2 - T36, T46, T53 are E82 model at hub height 135 metre; and the rest are E101 model at hub height 135 metre.

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location - E101 3.0 MW
- Proposed Turbine Location - E101 2.9 MW G2/G3
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- 1.5 km Radius from Proposed Turbine Centre Point
- 2km Radius from Proposed Turbine Centre Point
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Transmission Line
- Existing Structures
- Watercourse
- Waterbody
- Wooded Area
- Municipal Boundary
- Preferred Transmission Line Route (REA)
- Alternate Transmission Line Route (REA)
- Modified Alternate Transmission Route

Participating Noise Receptors
- Occupied
- Vacant

Non-participating Noise Receptors
- Occupied
- Vacant

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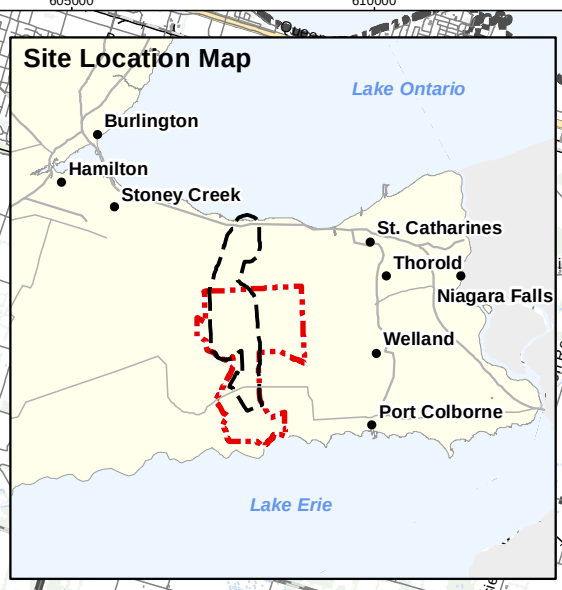
Figure No.
2.1d

Title
Locations of Project Infrastructure within Study Area: Map 4 of 4



605000 610000 615000 620000 625000 630000 635000

4785000 4780000 4775000 4770000 4765000 4760000 4755000 4750000 4745000

N

Lake Ontario

TOWN OF GRIMSBY

TOWN OF LINCOLN

TOWNSHIP OF WEST LINCOLN

TOWN OF PELHAM

TOWNSHIP OF WAINFLEET

HALDIMAND COUNTY

Olive Street
Livingston Avenue
Main Street West
Lake Street
Main Street East
South Service Road
QEW Highway
Greenlane
John Street
Ridge Road East
Elm Tree Road
Kemp Road West
Elmtree Road East
Kemp Road East
Mud Street
Mountain Road
Mountain Street
Russ Road
Church Road
Park Road South
Thirty Road
Walker Road
Mountainview Road
Ontario Street
King Street
Bartlett Road
Sann Road
Tufford Road
Merritt Road
Maple Grove Road
Quarry Road
Hillside Drive
Victoria Avenue
Nineteenth Street
Jordan Road
Fourth Avenue
Fly Road
Glen Road
Philip Road
Mountain Road
Moutain Street
Campden Road
Eighth Avenue
Pelham Road
Centre Street
Grassie
Regional Road 20
Grimsby Road
Young Street
Spring Creek Road
Slayton Street
Silver Street
Sixteen Road
Cream Street
Balfour Street
Canboro Road
Welland Road
Foss Road
Caistorville Road
Smithville Road
Canborough Road
Dunnville Road
Highway 3
Webber Road
Riverside Drive
Victoria Avenue
Robinson Road
Forks Road
Haldimand Road 17
Haldimand Road 20
Rainham Road
Haldimand Road 49
Highway 3 East
Grand River
Port Maitland Road
Rymer Road
Concession 1
Lakeshore Road
Lake Erie
Welland River

0 2,000 4,000 m
1:125,000

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Revised: 2016-04-06 By: bcowper

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Notes
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Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location - E101 3.0 MW
- Proposed Turbine Location - E101 2.9 MW G2/G3
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- 5km Buffer from Proposed Turbine Locations
- Sound Level Contours (40 dBA)
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Waterbody
- Wooded Area
- Municipality Lower Tier

Participating Noise Receptors
- Occupied
- Vacant

Non-participating Receptors
- Occupied
- Vacant

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

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Figure No.
6.1

Title
Predicted Equivalent Sound Level Contours (Cumulative Effects - Day/Nighttime Hours)

615000 620000 625000 630000

4770000 4765000 4760000 4755000 4750000 4745000

TOWN OF LINCOLN
Twenty Road
Twenty Mile Road
Pelham Union
Smithville
Townline Road
St Catharines Street
Smithville Road
Regional Road 569
St. Anns
Silverdale
Sixteen Road
Caistor Gainsborough Road
Rosedene
TOWNSHIP OF WEST LINCOLN
Silver Valley Street
Bismarck
Regional Road 20
TOWN OF PELHAM
Winslow
Silver Street
Regional Road 27
Victoria Avenue
Vaughan
Canboro Road
Fenwick
Townline Caistor Gainsborough
Boyle
Regional Road 63
Elcho
Canborough Road
Foss Road
Welland River
Wellandport
Riverside Drive
Creek Road
Wellandport Road
Attercliffe
Webber Road
Regional Road 7
Oswego Park
Becketts Bridge
Victoria Avenue
Robinson Road
Attercliffe Station
Perry
Moulton Station
Marshagan Road
Forks Road
Highway 3
Winger
TOWNSHIP
Mount Carmel
HALDIMAND COUNTY
Hutchinson Road
Highway 3 East
Grand River
Port Maitland Road
Stromness
Rymer Road
Grand River Line
Port Maitland
North Shore Drive
Lowbanks
Lakeshore Road
Willow Bay
Station Road
Long Beach
Lake Erie
Concession 1
Highway 3

Site Location Map
Lake Ontario
Burlington
Hamilton
Stoney Creek
St. Catharines
Thorold
Niagara Falls
Welland
Port Colborne
Lake Erie

0 2,000 4,000 m
1:80,000

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Revised: 2016-02-16 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location - E101 3.0 MW
- Proposed Turbine Location - E101 2.9 MW G2/G3
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Greenbelt
- Deer Wintering Yard (MNR)

Vegetation Communities

- Open Water
- Open Rock/Shrub Rock Barren
- Shoreline
- Bluff
- Wetlands
- Cultural
- Woodland
- Treed Agriculture

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Notes

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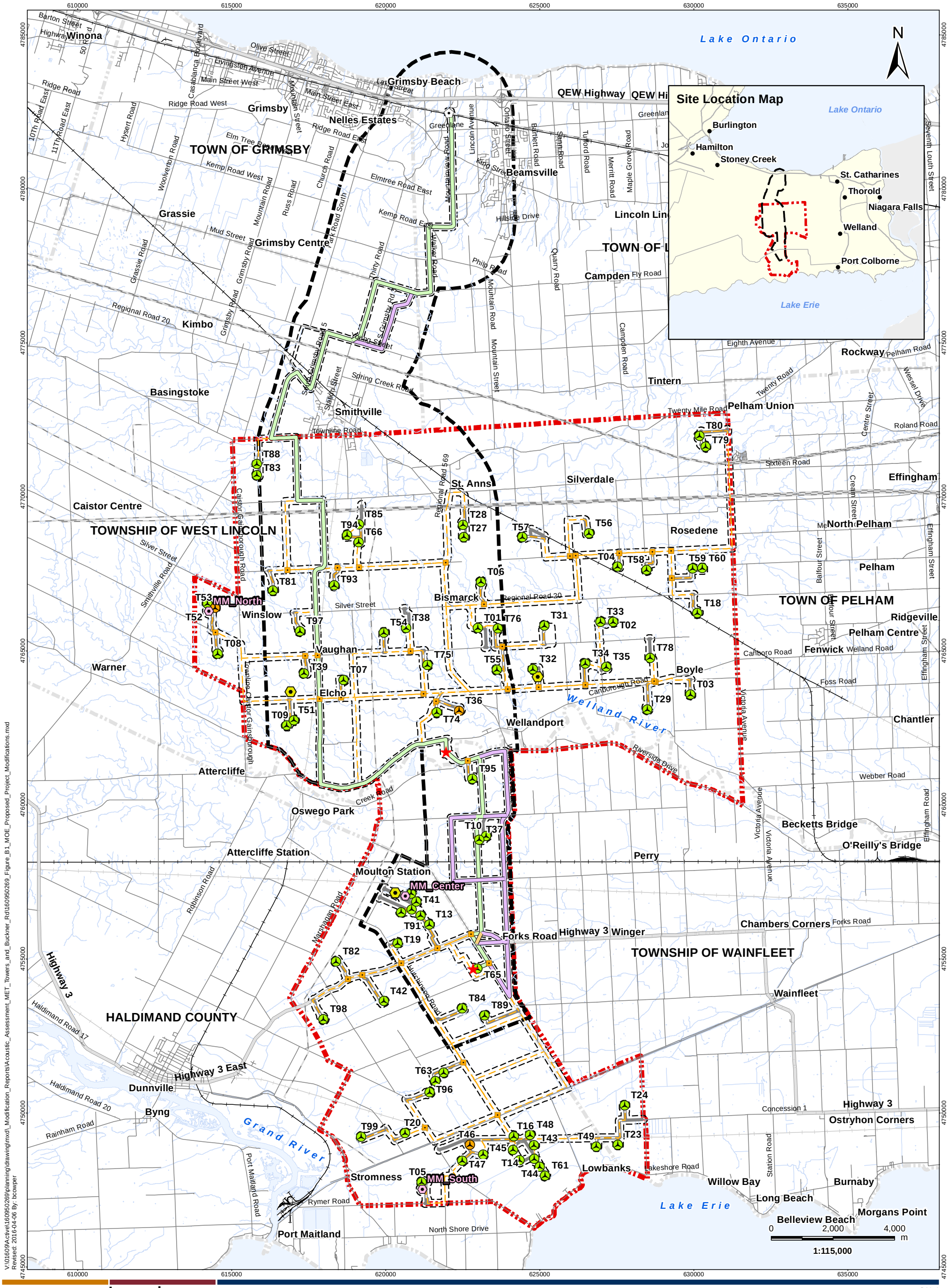
Figure No.
A1

Title
Natural Land Uses



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Revised: 2016-04-06 By: bcowper

Legend

Notes

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   Scenario 2 - T36, T46, T53 are E82 model at hub height 135 metre; and the rest are E101 model at hub height 135 metre

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Figure No.
B1

Title
Project Component Layout - Revised

Updated Figures for the Environmental Effects Monitoring Plan

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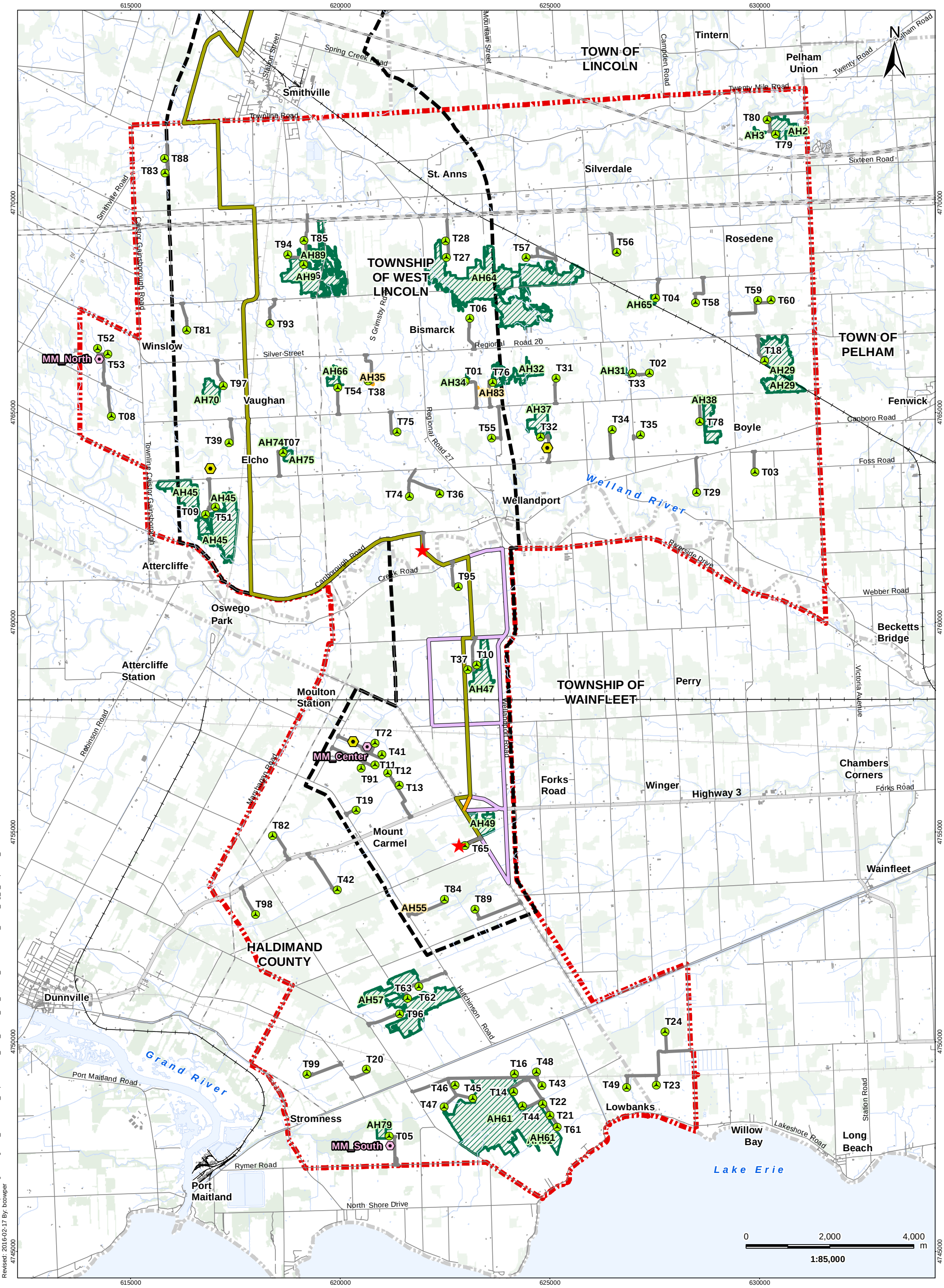

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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Significant Woodland Amphibian Breeding Habitat - All Requiring Pre-construction Survey
- Significant Wetland Amphibian Breeding Habitat - All Requiring Pre-construction Survey

Notes

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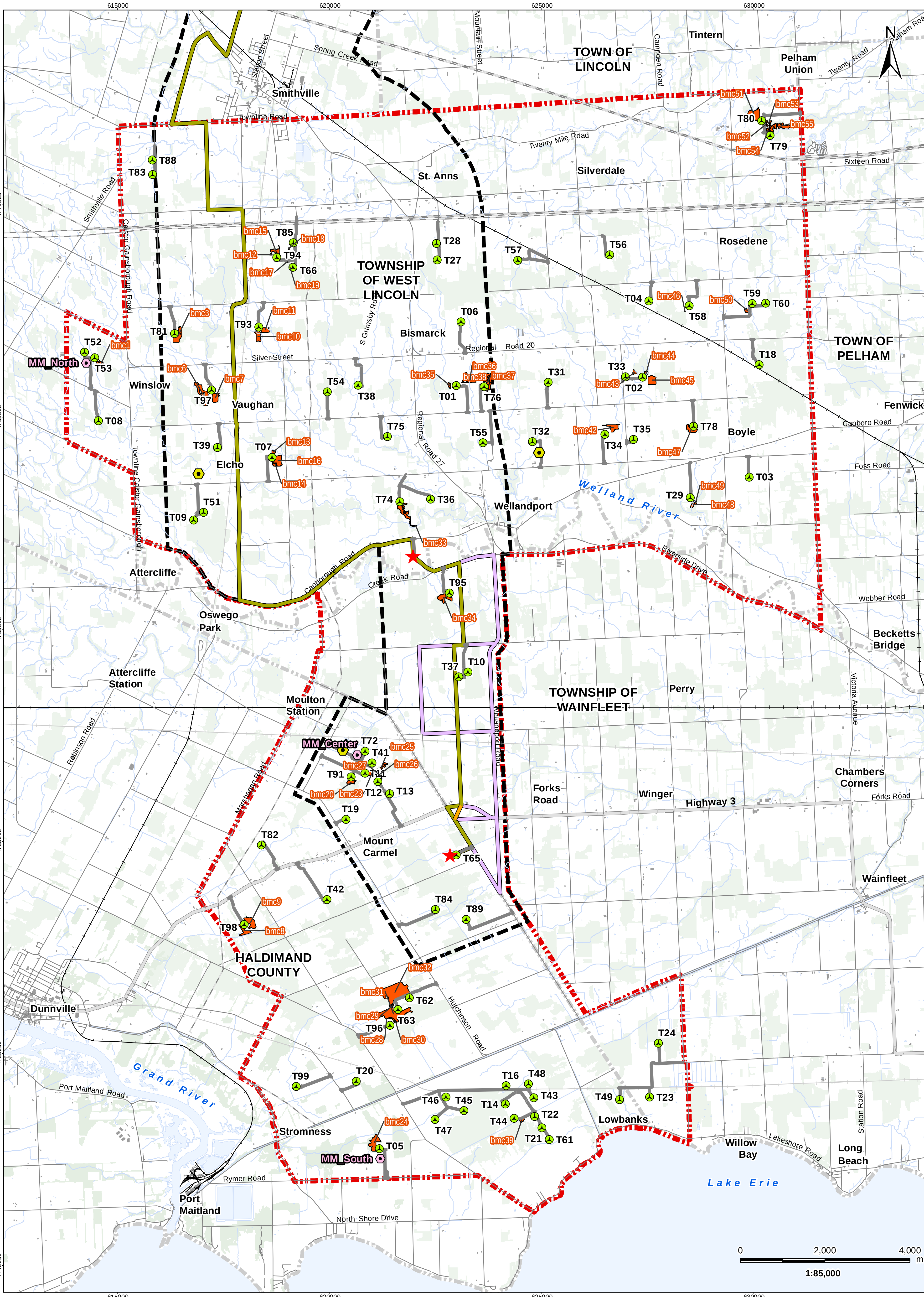
Figure No.
1

Title
Amphibian Habitats



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Bat Maternity Colonies - All Requiring Pre-construction Survey

Notes

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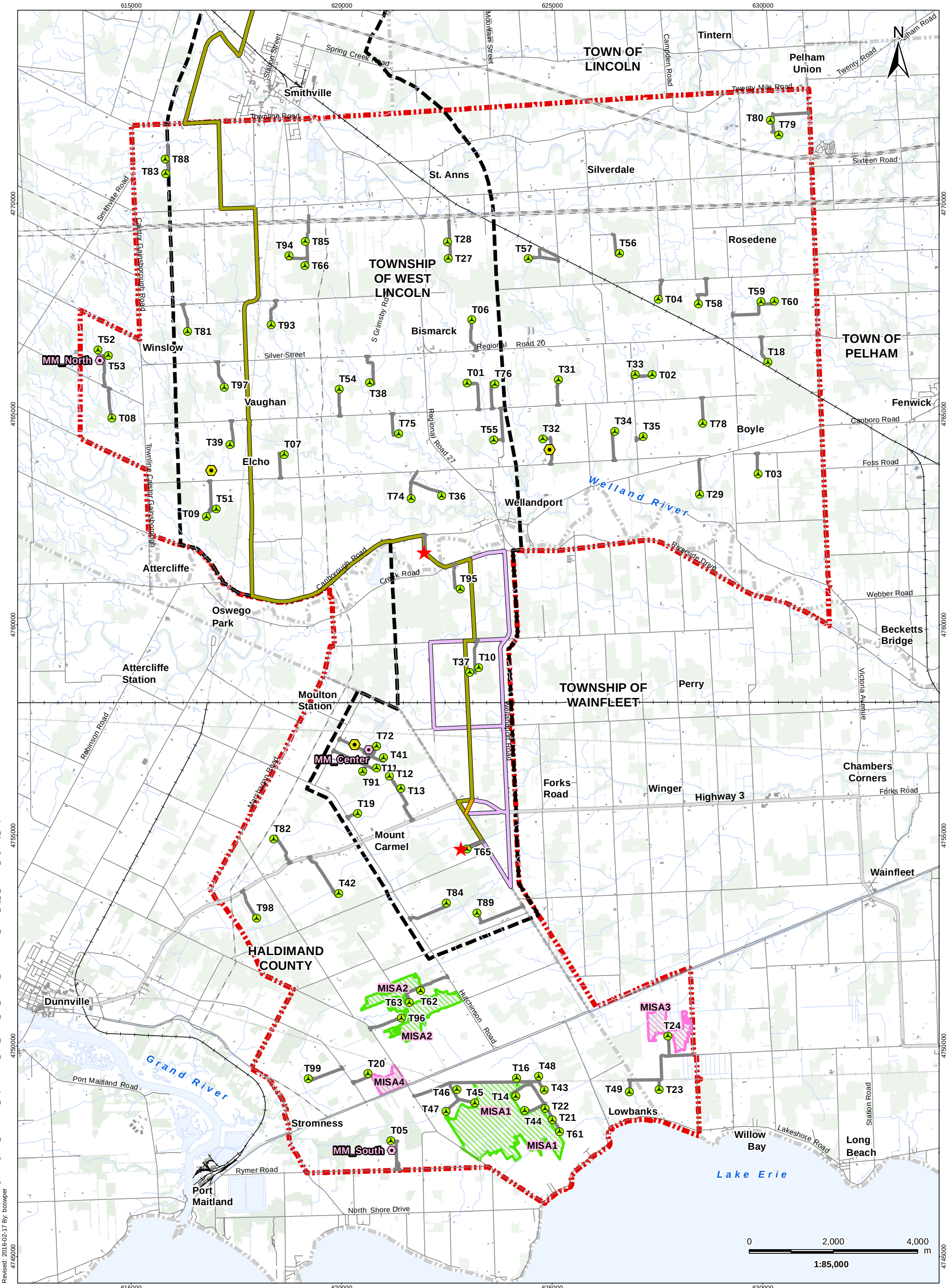
Figure No.

2

Title

Bat Maternity Colonies



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse

Notes

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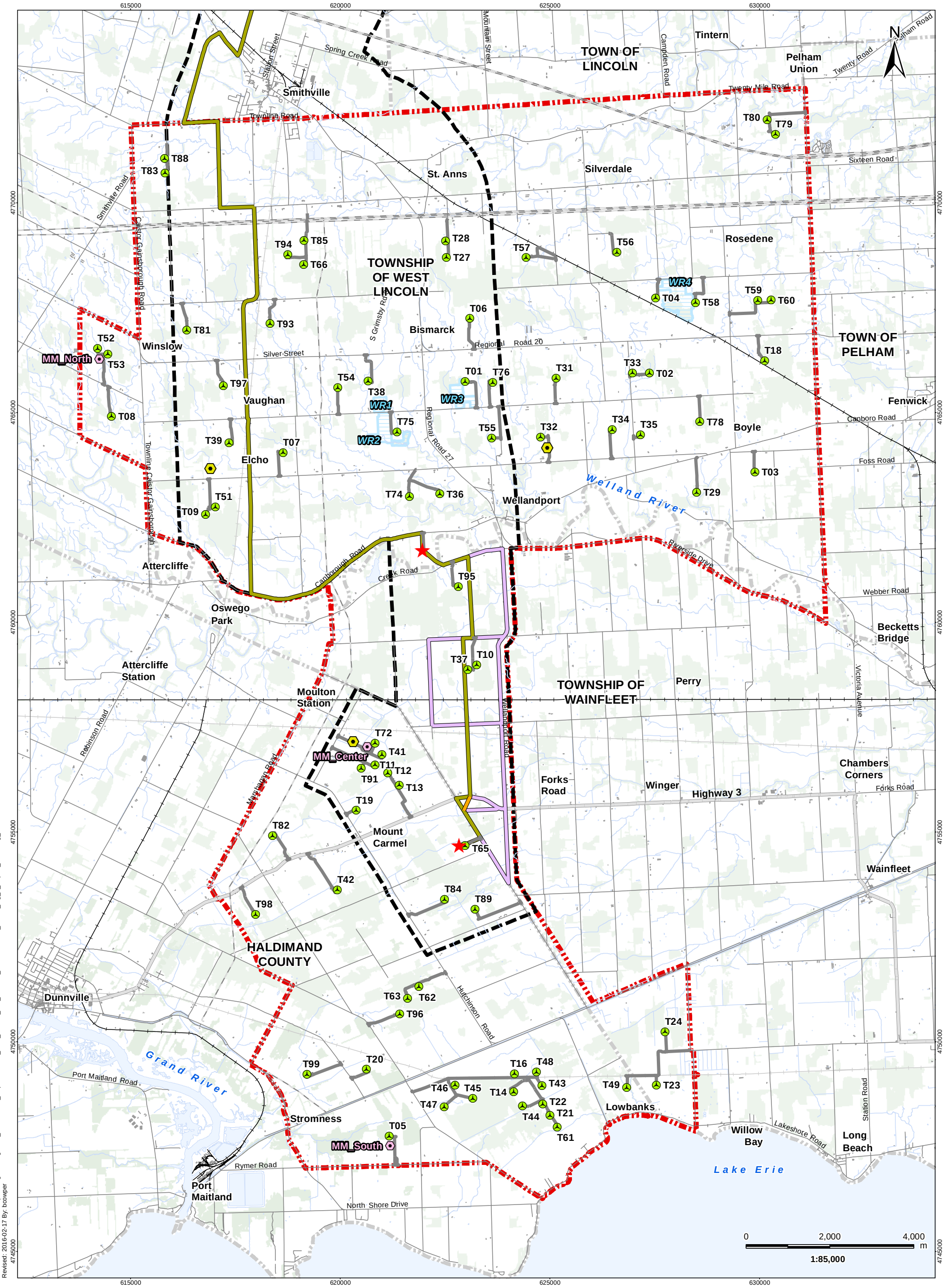
Figure No.
3

Title
Landbird Migratory Stopover



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Raptor Wintering Areas - All Significant

Notes

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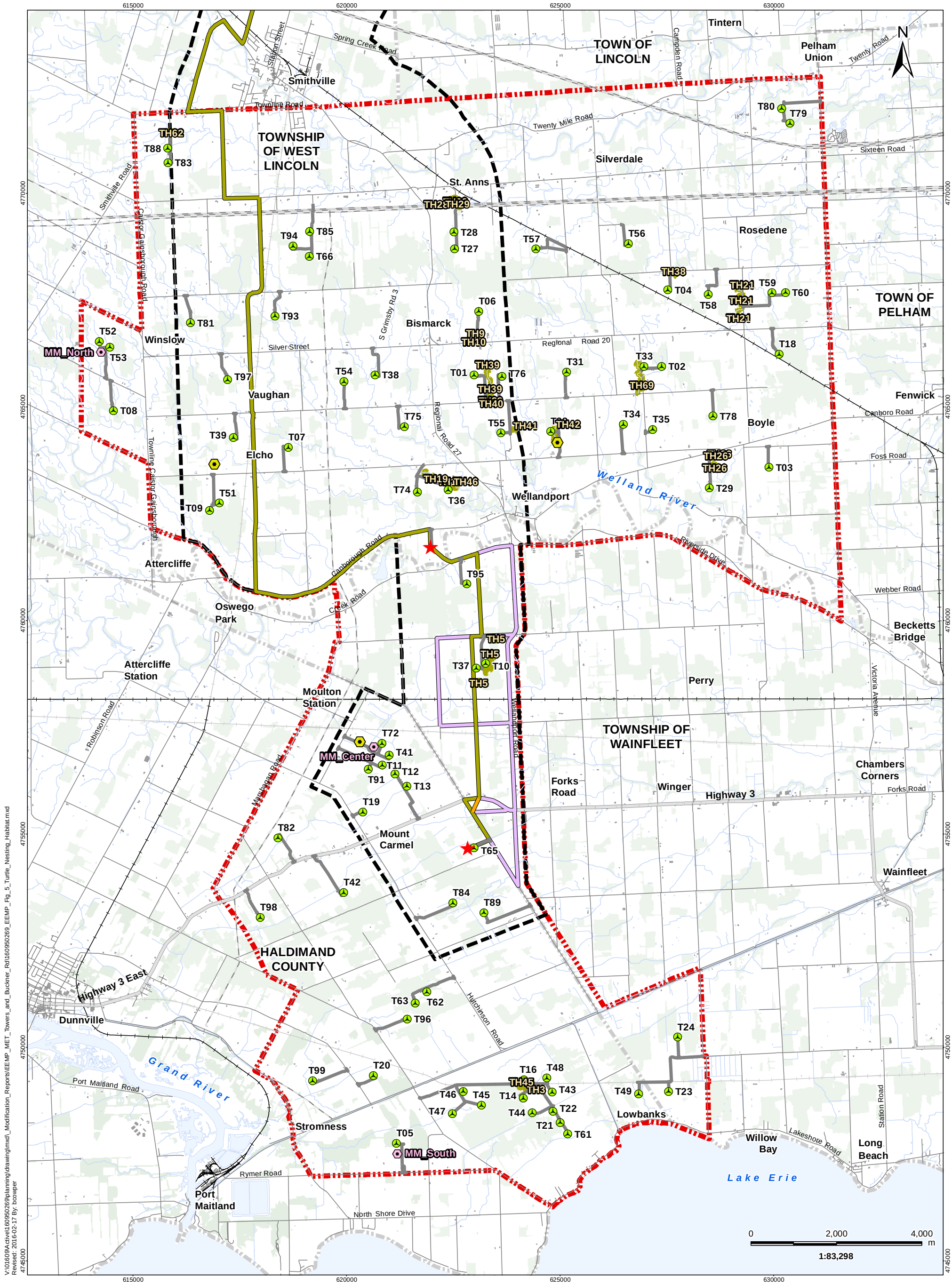
Figure No.
4

Title
Raptor Wintering Areas



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Turtle Nesting Habitat/Snapping Turtle Habitat - All Requiring Pre-construction Survey
- Turtle Habitat 30m Buffer

Notes

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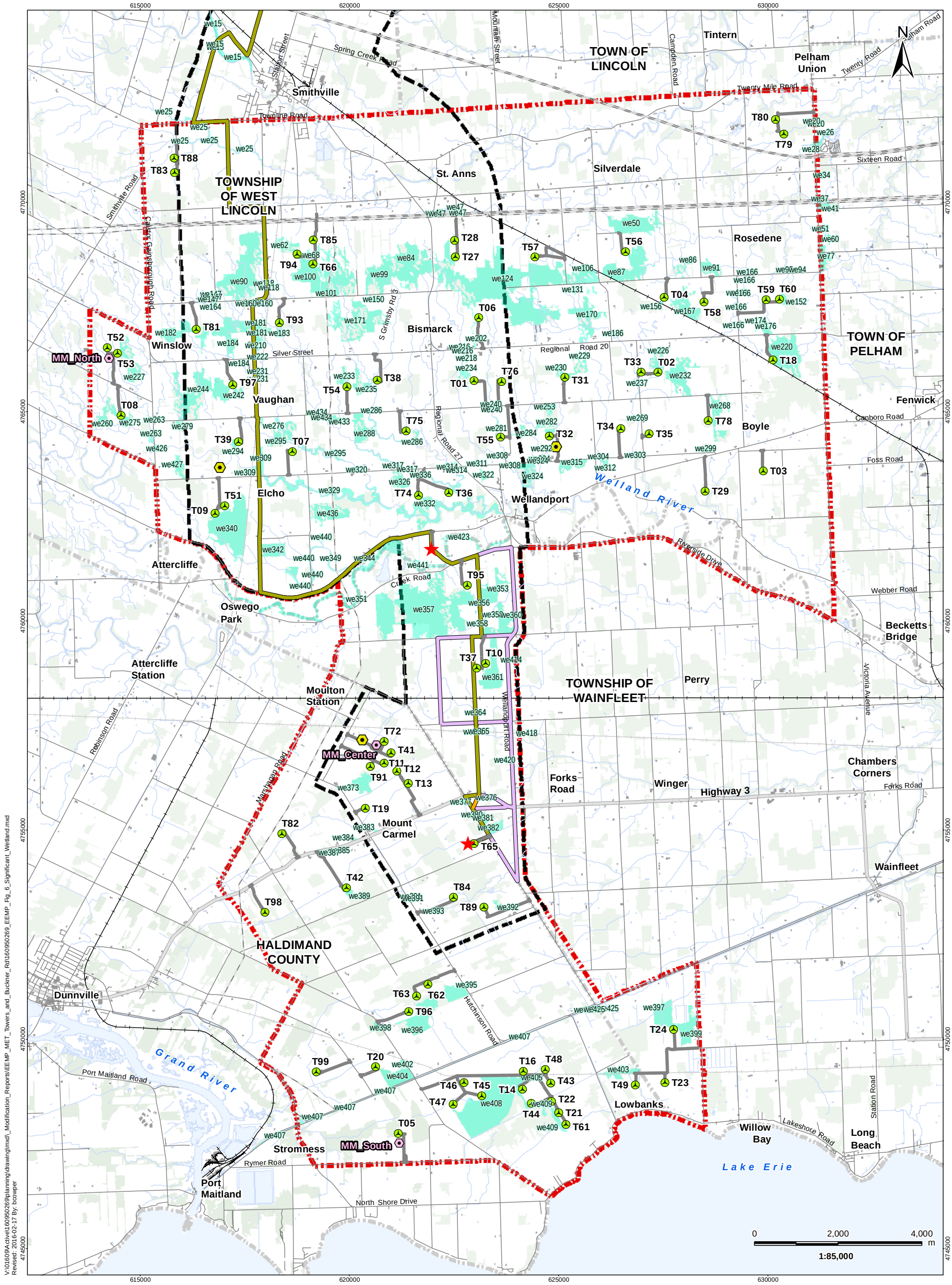
Figure No.
5

Title
Turtle Nesting Habitat



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Revised: 2016-02-17 By: bcowper

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Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Significant Wetland Communities

Notes

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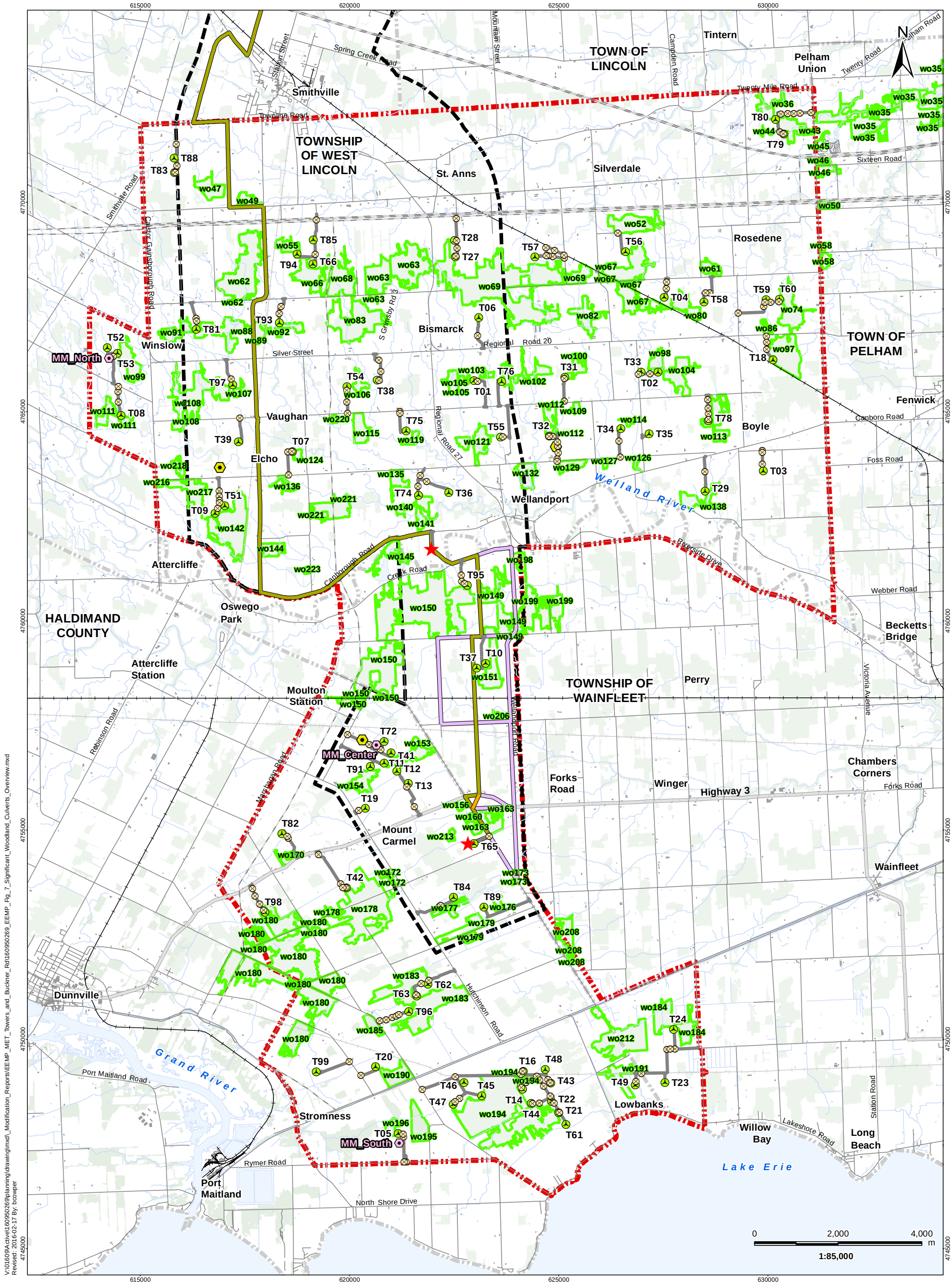
Figure No.
6

Title
Significant Wetland



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Proposed Culvert
- Significant Woodland Communities

Notes

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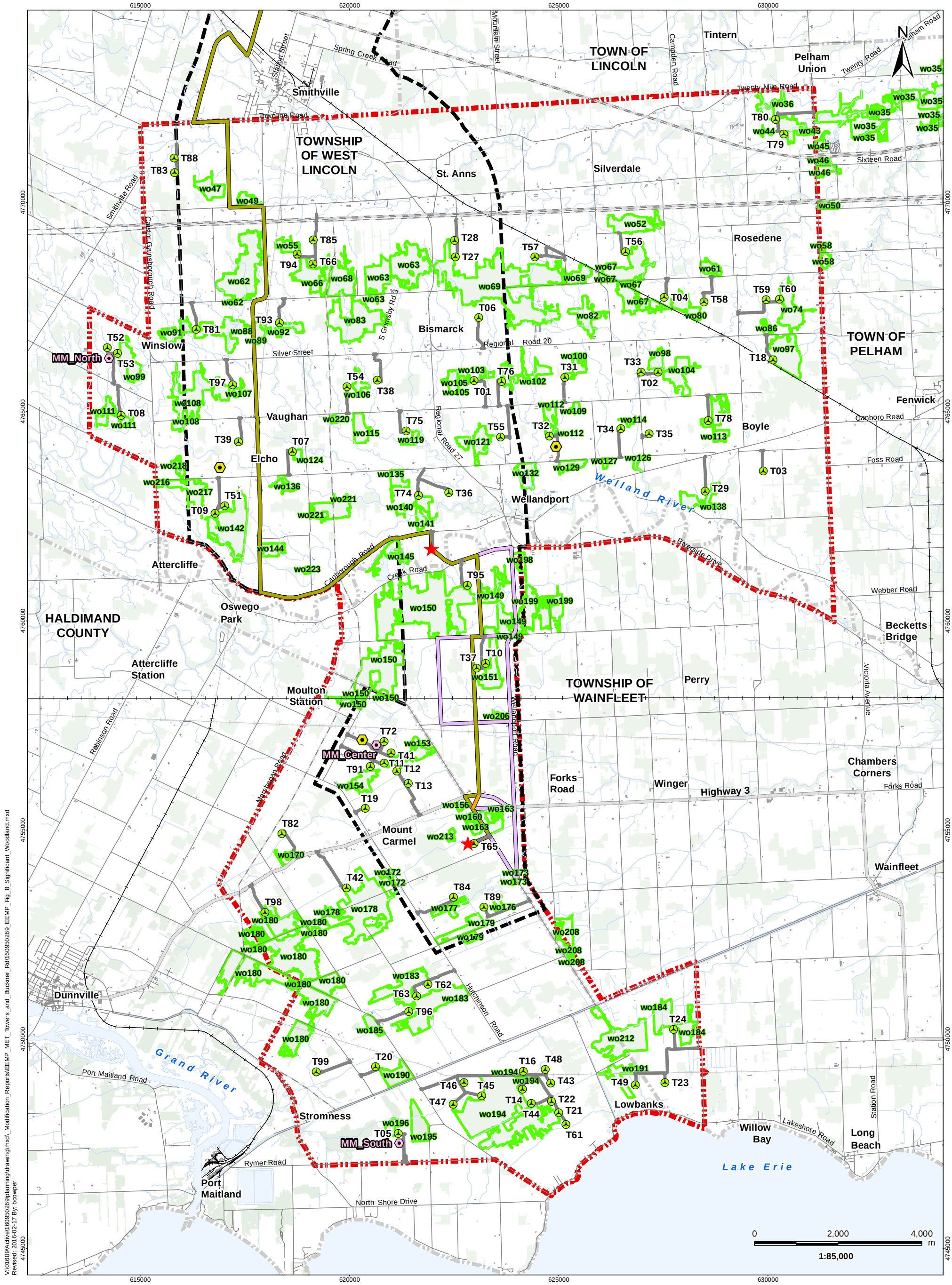
Figure No.
7

Title
Significant Woodland and Proposed Culvert Locations



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- Interconnector Study Area
- Proposed Turbine Location
- Potential Acesss Road
- Transformer Substation
- Tap-in Location
- Existing Met Tower
- Proposed MET Tower Locations
- Preferred Transmission Line Route (REA)
- Alternate Transmission Route (REA)
- Modified Alternate Transmission Route
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier
- Significant Woodland Communities

Notes

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Figure No.
8

Title
Significant Woodland and Proposed Culvert Locations

Updated Figures for the Property Line Setback Assessment

620500 621000 621500 622000

4748500 4748000 4747500 4747000

951 1339 T05 MM_South 662m 1363 1368 1335 1271 1255 1215 1102 971 950 970 989 1100 1251 1308

Bird Road

Dickhout Road

Rymer Road

N

0 50 100 m

1:6,000

Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
- Turbine 124m Buffer (Hub Height)
- Turbine 135m Buffer (Hub Height)
- Non-Particpating Receptor
- Particpating Receptor
- Preferred Transmission Line Route
- Alternate Transmission Route
- Potential Acesss Road
- Collector Lines - Underground or Overhead
- Fibre Optic Line
- Temporary Laydown Area
- Access Road 20m Construction Area

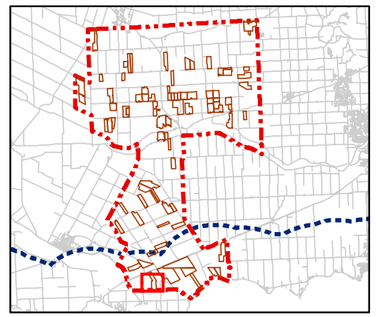

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Figure No.

1.5

Title

Overview Maps for Property Line Setback Assessment – T05

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Revised: 2016-02-25 By: bcowper

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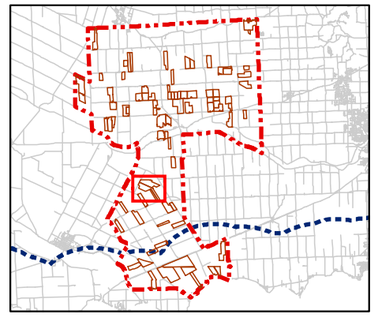
Revised: 2016-02-25 By: bcowper

Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
- Turbine 124m Buffer (Hub Height)
- Turbine 135m Buffer (Hub Height)
- Non-Particpating Receptor
- Particpating Receptor
- Preferred Transmission Line Route
- Alternate Transmission Route
- Potential Acesss Road
- Collector Lines - Underground or Overhead
- Fibre Optic Line
- Temporary Laydown Area
- Access Road 20m Construction Area



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February, 2016
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Client/Project

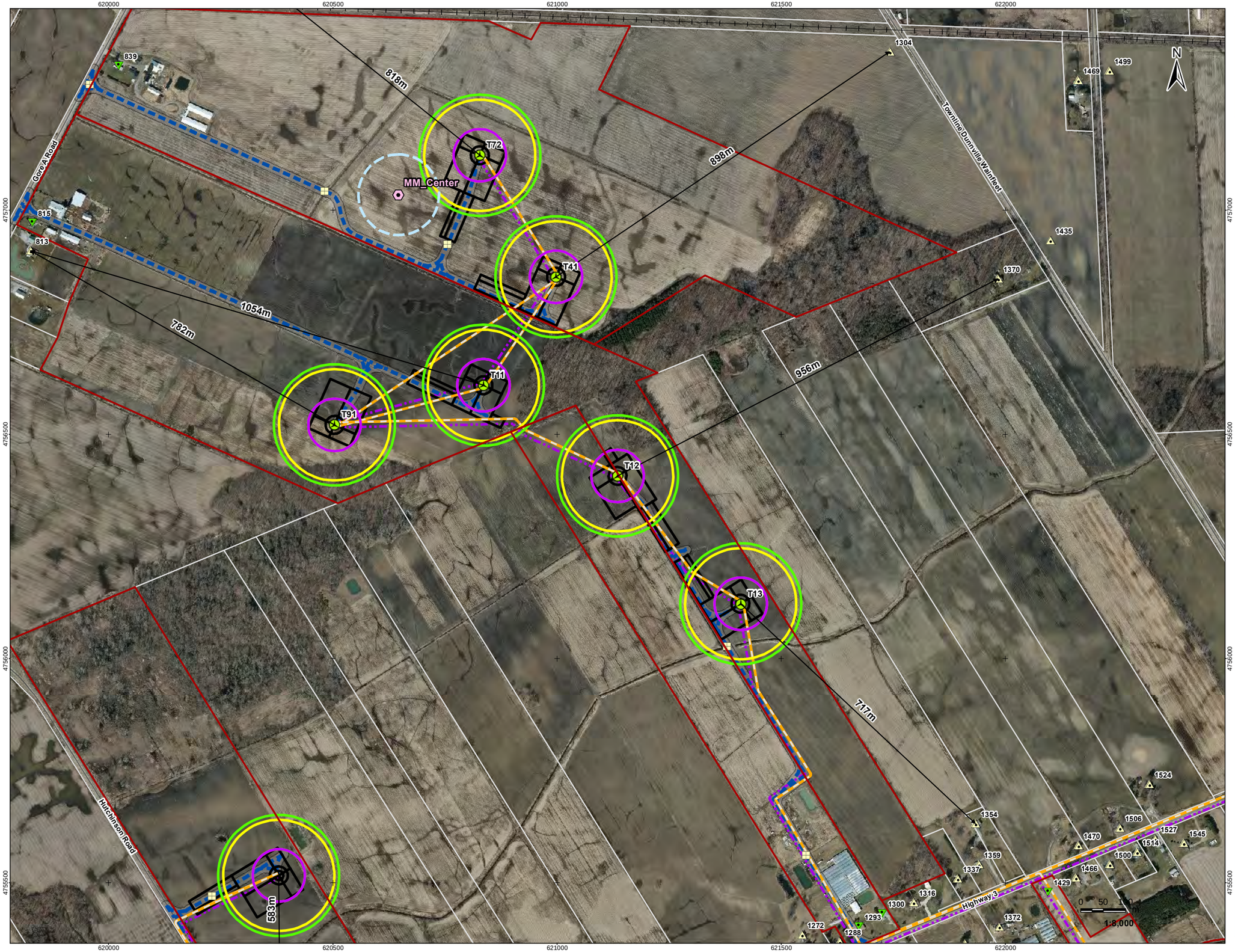
Niagara Region Wind Corporation
Niagara Region Wind Farm

Figure No.

1.11

Title

Overview Maps for Property Line Setback Assessment – T11



Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
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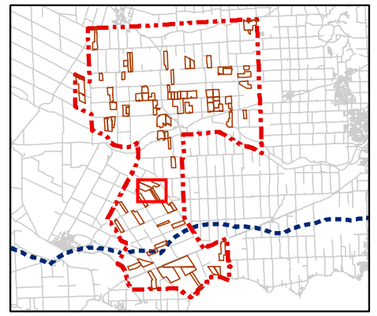

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Niagara Region Wind Farm

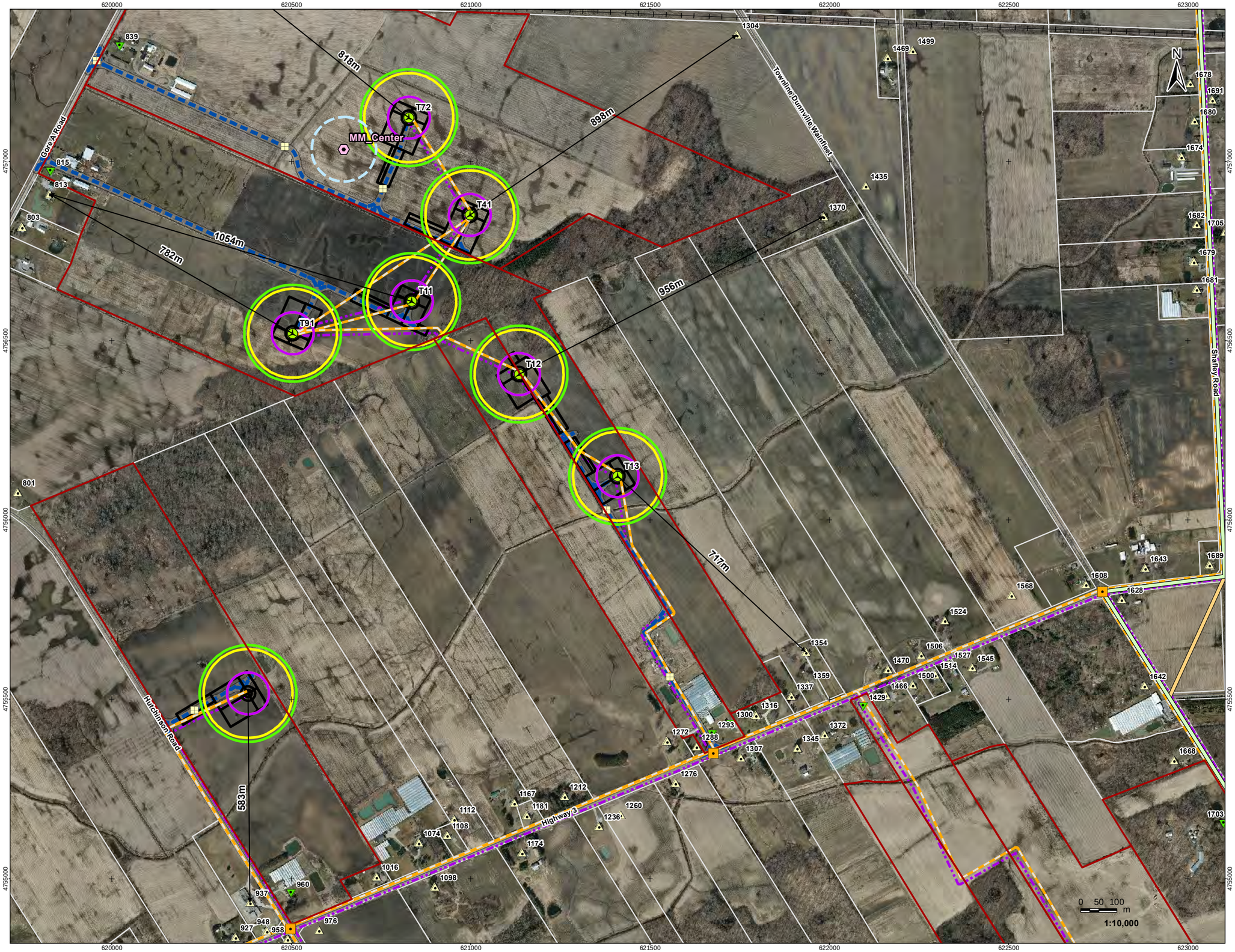
Figure No.

1.12

Title

Overview Maps for Property Line Setback Assessment – T12

V:\01609\Active\160950269\planning\drawing\mxd_Modificaton_Reports\Property_Line_Report_MET_Towers_and_Buckner_Rd\160950269_Fig_1_Property_Line_Setback_Assessment_Hub_Dist_Mapbook.mxd
Revised: 2016-02-25 By: bcowper



Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
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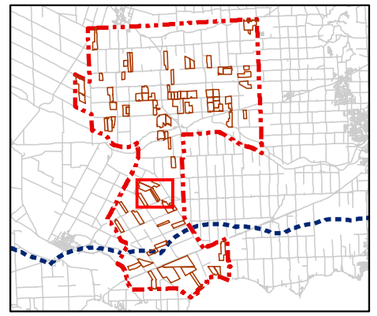

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Niagara Region Wind Farm

Figure No.

1.13

Title

Overview Maps for Property Line Setback Assessment – T13

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Revised: 2016-02-25 By: bcowper

620000 620500 621000 621500 622000

4757500 4757000 4756500 4756000

Calvert Road
Cora A Road
Concession 5
Townline Dunnville/Wainfleet

828 884 1289 1281 1296 1290 1331 1310 1324 1304 1469 839 815 813 1435 1370

818m 898m 1054m 782m 956m 747m

T72 T41 T11 T91 T12 T13

MM_Center

N

0 50 100 m
1:7,000

Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
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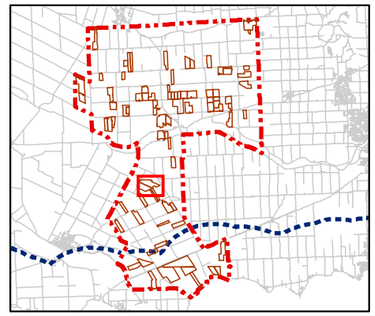

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Client/Project
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Niagara Region Wind Farm

Figure No.
1.35

Title
Overview Maps for Property Line Setback Assessment – T41

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Revised: 2016-02-25 By: bcowper

613500 614000 614500 615000

4767000 4766500 4766000

47 49 59 66 113 3902 64 79 115 116 117 82 105 129 127 138 136 28 3835 25 43 41 45 56 52 58 67 135 143 121 120 126 144 152 130 134

T52 T53 MM_North

604m 620m

Silver Street Cosby Road Concession 3 Silver Street Caistor Gainsborough Road

N

0 50 100 m

1:7,000

Legend

- Project Study Area
- Participating Property
- Property Boundary
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- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
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- Collector Lines - Underground or Overhead
- Fibre Optic Line
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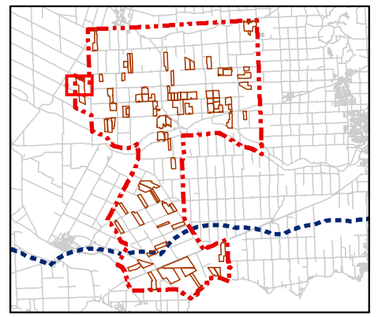
- Access Road 20m Construction Area



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Niagara Region Wind Farm

Figure No.
1.45

Title
Overview Maps for Property Line Setback Assessment – T52

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Revised: 2016-02-25 By: bcowper

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Revised: 2016-02-25 By: bcowper

Legend

- Project Study Area
- Participating Property
- Property Boundary
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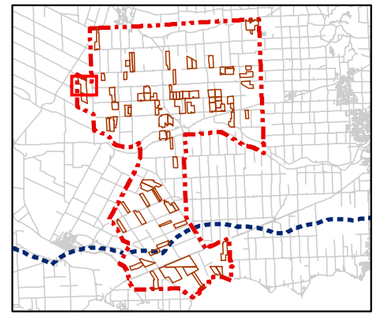

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Client/Project

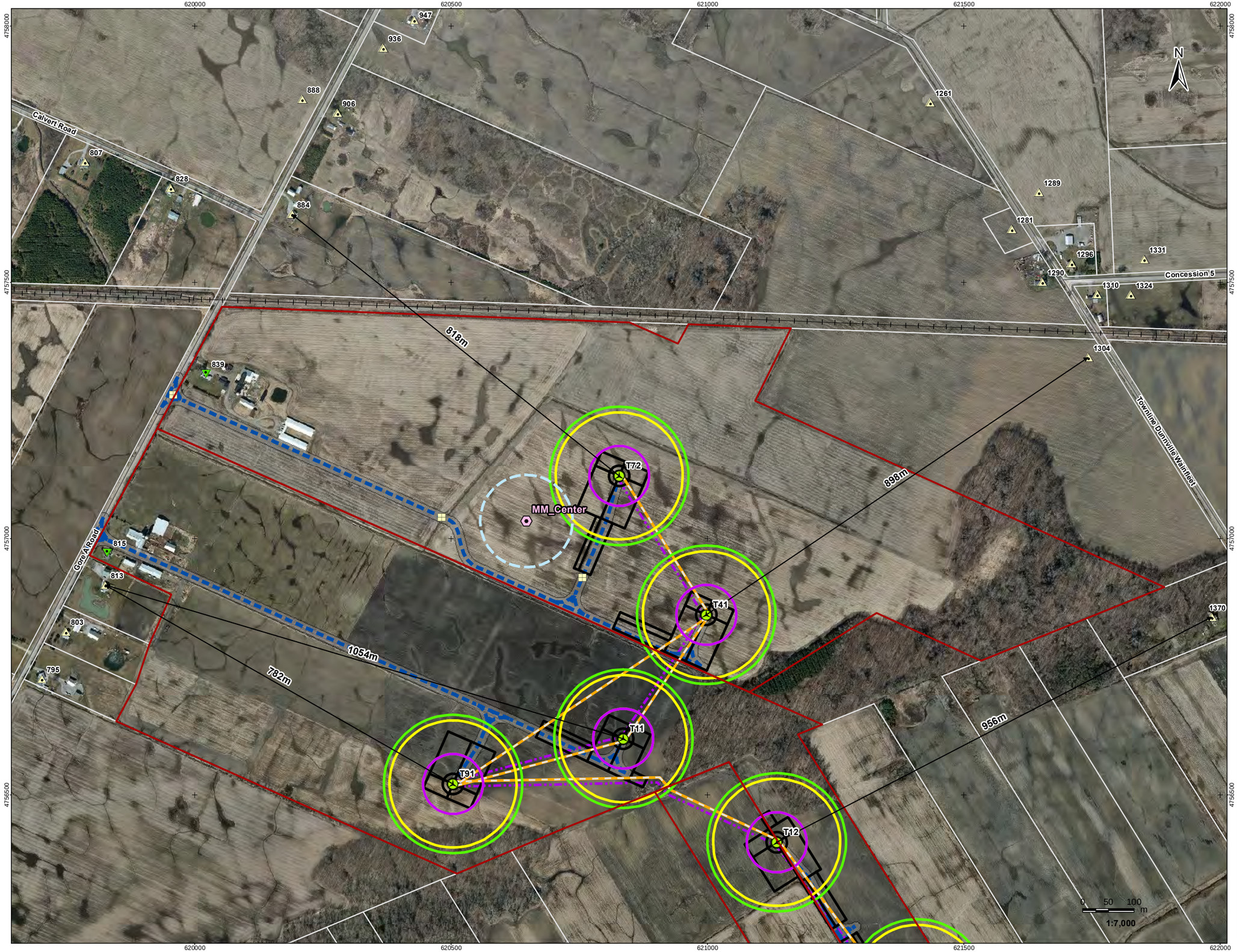
Niagara Region Wind Corporation
Niagara Region Wind Farm

Figure No.

1.46

Title

Overview Maps for Property Line Setback Assessment – T53



Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
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- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
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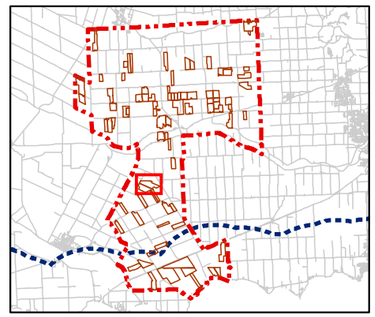

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Client/Project

Niagara Region Wind Corporation
Niagara Region Wind Farm

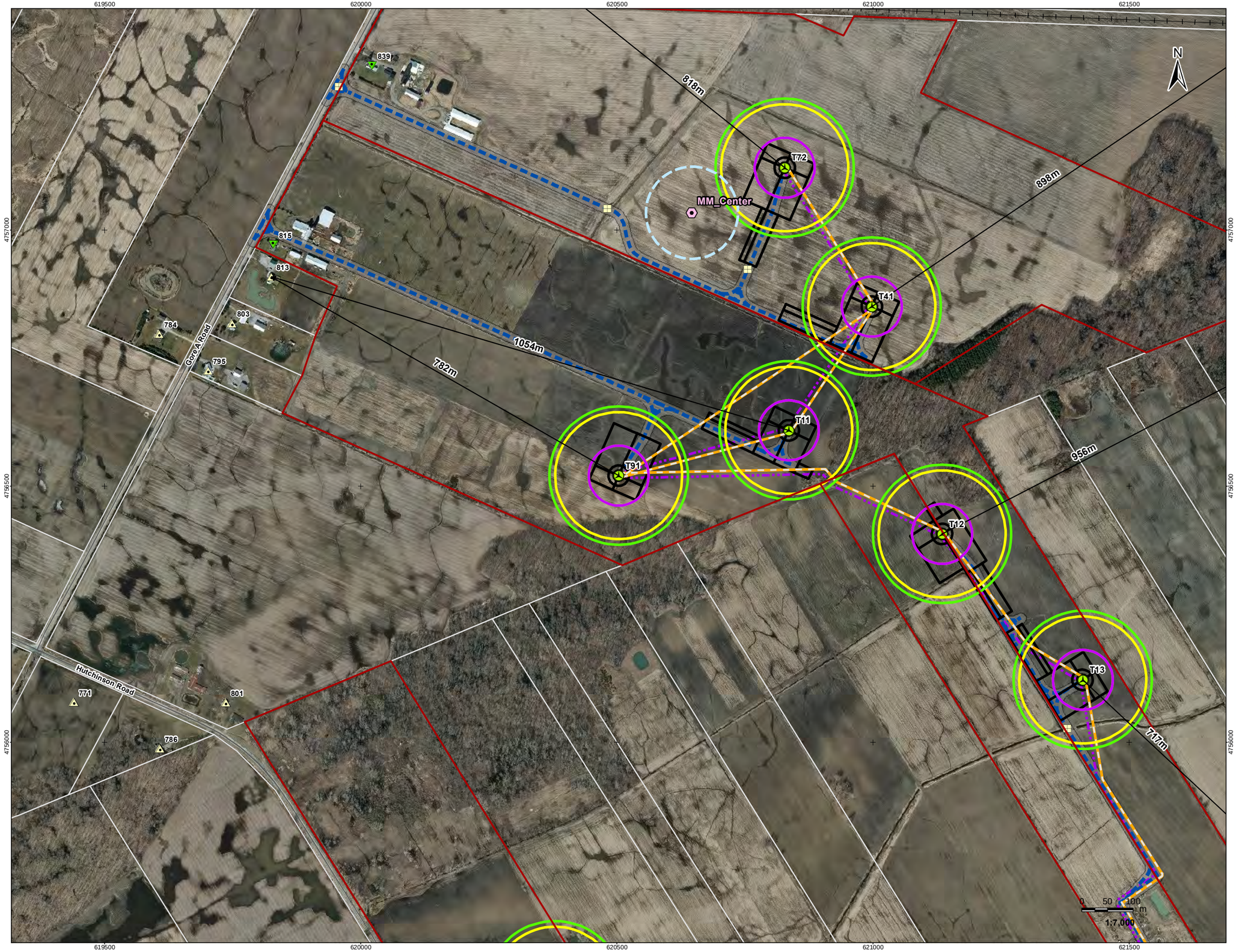
Figure No.

1.59

Title

Overview Maps for Property Line Setback Assessment – T72

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Property_Line_Report_MET_Towers_and_Buckner_Rd\160950269_Fig_1_Property_Line_Setback_Assessment_Hub_Dist_Mapbook.mxd
Revised: 2016-02-25 By: bcowper



Legend

- Project Study Area
- Participating Property
- Property Boundary
- Proposed Turbine Location
- Junction Box
- Proposed MET Tower Locations
- Proposed Culvert
- Turbine 58.6m Buffer (Blade + 10m)
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- Collector Lines - Underground or Overhead
- Fibre Optic Line
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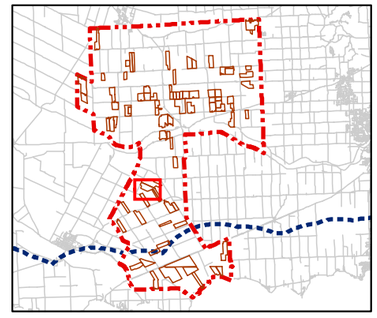

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February, 2016
160950269

Client/Project
Niagara Region Wind Corporation
Niagara Region Wind Farm

Figure No.
1.73

Title
Overview Maps for Property Line Setback Assessment – T91

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Property_Line_Report_MET_Towers_and_Buckner_Rd\160950269_Fig_1_Property_Line_Setback_Assessment_Hub_Dist_Mapbook.mxd
Revised: 2016-02-25 By: bcowper

APPENDIX B:
CORRESPONDENCE WITH MNRF

From: Beal, Jim (MNRF) [mailto:jim.beal@ontario.ca]
Sent: Friday, April 29, 2016 1:16 PM
To: Kopysh, Nicole
Subject: RE: MET TOWERS: Niagara Region Wind Farm NHA/EIS Addendum

Hi Nicole

As it relates to this specific amendment request (Buckner Line?)..MET Towers and alternate transmission line addendum (#3). This is separate from the Proposed Modified Alternate Transmission Route (Smithsville) addendum that will follow.

Conclusion:

The changes described by the consultant are minor changes to the project location components. No new mitigation measures are necessary beyond what was previously identified in Table 5.1 (Appendix B) of the NHA/EIS 2013. Also, the evaluation completed regarding the features present have been adequately mitigated. No additional assessment or mitigation is required at this time.

Thanks.

Jim Beal
Renewable Energy Coordinator
Southern Region
MNRF

705-755-1362

From: Kopysh, Nicole
Sent: Monday, March 07, 2016 3:03 PM
To: Beal, Jim (MNR) (jim.beal@ontario.ca)
Cc: Tripp, Bryan; Adam Rosso (adam.rosso@boralex.com)
Subject: Niagara Region Wind Farm: NHA/EIS Addendum

Hello Jim,

Please find attached an addendum to the Natural Heritage Assessment and Environmental Impact Study (NHA/EIS) for the Niagara Region Wind Farm (Stantec, 2013).

This addendum includes consideration of the installation of three MET tower(s) and the addition of an alternate transmission line route across a new participating property within the Project Study Area.

All proposed modifications are sited within agricultural fields, within areas that were previously assessed in the NHA/EIS, however small portions of the revised Zone Of Investigation (ZOI) extend beyond that originally identified in the NHA/EIS.

No new natural features occurred within the Project Location or the ZOI as a result of the modifications. The natural features that are located in the modified project location and/or ZOI were all evaluated previously and appropriate mitigation measures were recommended in the EIS (Stantec 2013). No changes to the Evaluation of Significance report or Environmental Impact Study as presented in the NHA/EIS are required.

Please note that given the ongoing construction activities and schedule for the Project, we are hoping to finalize this Addendum as soon as possible. As a result, the REA amendment will be submitted this week to MOECC (including the NHA Addendum).

Please let me know if you have any questions, I look forward to hearing from you.

Nicole

Nicole Kopysh
Project Manager/ Regional Technical Leader (Central Canada), Terrestrial Ecosystems- Wildlife
Stantec
70 Southgate Drive, Suite 1 Guelph ON N1G 4P5
Direct phone: 519-780-8163
Reception: (519) 836-6050
Cell: (519) 820-2318
Fax: (519) 836-2493

Stantec Consulting Ltd.
1-70 Southgate Drive, Guelph ON N1G 4P5

February 26, 2016
File: 160961052

Attention: Jim Beal
Ontario Ministry of Natural Resources and Forestry
Peterborough District
1st Floor, South Tower
300 Water St
Peterborough ON K9J 8M5

Dear Jim Beal,

Reference: NHA Addendum #3 – Proposed MET Towers, Niagara Region Wind Farm

FWRN LP (the Proponent or FWRN) is currently constructing the Niagara Region Wind Farm (the Project), a 230 MW wind energy project in the Townships of West Lincoln and Wainfleet and the Town of Lincoln in the Niagara Region and in Haldimand County in southern Ontario.

The Project's Renewable Energy Approval (REA) was issued under Ontario Regulation 359/09 of the *Environmental Protection Act*. The REA was issued on November 6, 2014 (EBR #012-0614).

This technical memorandum is an addendum to the 'Natural Heritage Assessment and Environmental Impact Study for the Niagara Region Wind Farm' (Stantec, 2013). This addendum addresses two proposed modifications to the Niagara Region Wind Farm (the 'Project').

The first Modification involves the installation of MET tower(s) within the Project Study Area at three locations based on the requirements of the Independent Electricity System Operator (IESO). The MET tower locations are shown on **Figure 1**. The existing MET towers in operation for this Project were described in the REA documents for context, but were not included in the REA application. Through on-going discussions with the IESO, the need for MET towers at specific locations and heights relative to the approved turbine locations was identified. This modification is proposed to address the IESO requirement.

Three (3) new MET towers are proposed, as follows:

- MM_North: proposed to be built north of Concession Road 3 and just west of Caistor Gainsborough Road, which will be situated near two turbines (T52 and T53) (**Figure 2.21**);
- MM_Centre: proposed to be built between Gore A Road and Townline Dunnville Wainfleet just south of the railway, which will be situated near five turbines (T11, T12, T41, T72, and T91) (**Figure 2.43**); and

- MM_South: proposed to be built north of Rymer Road and west of Dickhout Road, which will be situated near one turbine (T05) (**Figure 2.56**).

All three proposed MET tower locations are positioned on agricultural land within the Zone of Investigation (ZOI) previously identified for the Project.

The second Modification involves the addition of an additional alternate transmission line route across a new participating property within the Project Study Area. Recent consultation between the FWRN and MTO has identified MTO's strong preference for the transmission route to avoid placement of transmission poles within the MTO Hwy 3 right-of-way. The proposed alternate transmission route identified in this Modification allows FWRN to accommodate these new comments and to avoid the placement of transmission line poles along Hwy 3. A segment of the approved 115 kV transmission line route would cross an agricultural field from the intersection of Buckner Road and Dunnville Wainfleet Townline to the intersection of Highway 3 and Shafley Road (**Figure 2.47**). The remainder of the transmission line would follow the approved route between the North and South Substations.

A portion of the revised transmission line route will extend outside of the ZOI originally identified in the REA application, which consists of an actively managed agricultural field. The location of the alternate route is presented on **Figure 2.47** and discussed in the following sections.

The three proposed MET towers and transmission line are sited in actively managed agricultural fields and within the Zone of Investigation (ZOI) area (the land within 120 m of the Project Location for the MET towers and 50 m for the transmission line) that was previously assessed in the NHA/EIS (Stantec, 2013). In addition, the majority of the ZOI around the MET towers and transmission line overlaps with previously assessed areas. A portion of the ZOI for each of the new MET tower locations, as well as the transmission line, extends beyond the previously assessed Project Location ZOI. The modified ZOI, indicating areas previously not assessed is shown on **Figures 2.21, 2.43, 2.47 and 2.56**.

This addendum to the NHA is presented to the Ministry of Natural Resources and Forestry (MNRF) for their review and confirmation.

SUMMARY OF CHANGES TO NHA/EIS

Records Review

Following the same methods used in the original NHA/EIS, a records review was conducted for the new portions of the modified ZOI to determine if known natural features are present in the area of the modifications. According to the Natural Heritage Information Centre (NHIC, 2015) and Land Information Ontario (LIO, 2015) databases, there are no areas designated as a wetland, woodland or Area of Natural or Scientific Interest (ANSI) in the new portions of the modified ZOI.

Reference: NHA Addendum #3 – Proposed MET Towers, Niagara Region Wind Farm

No rare species were identified as potentially occurring in the new portions of the modified ZOI. No additional changes are required to the Records Review of the NHA/EIS.

Site Investigation

The proposed modifications and associated revised Project Location and ZOI all fall entirely within Ecological Land Classification (ELC) polygons that were previously identified and assessed in the NHA. ELC mapping as identified through the original NHA/EIS is shown on **Figures 3.21, 3.43, 3.47 and 3.56.**

- MM_North MET tower: Project Location and ZOI are in areas that were identified in the NHA as actively managed agricultural fields. Both the MET tower location and the ZOI were in soy fields.
- MM_Center MET tower: Project Location and ZOI are in areas that were identified in the NHA as actively managed agricultural fields. The MET tower location was in a corn field, with the ZOI comprised of soy and corn fields.
- MM_South MET tower: Project Location and ZOI are in areas that were identified in the NHA as actively managed agricultural fields. The MET tower location was in a corn field, while the ZOI was in hay and corn fields.
- Transmission Line Route near Buckner Road: Project Location is in an area that was identified in the NHA as actively managed agricultural fields (wheat). The ZOI was comprised primarily of managed agricultural fields, with a small proportion of residential, wetland, and wooded areas.

No natural features were found in the modified project location or ZOI for the MET towers (see **Figures 4, 5 and 6**).

Wetland 376 (we376; **Figure 4.47**) occurs within 7.5 m of the proposed modified transmission line. This wetland was previously assessed due to proximity to the originally proposed transmission line (i.e., 8.9 m) as well as a collector line (14.2 m) as detailed in the NHA/EIS (Stantec, 2013). Woodland 155 (wo155; **Figure 5.47**), located within 34.0 m of the proposed modified transmission line, was located in the previous ZOI and was assessed previously (Stantec, 2013). No changes to the Site Investigation report as presented in the NHA/EIS are required.

Evaluation of Significance and Environmental Impact Study

Results of the Evaluation of Significance by Stantec in the NHA/EIS (2013) determined that We376 met the criteria for significance (wetland and generalized wildlife habitat; **Figure 7.47**) and an impact assessment for a transmission line in proximity to significant wetlands as well as mitigation

Reference: NHA Addendum #3 – Proposed MET Towers, Niagara Region Wind Farm

measures were previously provided (Stantec, 2013). The mitigation measures as presented in the NHA/EIS are applicable to the modified project location.

Wo155 did not meet the criteria for significant woodland. Therefore an impact assessment was not required.

The natural features that are located in the modified project location and/or ZOI were all evaluated previously and appropriate mitigation measures were recommended in the EIS (Stantec 2103). No changes to the Evaluation of Significance report or Environmental Impact Study as presented in the NHA/EIS are required.

SUMMARY AND CONCLUSION

The natural features that occur within 120 m of the original, or within 50 m of the modified, Project Location for the three MET towers and transmission line locations were previously evaluated. No changes are required to the Records Review, Site Investigation, Evaluation of Significance or Environmental Impact Study reports as presented in the NHA/EIS (Stantec, 2013) as a result of the proposed modifications. No changes are required to the Construction Plan Report and the Environmental Effects Monitoring Plan as a result of the proposed modifications.

The information contained in the NHA/EIS, as confirmed by the MNRF through their letter dated April 2, 2013, remains applicable to these Project modifications.

Given the results of this assessment, the modifications can be implemented with no new net negative environmental effects. We would appreciate that the MNRF review the material and provide confirmation as appropriate. If you have any questions or concerns, please do not hesitate to contact the undersigned at any time.

Regards,

STANTEC CONSULTING LTD.

Nicole Kopysh, BES
Senior Terrestrial Ecologist
Phone: (519) 780-8163
Fax: (519) 836-2493
nicole.kopysh@stantec.com

David L. Charlton, MSc, PAg, LEED® AP
Applied Ecologist, Environmental Services, Senior Principal
Phone: (519) 780-8153
Fax: (519) 836-2493
david.charlton@stantec.com

Reference: NHA Addendum #3 – Proposed MET Towers, Niagara Region Wind Farm

Attachments: Figures

Figure 1	Draft Site Plan Overview
Figures 2	Records Review Mapbook
Figures 3	Ecological Land Classification (ELC) Mapbook
Figures 4	Wetland Communities Mapbook
Figures 5	Woodland Communities Mapbook
Figures 6	Candidate Significant Wildlife Habitat Mapbook
Figures 7	Significant Natural Features Mapbook

c. Adam Rosso, Boralex
Chris Powell, Stantec
Bryan Tripp, Stantec

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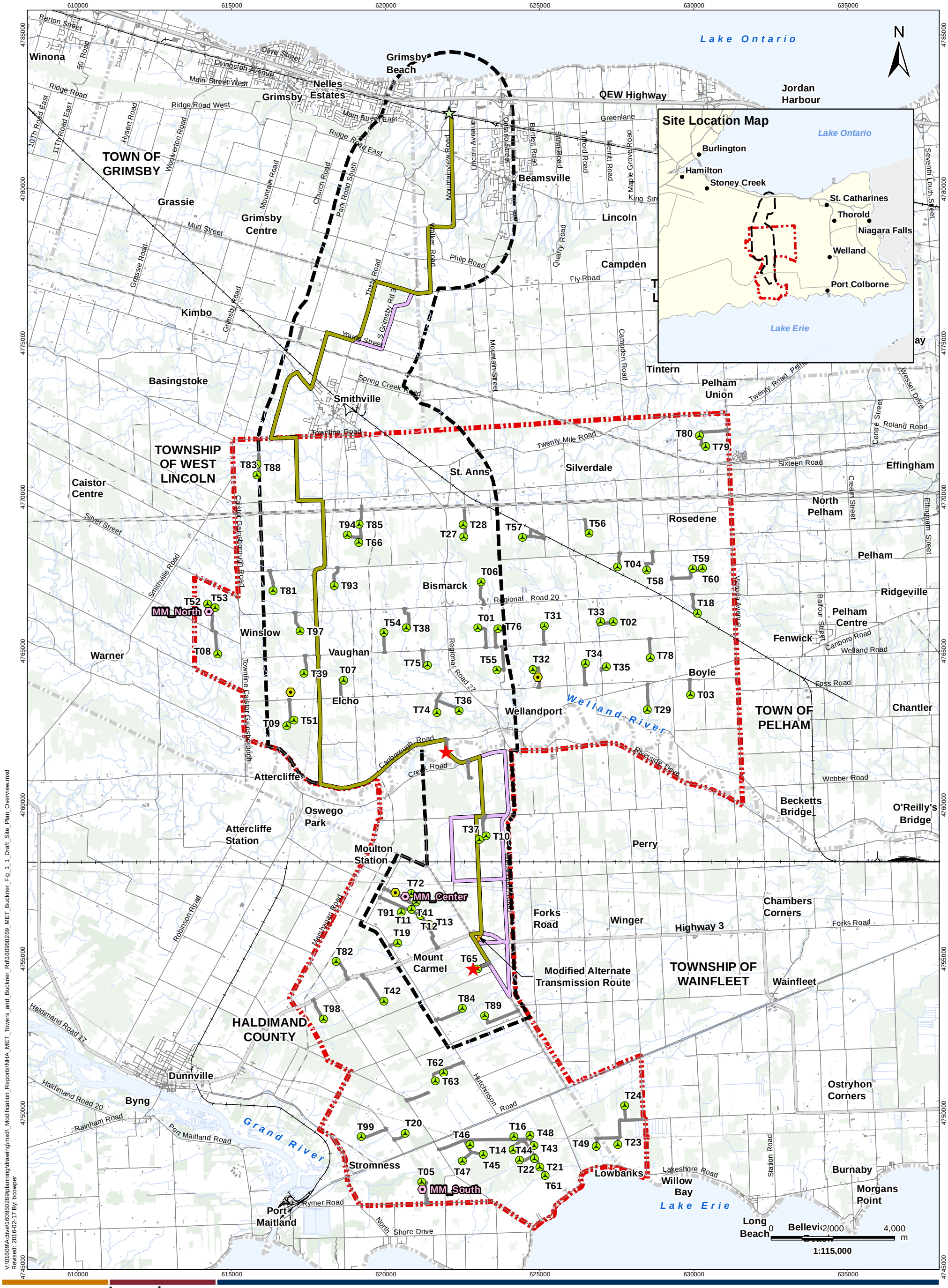

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Revised: 2016-02-17 By: bcowper

Legend

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

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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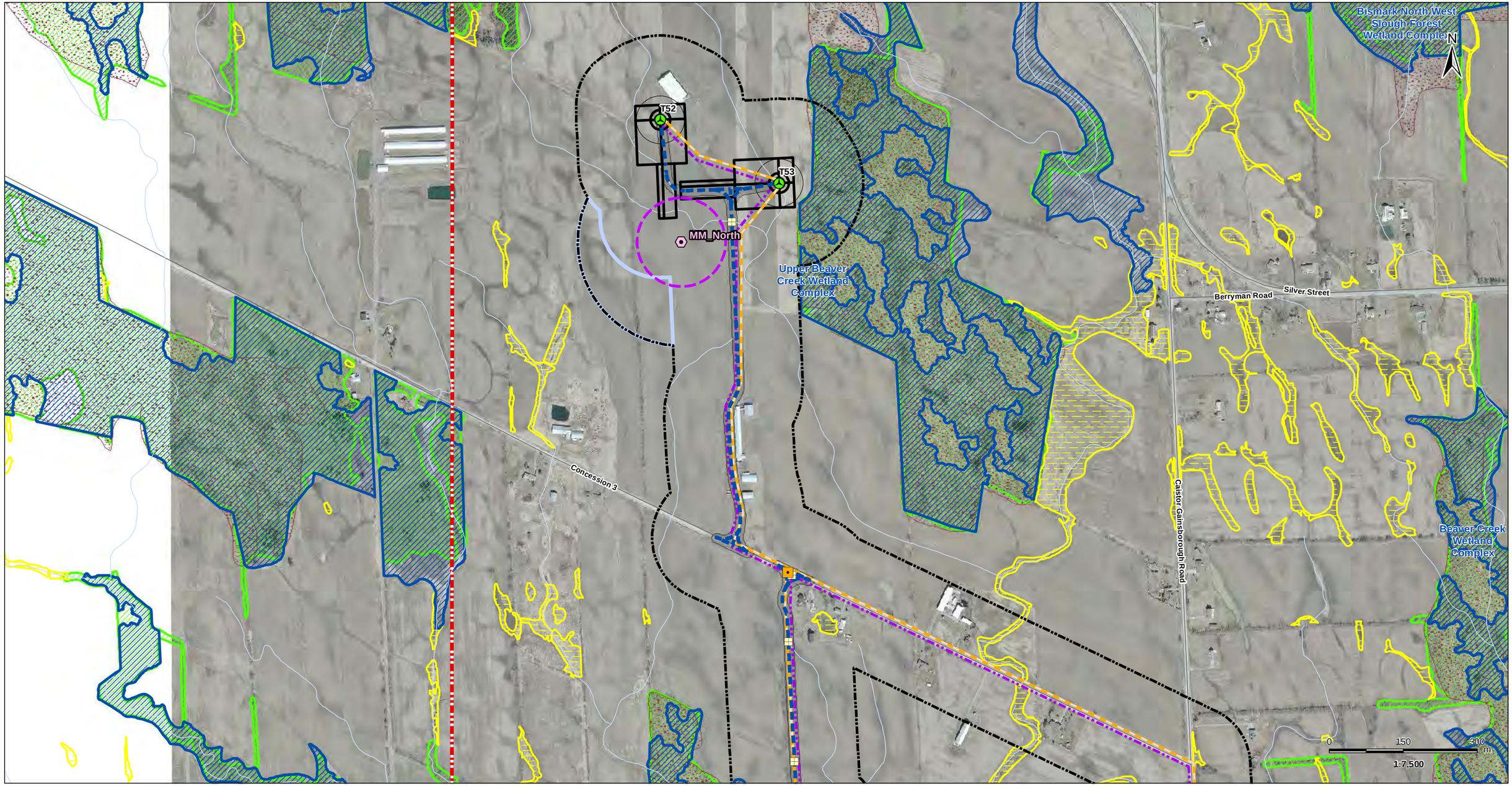
Client/Project
FWRN LP
Niagara Region Wind Farm

February 2016
160950269

Figure No.
1

Title
Draft Site Plan Overview Revised



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Revised: 2016-02-17 By: bcowper

February, 2016
160950269

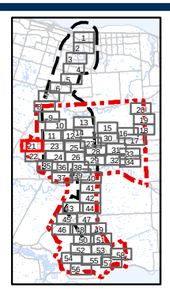
Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines - Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Access Road 20m Construction Area
- Unevaluated Wetland (NPCA)
- Woodland (MNR)
- Provincially Significant Wetland (MNR)
- Deer Wintering Yard (MNR)

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.



Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.21

Title
Records Review - Natural Features Figure 2.21 Revised

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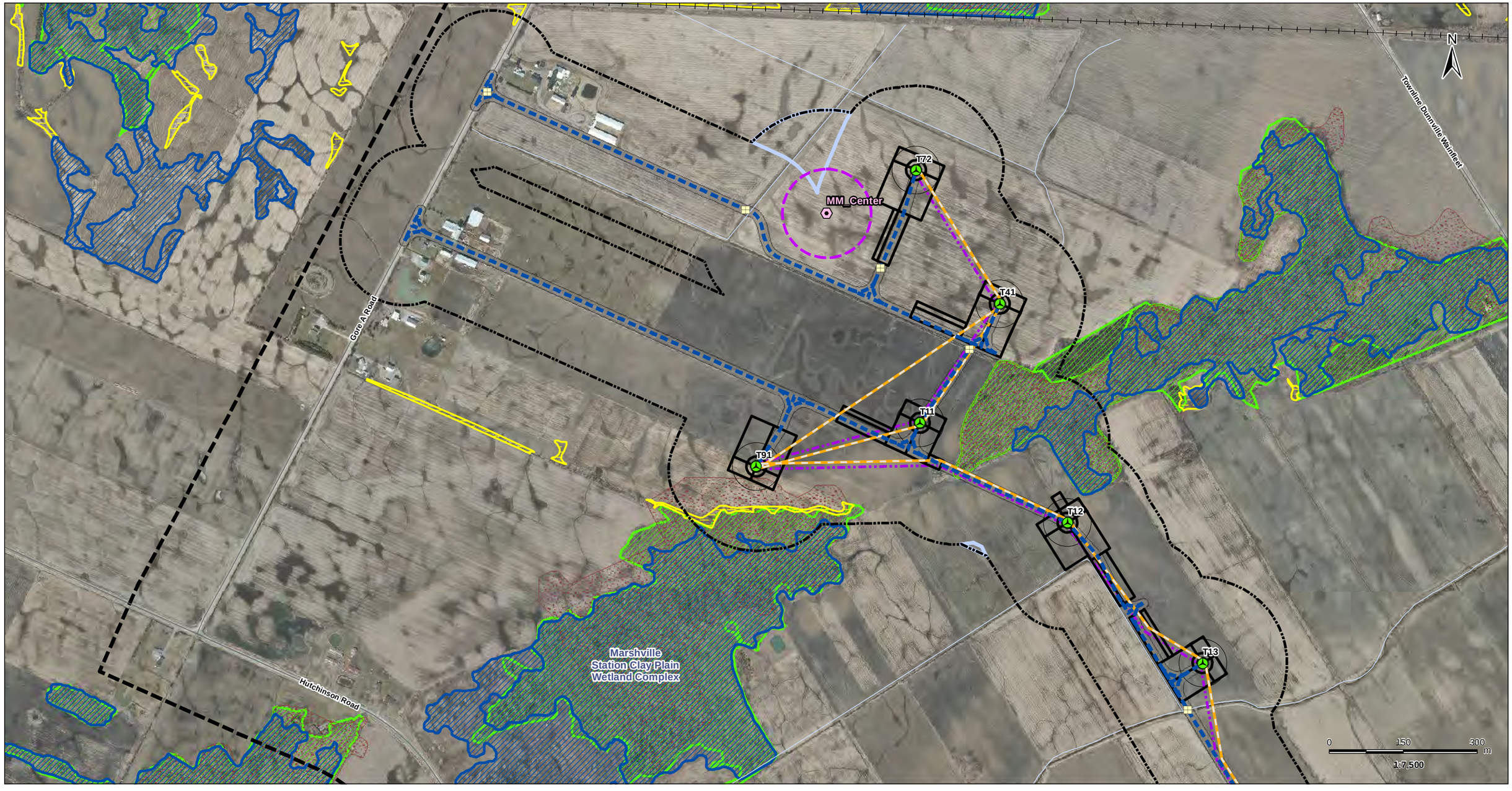
Revised: 2016-02-16 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines - Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Access Road 20m Construction Area
- Unevaluated Wetland (NPCA)
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Notes

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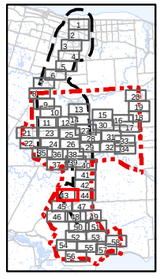
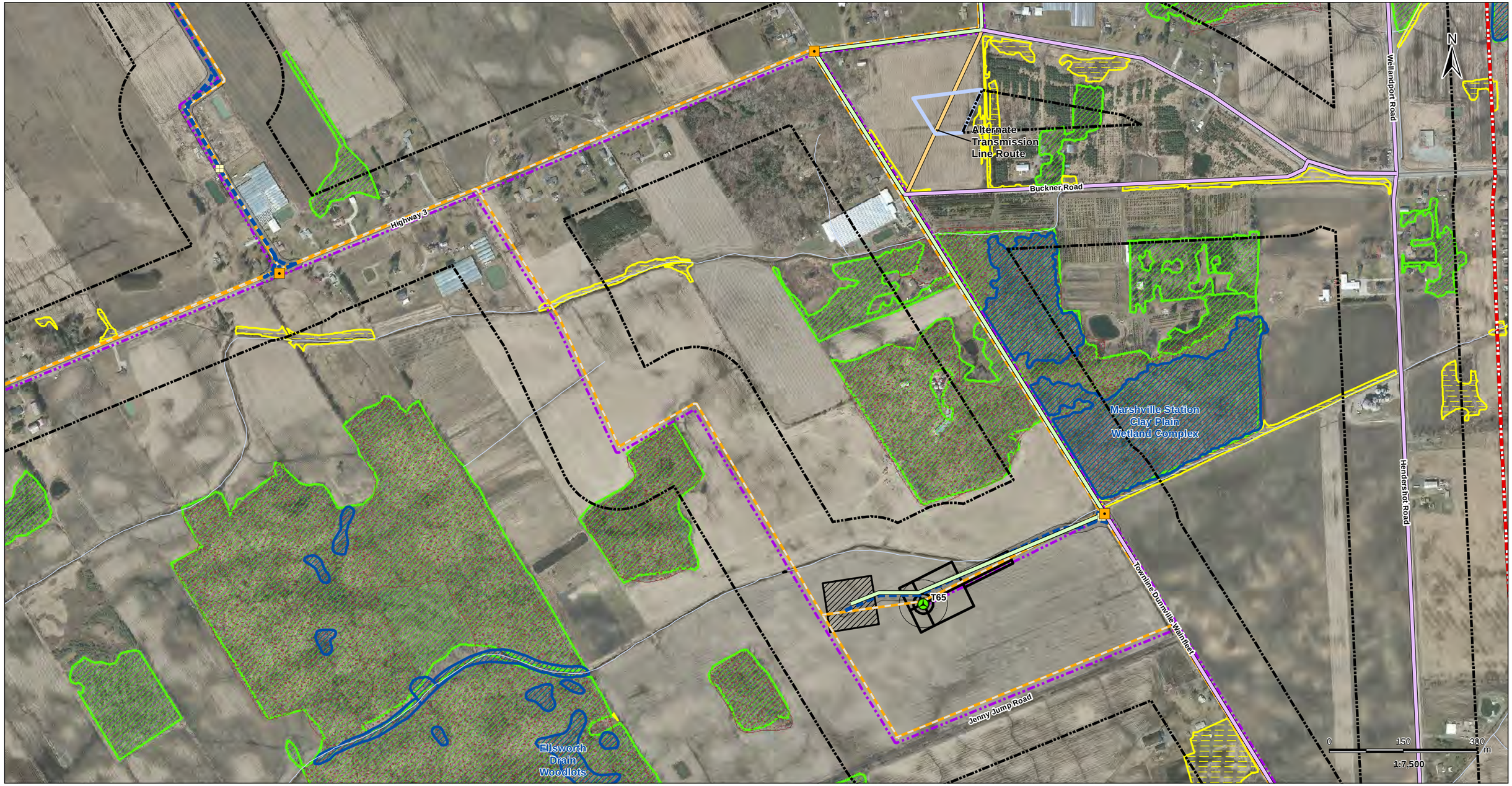


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.43

Title
Records Review - Natural Features Figure 2.43 Revised



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Revised: 2016-03-28 By: bcowper

March, 2016
160950269

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation
- Area Added
- Potential Transmission Route (REA)
- Alternate Tranmission Route
- Modified Alternate Transmission Route
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines - Underground or Overhead
- Fibre Optic Line
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- Access Road 20m Construction Area
- Transformer Substation
- Unevaluated Wetland (NPCA)
- Woodland (MNR)
- Provincially Significant Wetland (MNR)
- Deer Wintering Yard (MNR)

Notes

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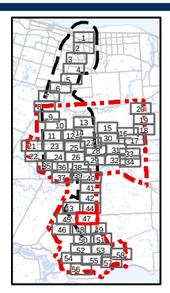
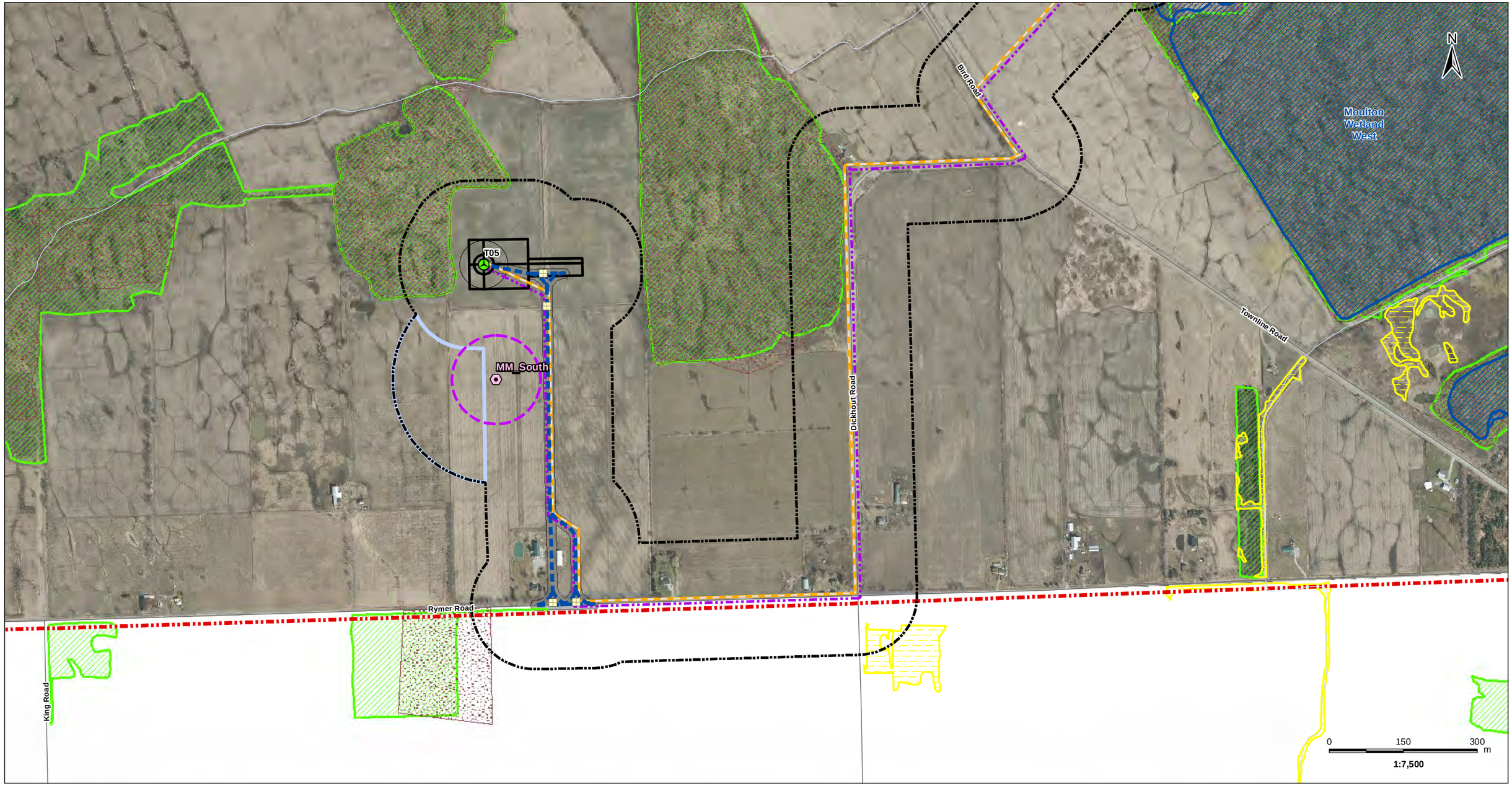


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
2.47

Title
Records Review - Natural Features Figure 2.47 Revised



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Revised: 2016-02-16 By: bcowper

February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation
  - Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines - Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Access Road 20m Construction Area
- Unevaluated Wetland (NPCA)
- Woodland (MNR)
- Provincially Significant Wetland (MNR)
- Deer Wintering Yard (MNR)

Notes

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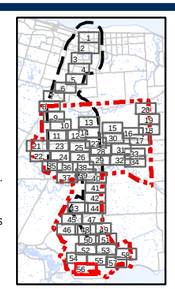

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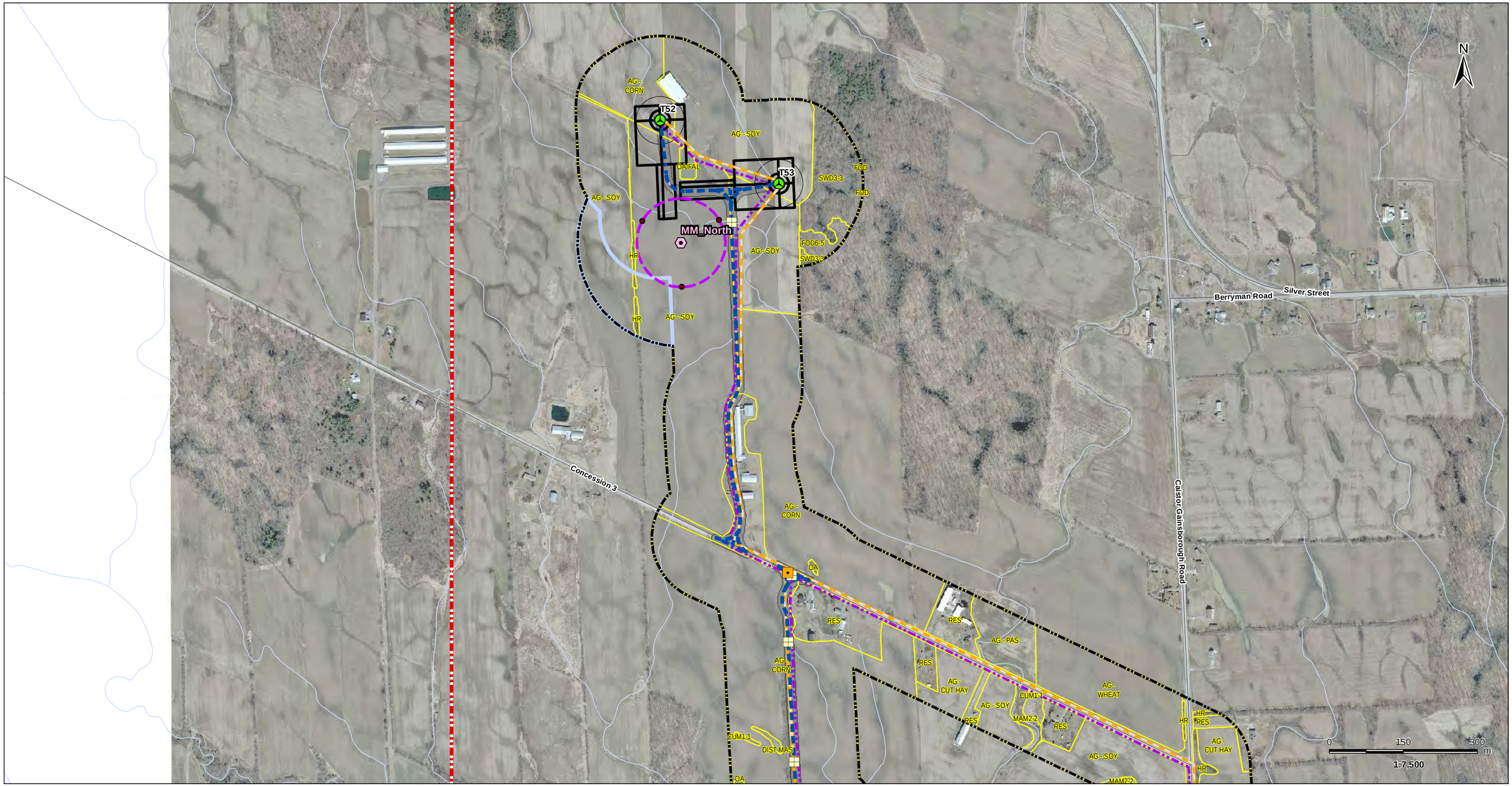
Figure No.
2.56

Title
Records Review - Natural Features Figure 2.56 Revised



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Revised: 2016-02-17 By: bcowper

February, 2016
160950269

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- ELC Boundary
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Collector Lines – Underground or Overhead
- Temporary Laydown Area
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Notes

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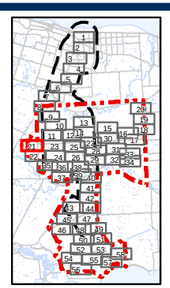
3. Orthoimagery source: First Base Solutions, Date Spring 2010.



Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
3.21

Title
ELC Vegetation Communities - Figure 3.21 Revised

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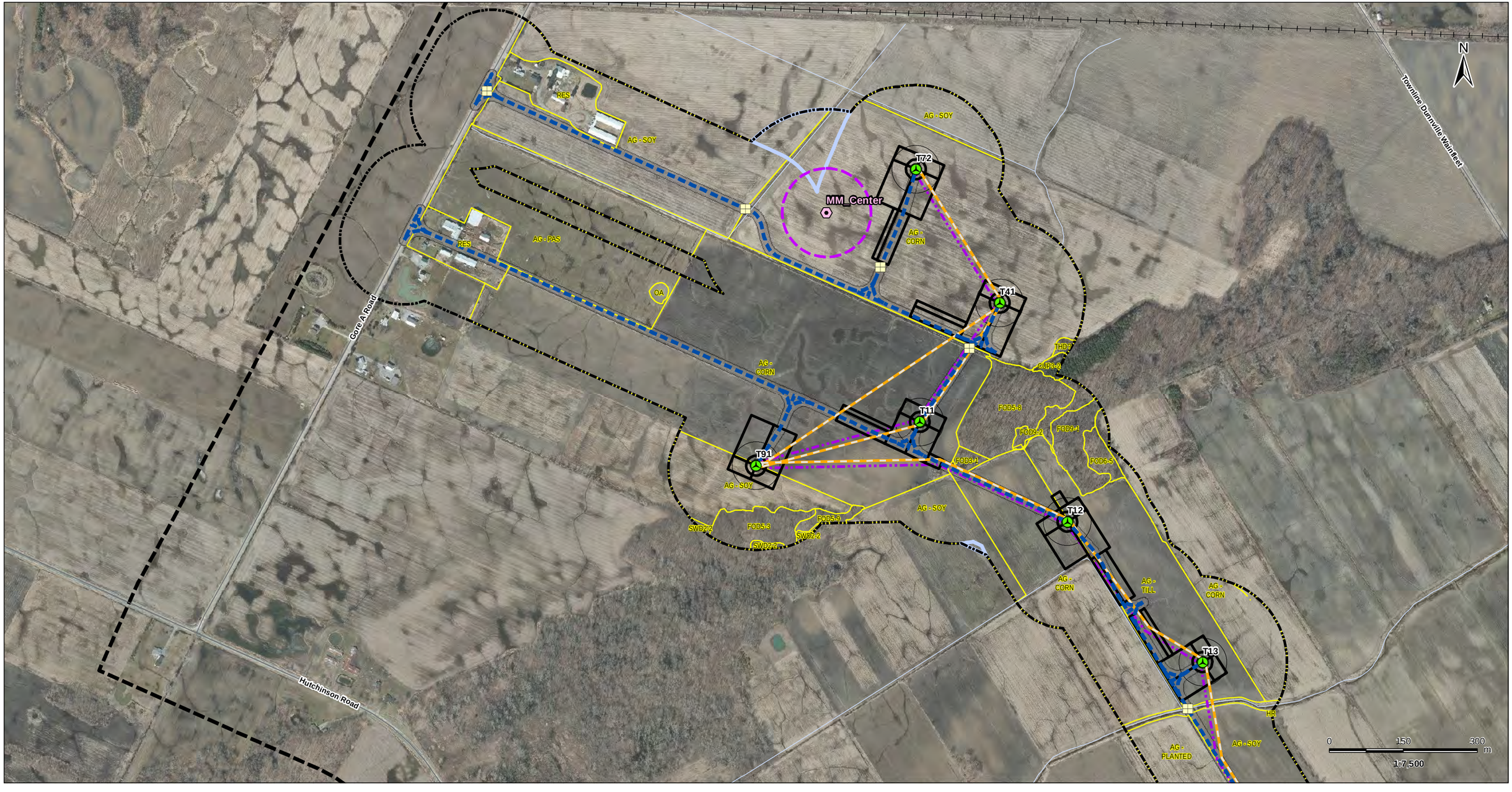

February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
  - Area Added
  - ELC Boundary
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Collector Lines – Underground or Overhead
- Temporary Laydown Area
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Notes

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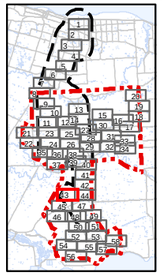

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
3.43

Title
ELC Vegetation Communities - Figure 3.43 Revised

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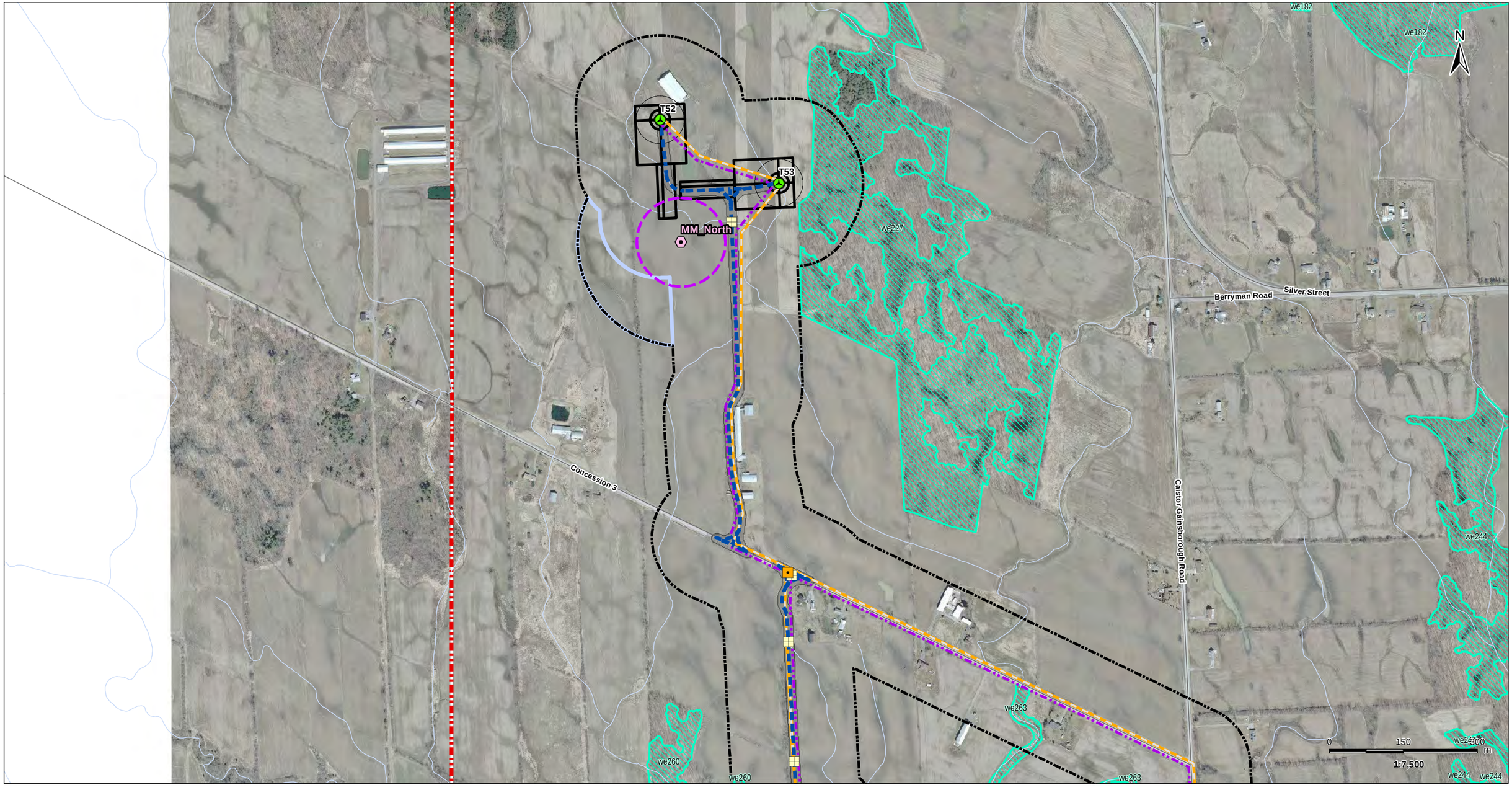

February, 2016
160950269

Legend

- Project Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Wetland Communities

Notes

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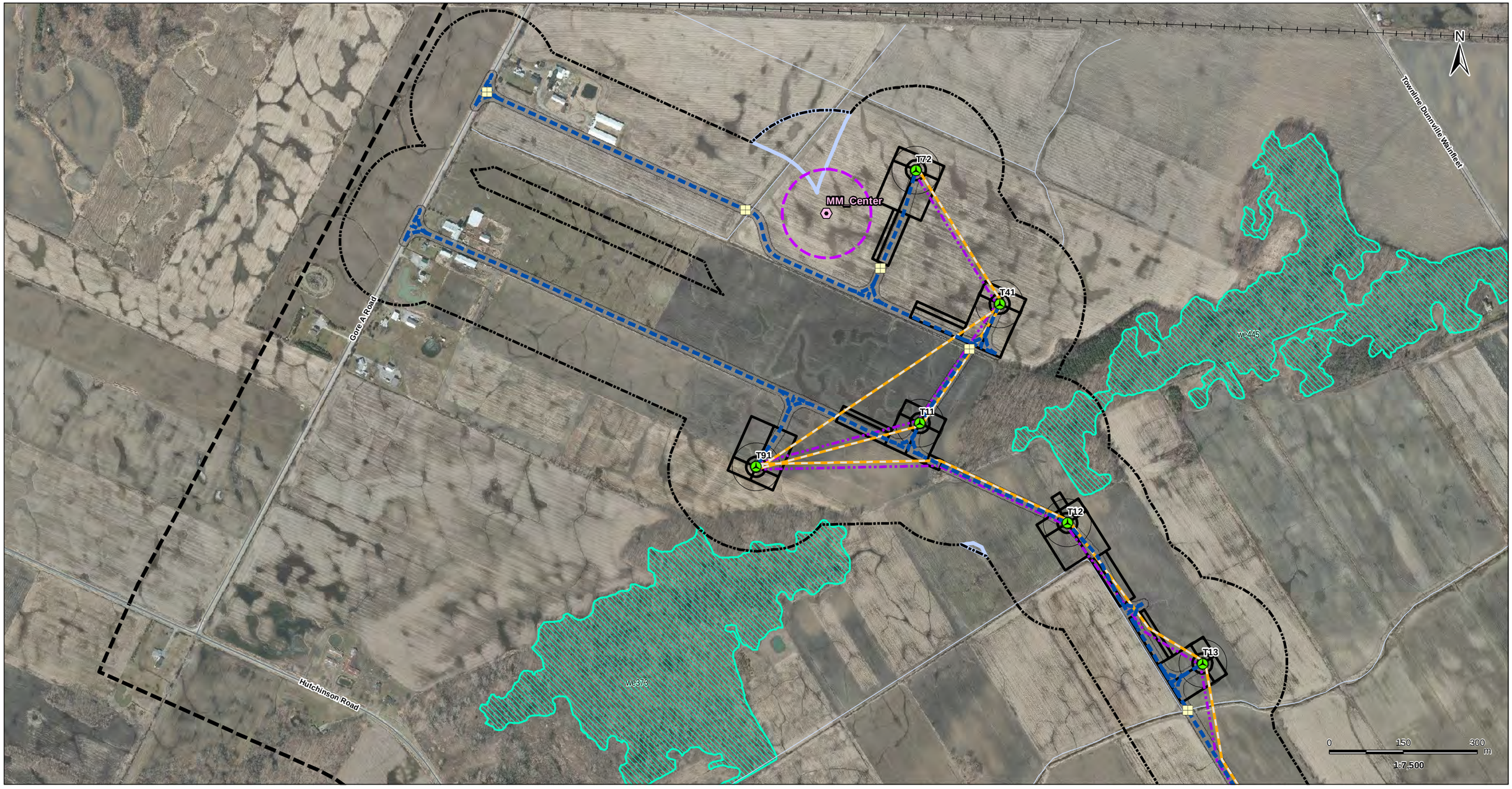
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.21

Title
Wetland Communities
Figure 4.21
Revised



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Revised: 2016-02-10 By: bcowper

February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Wetland Communities

Notes

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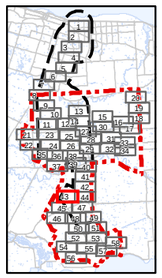

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.43

Title
Wetland Communities
Figure 4.43
Revised

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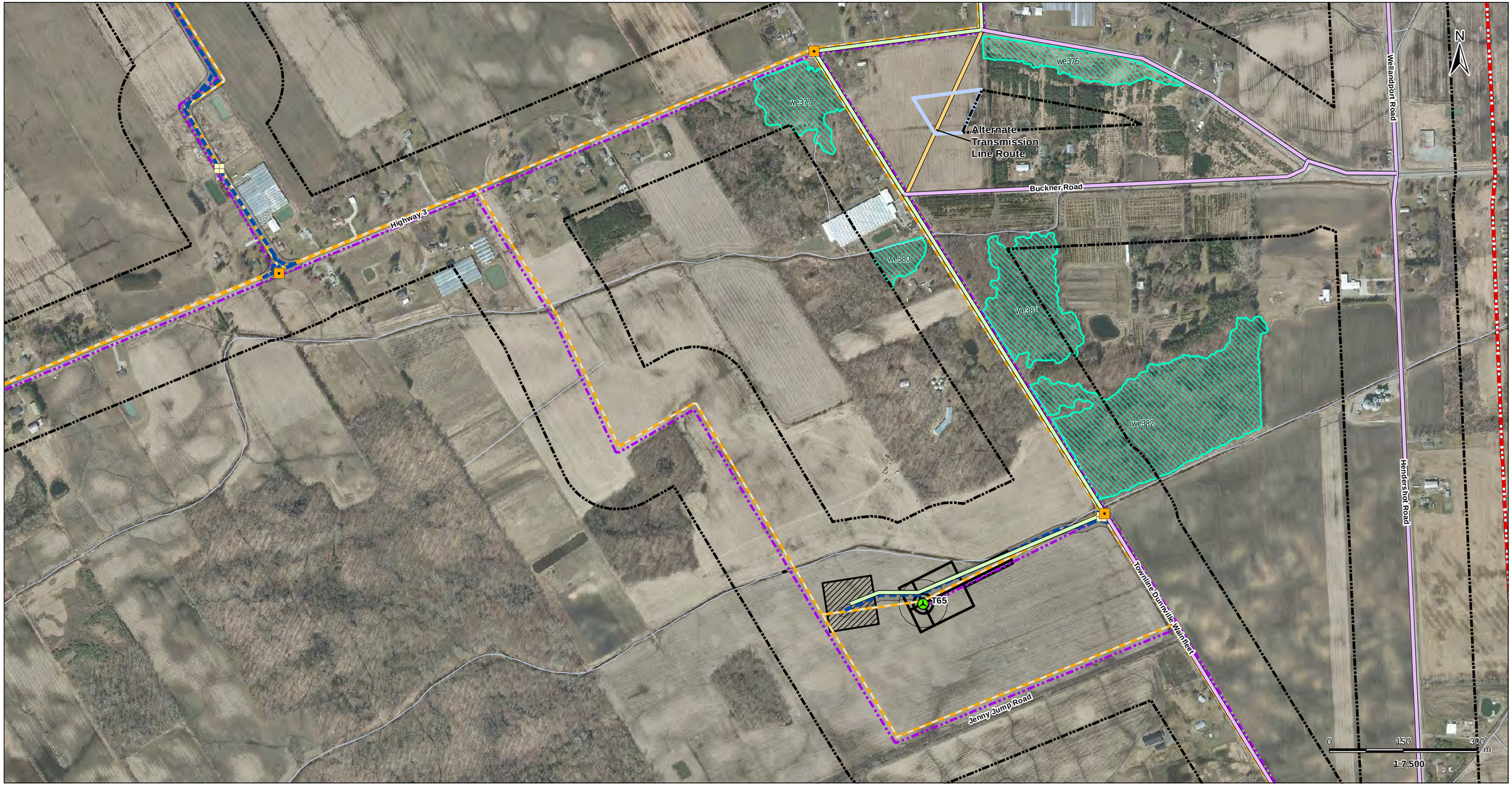

March, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Modified Alternate Transmission Route
- Potential Transmission Route (REA)
- Alternate Tranmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Transformer Substation
- Wetland Communities

Notes

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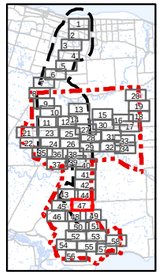

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.47

Title
Wetland Communities
Figure 4.47
Revised

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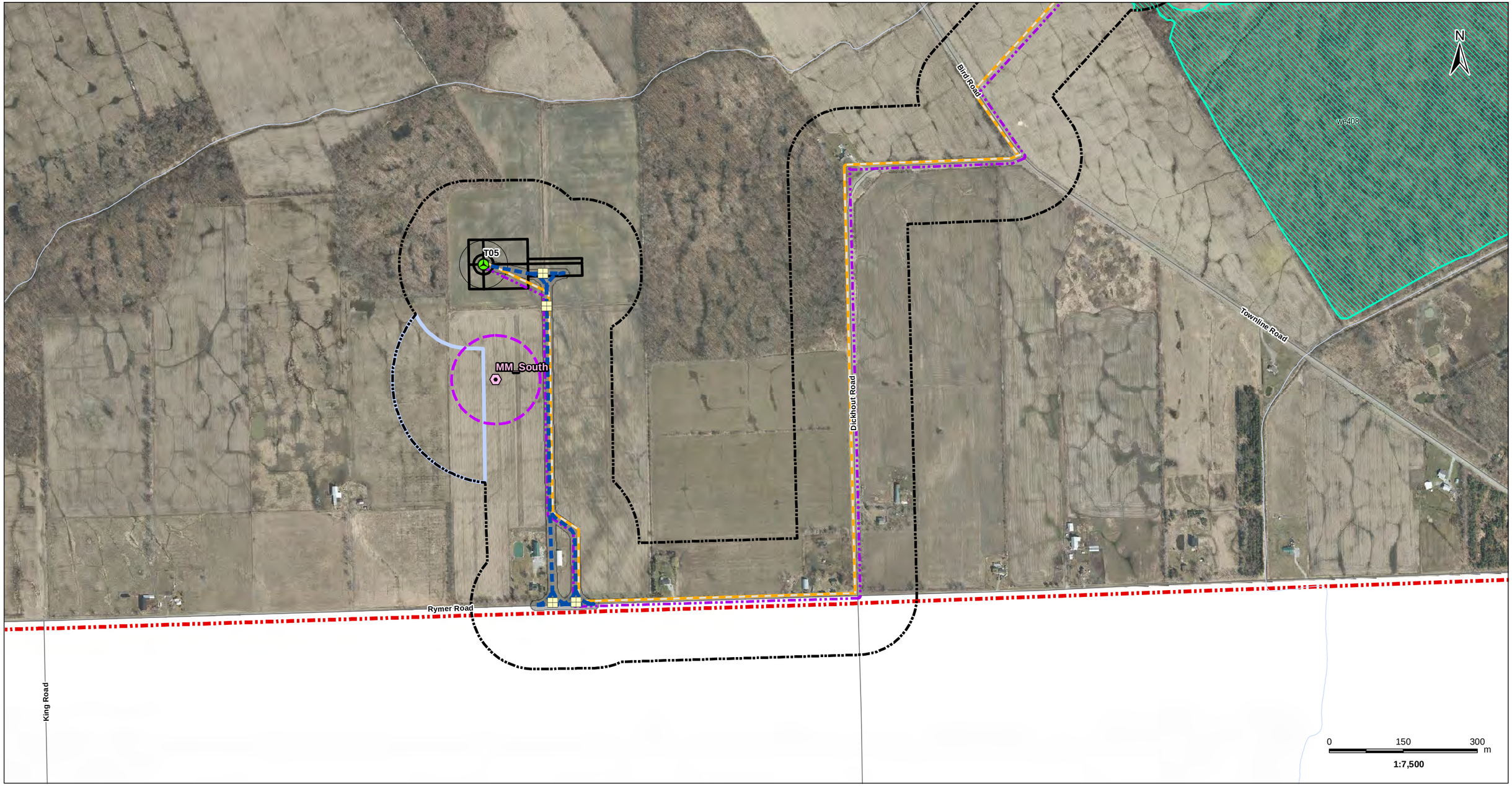

February, 2016
160950269

Legend

- Project Study Area
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Wetland Communities

Notes

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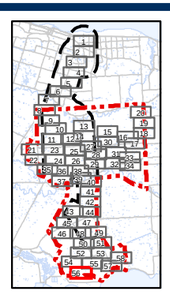

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
4.56

Title
Wetland Communities
Figure 4.56
Revised

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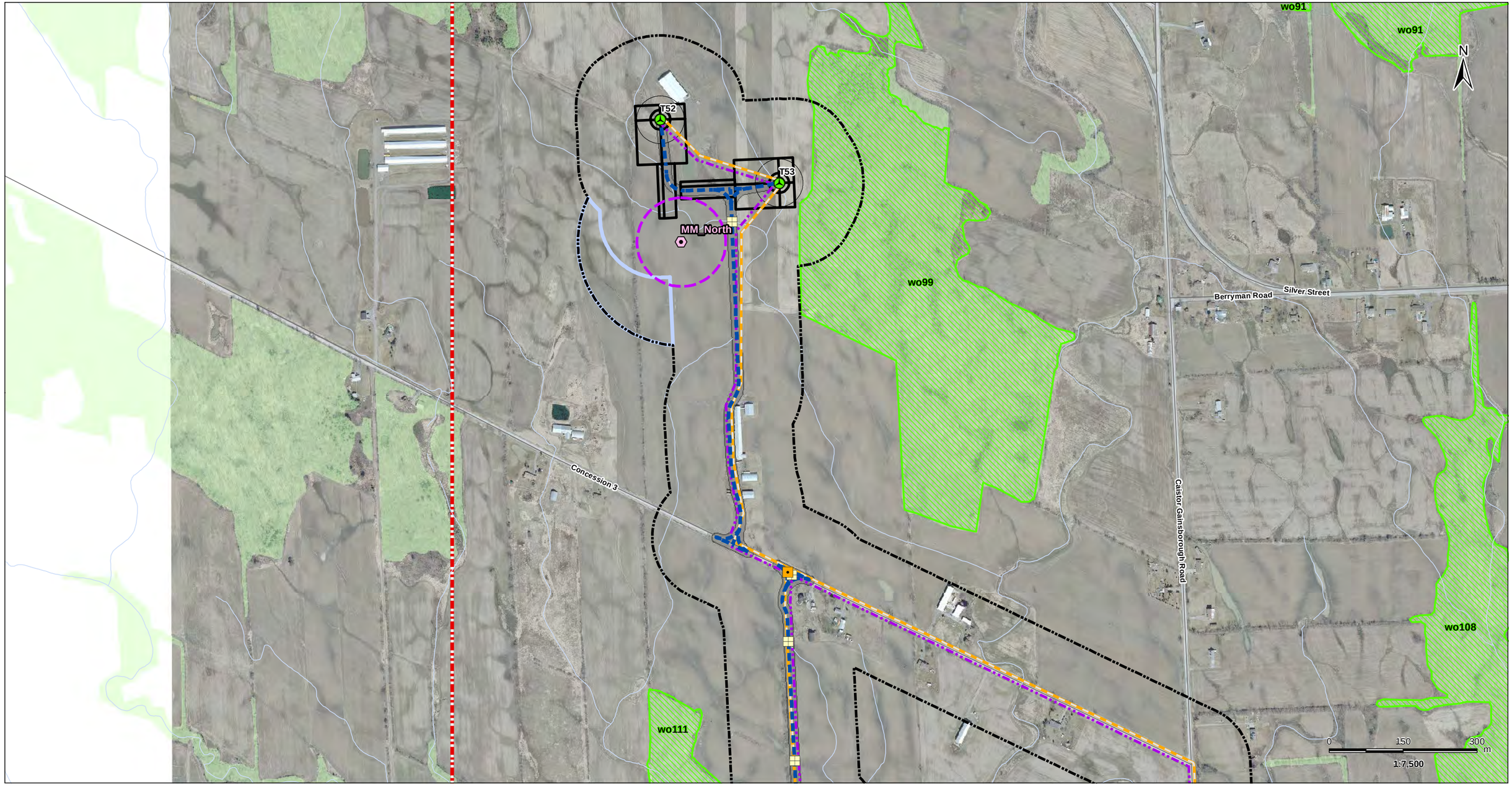
Revised: 2016-02-17 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Woodland Communities
- MNR Wooded Area

Notes

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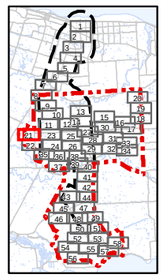

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Natural Heritage Assessment Report

Figure No.
5.21

Title
Woodland Communities
Figure 5.21
Revised

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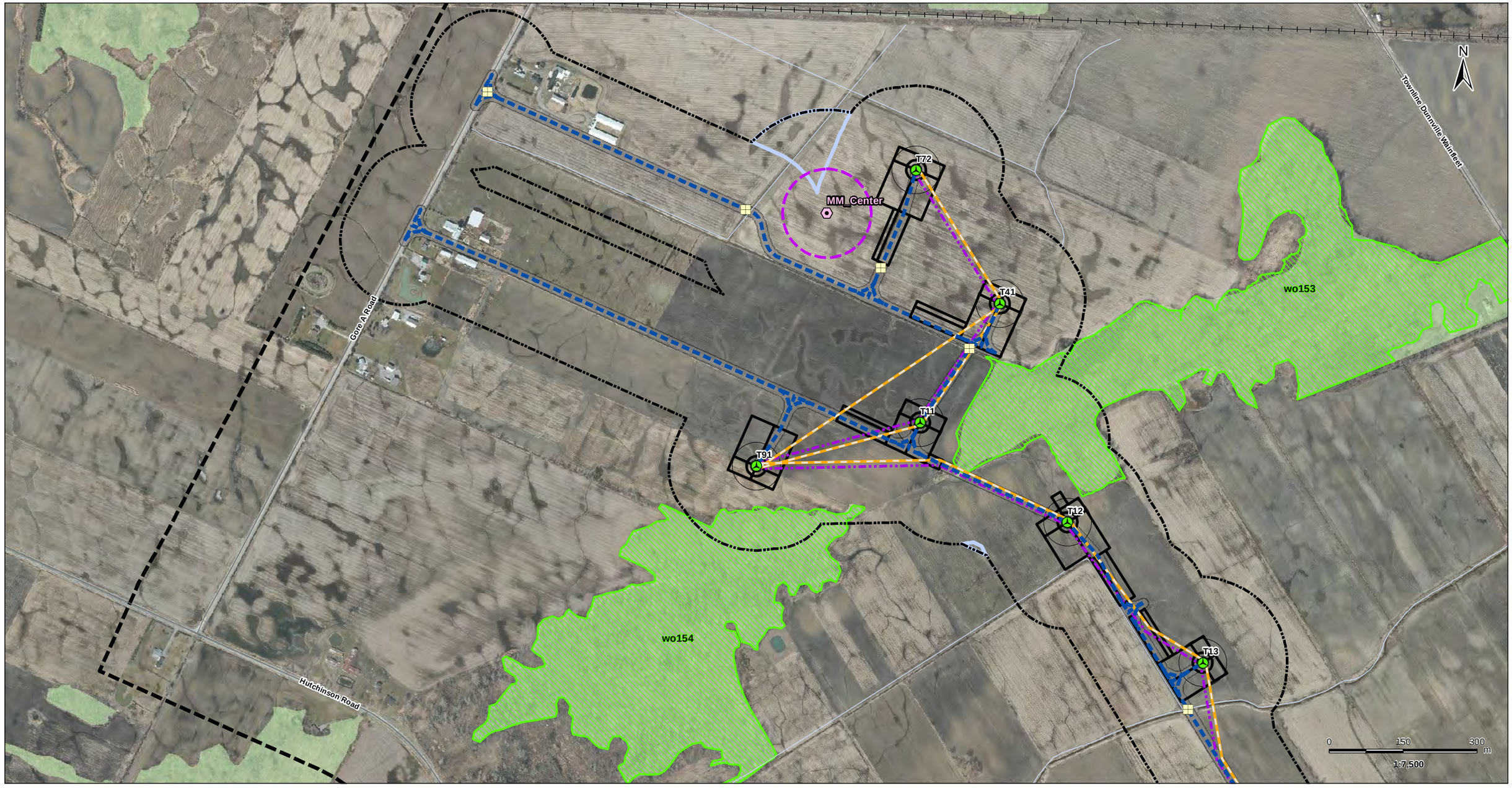
Revised: 2016-02-16 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Woodland Communities
- MNR Wooded Area

Notes

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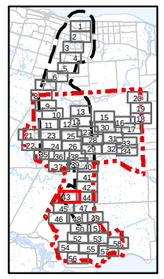

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
5.43

Title
Woodland Communities
Figure 5.43
Revised

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Revised: 2016-03-28 By: bcowper

March, 2016
160950269

Stantec

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Modified Alternate Transmission Route
- Preferred Transmission Route
- Alternate Tranmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
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- Fibre Optic Line
- Access Road 20m Construction Area
- Transformer Substation
- Woodland Communities
- MNR Wooded Area

Notes

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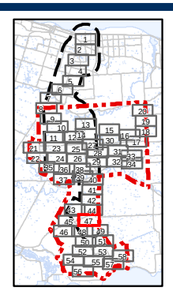
3. Orthoimagery source: First Base Solutions, Date Spring 2010.



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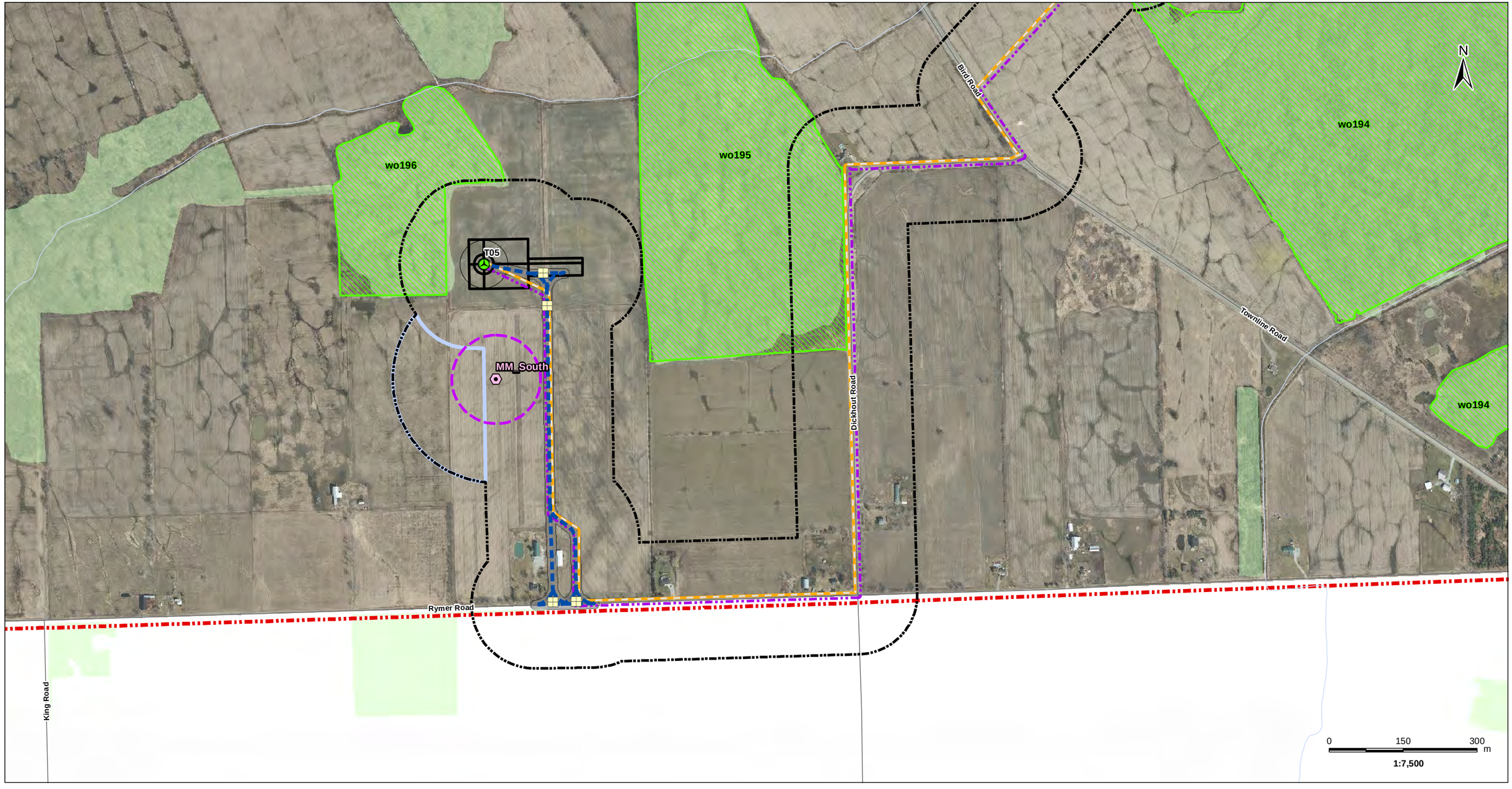
Natural Heritage Assessment Report

Figure No.
5.47

Title
Woodland Communities
Figure 5.47
Revised



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Fibre Optic Line
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Woodland Communities
- MNR Wooded Area

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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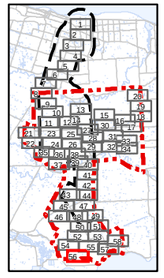
3. Orthoimagery source: First Base Solutions, Date Spring 2010.

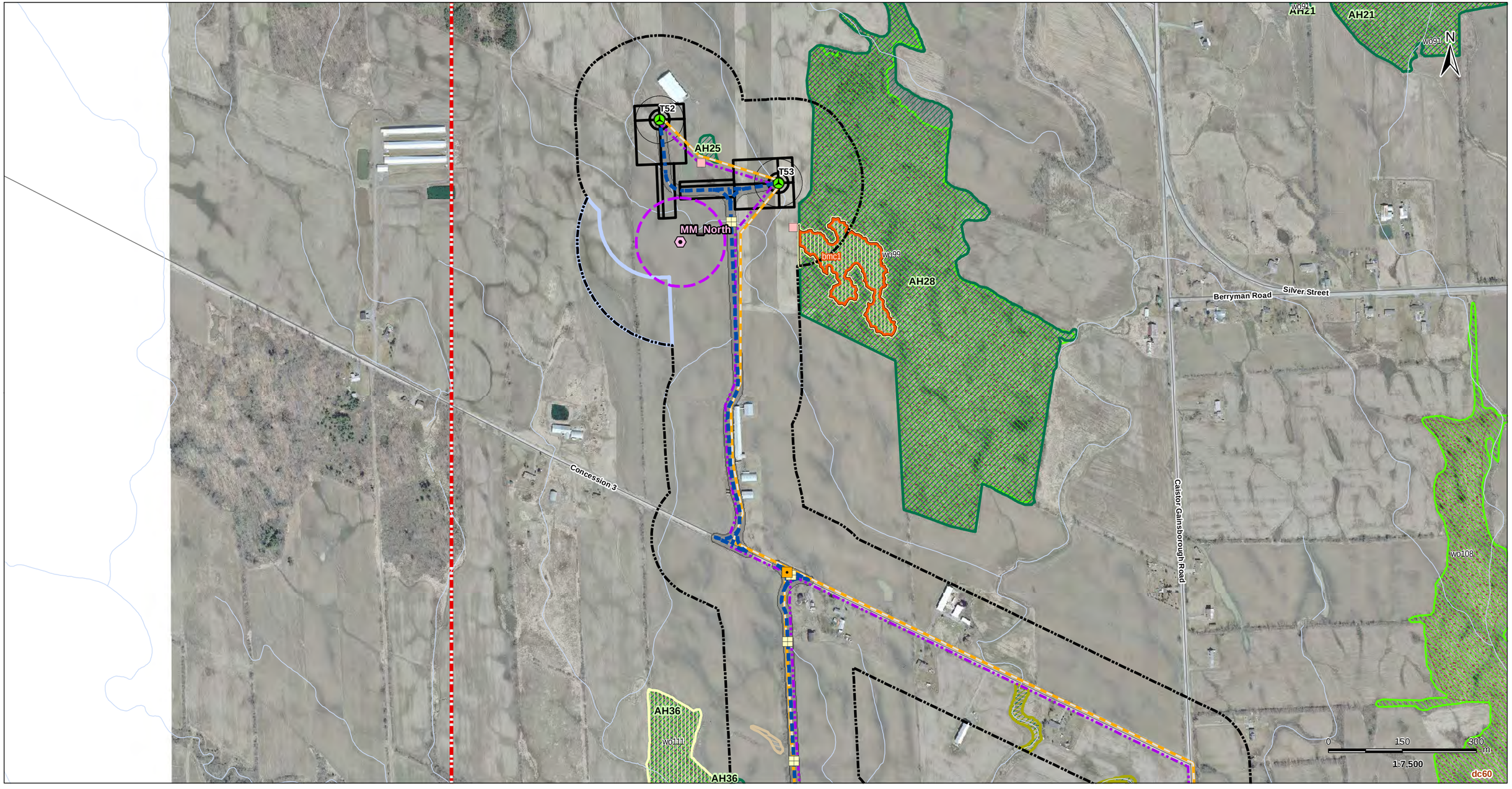


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
5.56

Title
Woodland Communities
Figure 5.56
Revised

V:\01609\Active\160950269\planningdrawing\mxd_Modification_Reports\NHA_MET_Towers_and_Buckner_Rd\160950269_MET_Buckner_Figure_6_Candidate_Significant_Wildlife_Habitat_Mapbook.mxd
Revised: 2016-02-17 By: bcowper



February, 2016
160950269

Stantec

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Amphibian Breeding Stations
- Woodland Communities
- Deer Congregation Areas (MNR)
- Amphibian Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat
- Bat Maternity Colonies

Notes

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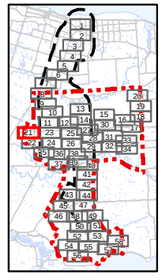
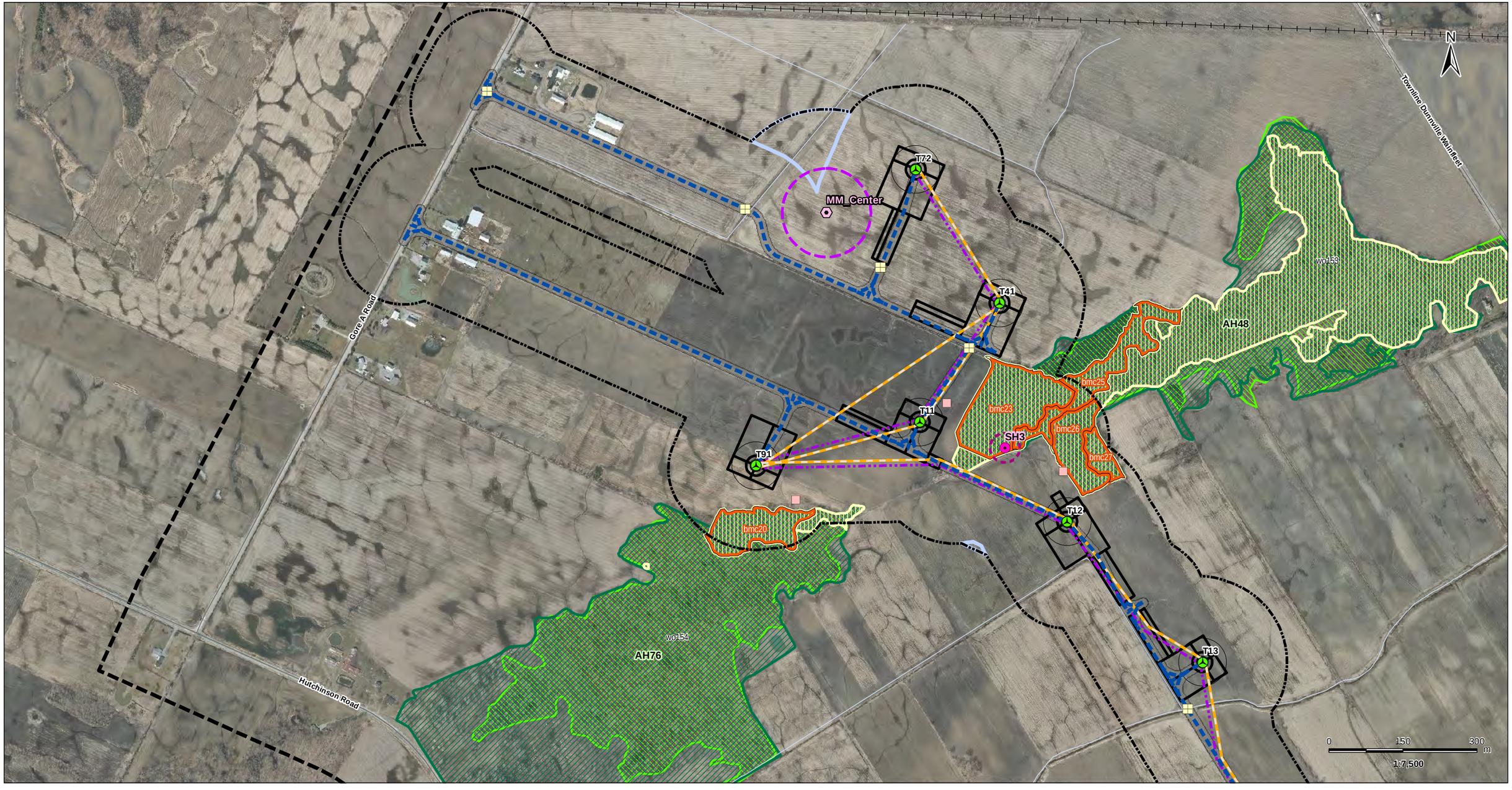


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.21

Title
Candidate Significant Wildlife Habitat Figure 6.21 Revised

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\NHA_MET_Towers_and_Buckner_Rd\160950269_MET_Buckner_Figure_6_Candidate_Significant_Wildlife_Habitat_Mapbook.mxd
Revised: 2016-02-10 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Amphibian Breeding Stations
- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Woodland Communities
- Deer Congregation Areas (MNR)
- Amphibian Breeding Habitat
- Woodland Vole Habitat
- Bat Maternity Colonies

Notes

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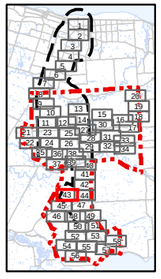

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.43

Title
Candidate Significant Wildlife Habitat Figure 6.43 Revised

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Revised: 2016-03-28 By: bcowper

March, 2016
160950269

Legend

- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Potential Transmission Route (REA)
- Alternate Tranmission Route
- Modified Alternate Transmission Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Transformer Substation
- Amphibian Breeding Stations
- Woodland Communities
- Deer Congregation Areas (MNR)
- Amphibian Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat

Notes

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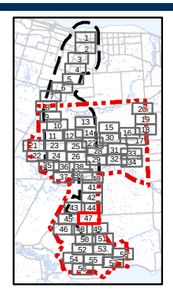
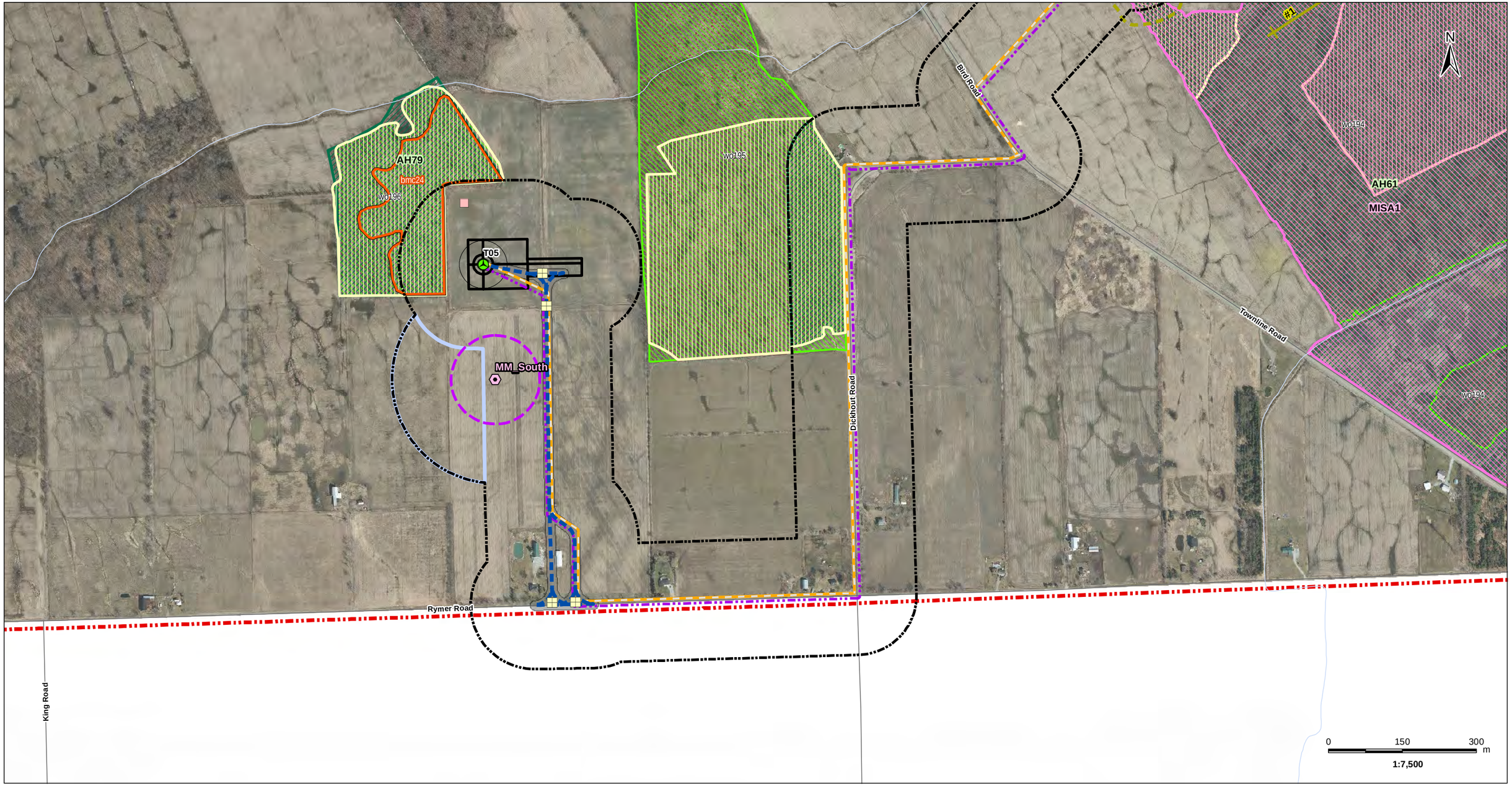


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.47

Title
Candidate Significant Wildlife Habitat Figure 6.47 Revised

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\NHA_MET_Towers_and_Buckner_Figure_6_Candidate_Significant_Wildlife_Habitat_Mapbook.mxd
Revised: 2016-02-10 By: bcowper



February, 2016
160950269

Legend

- Project Study Area
- 120m Zone of Investigation
- Zone of Investigation Adjustments
- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)
- Amphibian Breeding Stations
- Migratory Bird Transect
- Woodland Communities
- Deer Congregation Areas (MNR)
- Landbird Migratory Stopover
- Amphibian Breeding Habitat
- Woodland Raptor Nesting Habitat/ Woodland Area Sensitive Bird Breeding Habitat
- Woodland Vole Habitat
- Terrestrial Crayfish Habitat
- Turtle Habitat 30m Buffer
- Bat Maternity Colonies

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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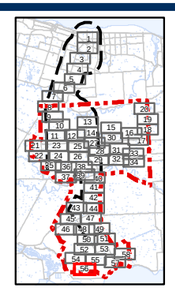

Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
6.56

Title
Candidate Significant Wildlife Habitat Figure 6.56 Revised

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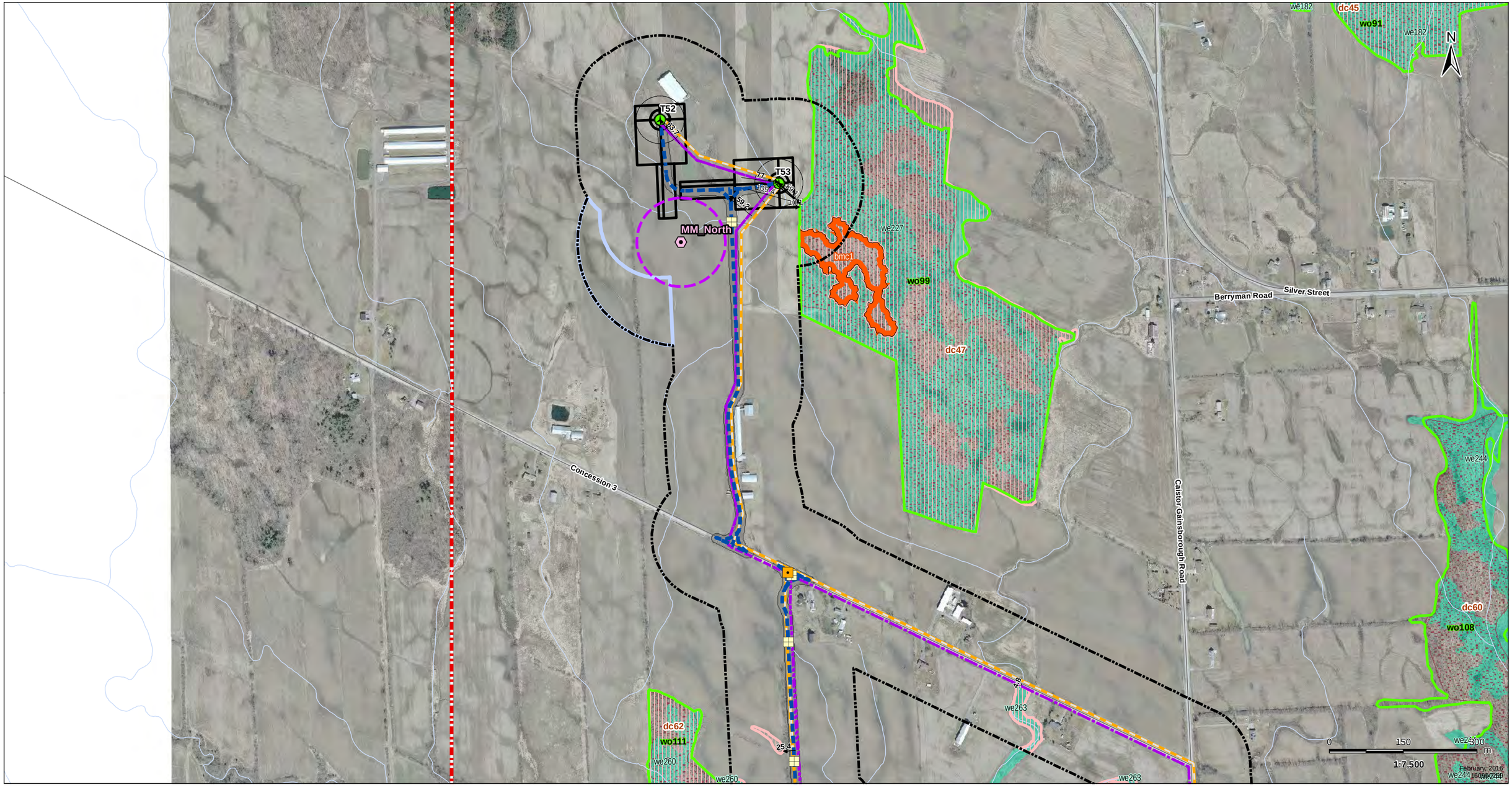
Revised: 2016-02-17 By: bcowper



Legend

- Project Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments

- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Significant Wildlife Habitat

- Snake Hibernacula
- Wetland Communities
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)
- Bat Maternity Colonies

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.
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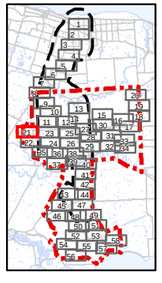
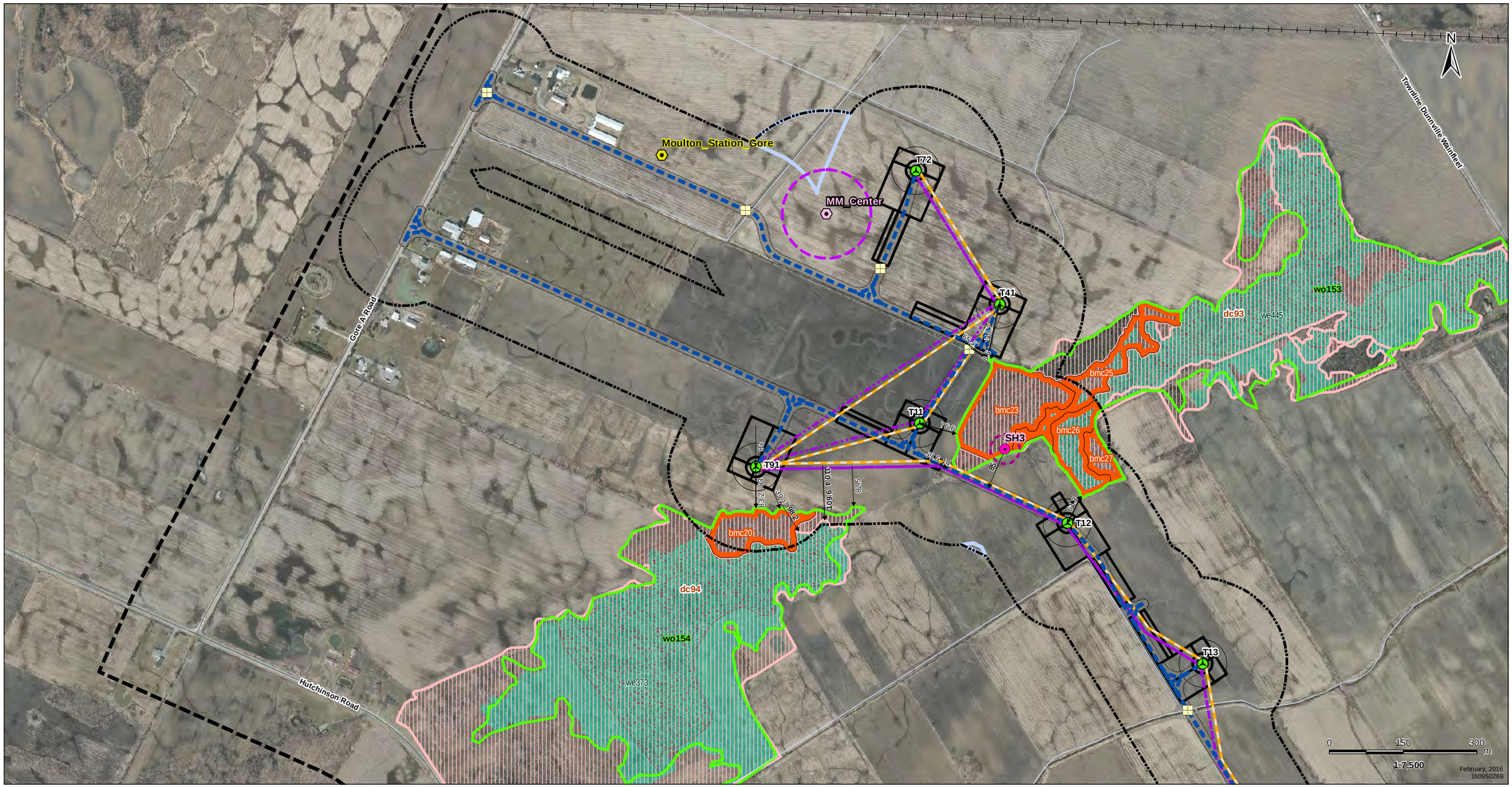


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.21

Title
Significant Natural Features - Figure 7.21 Revised



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Revised: 2016-02-17 By: bcowper

Stantec

Legend

- Existing MET Tower
- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments

- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Significant Wildlife Habitat

- Snake Hibernacula
- Snake Hibernacula 30m Buffer
- Wetland Communities
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)
- Bat Maternity Colonies

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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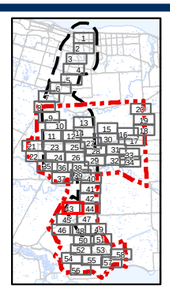
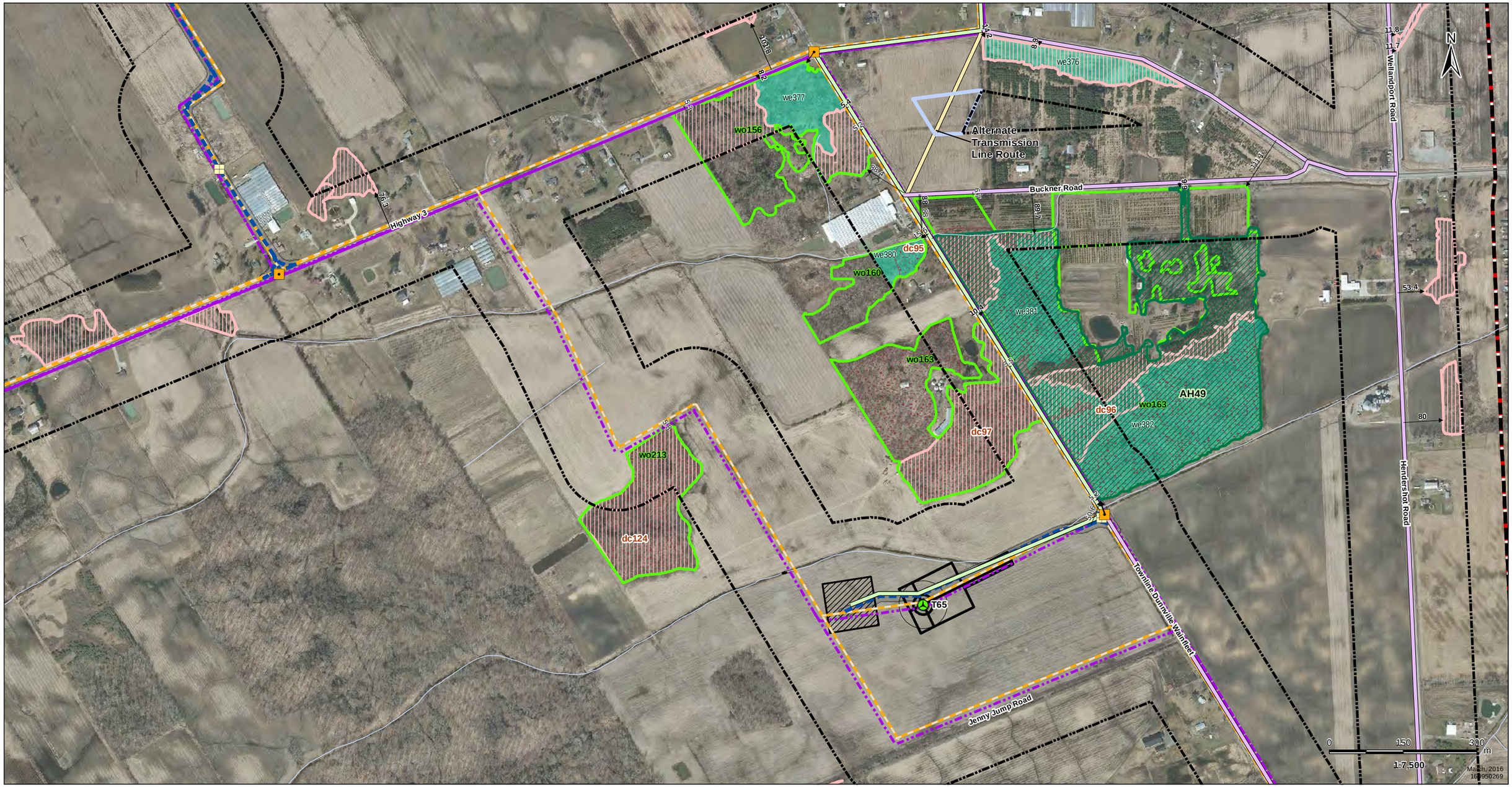


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.43

Title
Significant Natural Features - Figure 7.43 Revised



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Revised: 2016-03-28 By: bcowper

Stantec

Legend

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

Zone of Investigation Adjustments

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

Significant Wildlife Habitat

- Snake Hibernacula
- Wetland Communities
- Woodland Amphibian Breeding Habitat
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N).
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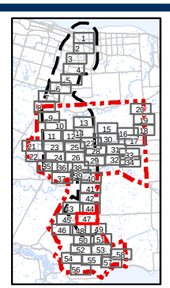
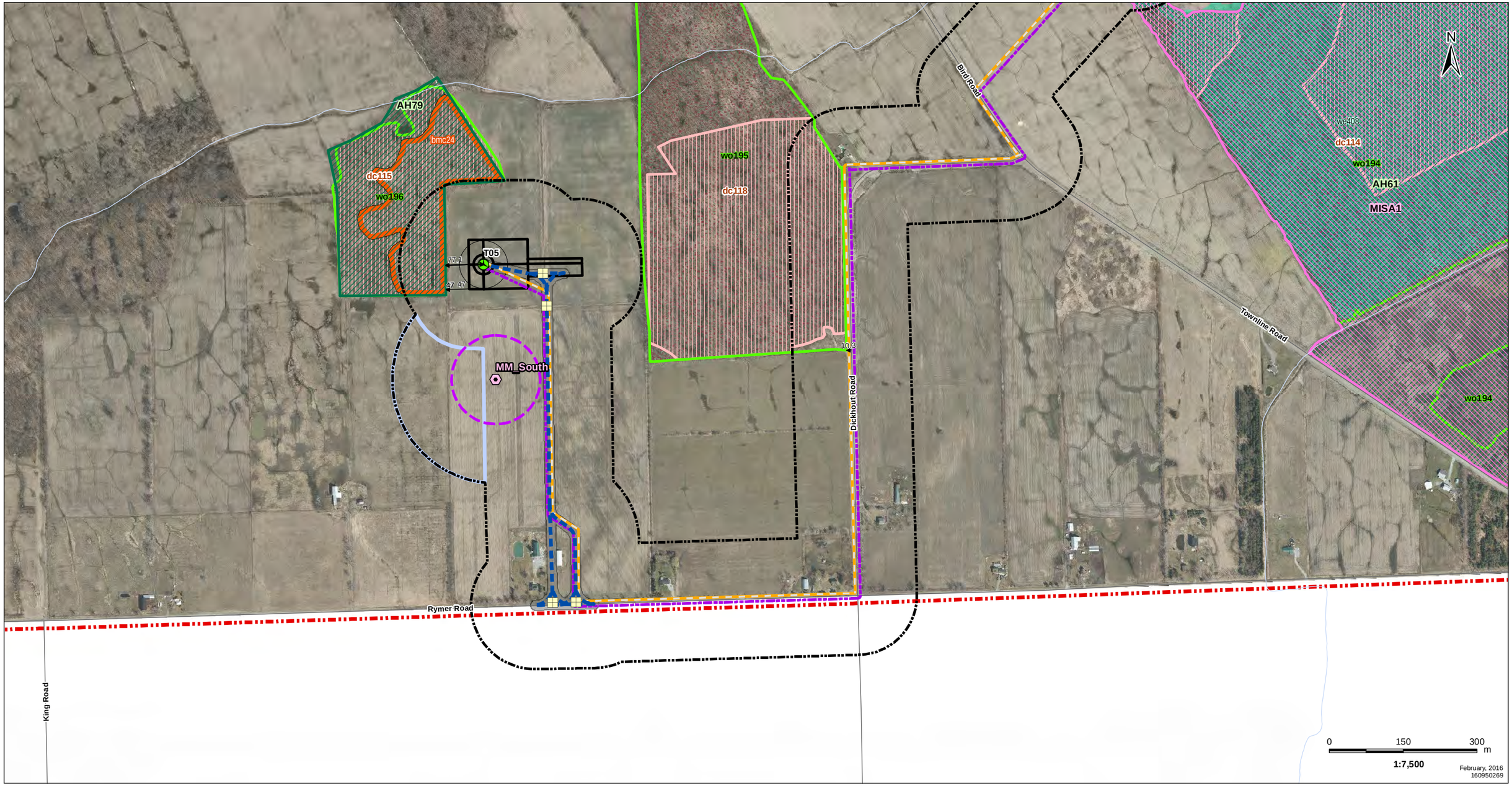


Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.47

Title
Significant Natural Features - Figure 7.47 Revised



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Revised: 2016-02-17 By: bcowper

Legend

- Project Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments

- Area Added
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Fibre Optic Line
- Potential Access Road
- Access Road 20m Construction Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Significant Wildlife Habitat

- Snake Hibernacula
- Landbird Migratory Stopover
- Wetland Communities
- Woodland Amphibian Breeding Habitat
- Woodland Communities
- Generalized Wildlife Habitat
- Deer Congregation Areas (MNR) (Generalized)
- Bat Maternity Colonies

Notes

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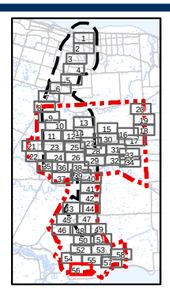
3. Orthoimagery © First Base Solutions, 2010.



Client/Project
FWRN LP
Natural Heritage Assessment Report

Figure No.
7.56

Title
Significant Natural Features - Figure 7.56 Revised

APPENDIX C:
CORRESPONDENCE WITH MTCS

Ministry of Tourism, Culture and Sport

Heritage Program Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314-7145
Fax: 416 212-1802

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes patrimoine
Direction des programmes et des services
Division de culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Tél: 416 314-7145
Téléc: 416 212-1802

Ontario

April 5, 2016

Meaghan Rivard
Stantec Consulting Limited
49 Frederick Street
Kitchener, ON N2H 6M7
E: Meaghan.Rivard@stantec.com

Project:	**Niagara Region Wind Farm**
Feed-in Tariff Number:	**FIT-FLKZ509**
Report Title:	**Buckner Transmission Line Route Niagara Region Wind, Heritage Assessment Review (amendment)**
Applicant:	**Niagara Region Wind Corporation**
Location:	**Townships of West Lincoln and Wainfleet and Town of Lincoln in the Regional Municipality of Niagara, and portions of Haldimand Country.**
MTCS File No.:	**00EA080**

Dear Meaghan Rivard:

This office has reviewed the above-mentioned report (the "Report"), which has been submitted to this ministry as required under O. Reg. 359/09, as amended (Renewable Energy Approvals under the *Environmental Protection Act*) (the "REA regulation"). This letter constitutes the Ministry of Tourism, Culture and Sport (the "Ministry") comments for the purposes of section 23(3)(a) of the REA regulation regarding the heritage assessment undertaken for the above project.

The Report recommends the following:

> **Recommendations**
>
> It was determined that there were no heritage resources positioned within, or adjacent to, the property where modifications are proposed. Based on these findings, it was determined that the analysis, assessment, and recommendations of the HAR (Stantec, 2013) remain unchanged as a result of the proposed project modifications.

Based on the information contained in the Report, the Ministry is satisfied that the heritage assessment process and reporting are consistent with the applicable heritage assessment requirements established in s. 23 of O. Reg. 359/09. Please note that the Ministry makes no representation or warranty as to the completeness, accuracy or quality of the heritage assessment report (please see Note 1).

This letter does not waive any requirements under the *Ontario Heritage Act*.

This letter does not constitute approval of the renewable energy project. Approvals or licences for the project may be required under other statutes and regulations. Please ensure that you obtain all required approvals and/or licences.

Please ensure that the proponent is aware that, if new information or substantive project changes arise after issuance of this letter, the applicant should discuss them with you to determine if any additional assessment or reporting is required. If additional reporting or revisions are required, they should be submitted to the Ministry for review. Upon completion of that review, the Ministry will determine if any revisions to the content of this letter are required.

Should you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Joseph Muller, RPP/MCIP
Heritage Planner
Joseph.Muller@Ontario.ca

cc. Shiloh Berriman, Project Coordinator
Enercon

Kathleen Hedley, Director
Environmental Approvals Branch, Ministry of the Environment and Climate Change (MoECC)

Sarah Paul, Director
Environmental Approvals Access and Service Integration Branch, MoECC

James Hamilton, Manager
Culture Services Unit, Ministry of Tourism, Culture and Sport

---

Note 1: In no way will the Ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional heritage resources are identified or the Report is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

From:	Rivard, Meaghan
To:	"Hatcher, Laura (MTCS)"
Cc:	Varley, Colin; Myrans, Katharine; Tripp, Bryan; Sebele, James
Subject:	Niagara Region Wind Centre Project - Modification Letter (Mod #3)
Date:	Wednesday, March 02, 2016 3:00:00 PM
Attachments:	let_160950269_addendum_buckner_final.pdf

Good afternoon Laura,

Please find the attached letter for your review and comment.

Best,
Meaghan

Meaghan Rivard, MA, CAHP
Heritage Specialist
Stantec
100-300 Hagey Boulevard Waterloo ON N2L 0A4
Phone: (519) 575-4114
Cell: (226) 268-9025
Fax: (519) 579-6733
Meaghan.Rivard@stantec.com

Stantec Consulting Ltd.
100-300 Hagey Boulevard, Waterloo ON N2L 0A4

March 2, 2016
File: 160950269

Attention: Laura Hatcher, Team Lead: Heritage Land Use Planning
Ministry of Tourism, Culture, and Sport – Cultural Services Unit

Dear Ms. Hatcher,

Reference: Buckner Transmission Line Route, Niagara Region Wind Farm, Heritage Assessment Review

FWRN LP (the Proponent or FWRN) is developing the Niagara Region Wind Farm (the Project), a 230 MW wind energy 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.

The Project's Renewable Energy Approval (REA) was issued under Ontario Regulation 359/09 of the *Environmental Protection Act*. The REA was issued on November 6, 2014 (EBR #012-0614). As part of the REA, a Heritage Assessment Report (HAR) entitled, *Heritage Assessment, Niagara Region Wind Farm* (Stantec, 2013), was completed. The HAR was submitted to the Ministry of Tourism Culture and Sport (MTCS) and a letter of satisfaction issued on April 12, 2013. Since receipt of the REA and completion of the Environmental Review Tribunal, FWRN has identified the need to make minor amendments (Modifications) to the Project that differ from the information described in the REA Application documents and approved by the Ministry of the Environment and Climate Change (MOECC).

Stantec was retained by the Proponent to review the proposed modifications to the Project as they pertain to heritage resources. The purpose of this letter is to review the modifications in relation to the findings of the original heritage assessment and to identify heritage resources, if any, that were not previously assessed. Where the modification may affect a previously identified heritage resource, the impact will be assessed. If heritage resources were identified as a result of the project modification, the memo will assess the resources based on *Ontario Regulation 9/06* and determine, if any, the potential negative impacts of the project on the heritage resources.

PROJECT DESCRIPTION

The Project Study Area covers approximately 33,747 hectares and is generally bounded by Castor Gainsborough Road to the West; the Queen Elizabeth Way to the North; the north shore of Lake Erie to the South; and Balfour Street to the East (Stantec, 2013). 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, meteorological towers (MET towers), 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 (Stantec, 2013).

Reference: Buckner Transmission Line Route, Niagara Region Wind Farm, Heritage Assessment Review

HERITAGE CONTEXT

Since completion of the HAR, the addition of 3 MET towers has been proposed. Stantec reviewed this modification and determined that no impacts were anticipated to result from the proposed modification. This information was provided to MTCS on December 21, 2015 and a letter of satisfaction received from MTCS on January 5, 2016.

PROPOSED MODIFICATION DESCRIPTION

The Proponent has proposed an alternate transmission line route southeast of the intersection of Highway 3 and Townline Dunnville Wainfleet road, where Buckner Road intersects with Townline Dunnville Wainfleet road. The alternate route is proposed to cross an agricultural field situated at 44241 Highway 3, in the Township of Wainfleet.

REPORT REVIEW

Review of the HAR (Stantec, 2013) determined that the property where modifications are proposed was included in the Project Location identified during preparation of the 2013 HAR and therefore considered for potential heritage resources in the original assessment. Upon review, it was determined there were no heritage resources identified at, or adjacent to, 44241 Highway 3. Therefore, no additional assessment is required.

RECOMMENDATIONS

It was determined that there were no heritage resources positioned within, or adjacent to, the property where modifications are proposed. Based on these findings, it was determined that the analysis, assessment, and recommendations of the HAR (Stantec, 2013) remain unchanged as a result of the proposed project modifications.

We ask that the MTCS review the attached figure illustrating the proposed project modifications. Following review, if appropriate, we request confirmation of Stantec's review and MTCS comment regarding the proposed modification as related to recommendations of the HAR.

Reference: Buckner Transmission Line Route, Niagara Region Wind Farm, Heritage Assessment Review

Regards,
STANTEC CONSULTING LTD.

Meaghan Rivard, MA
Heritage Consultant
Phone: (519) 579-6733
Fax: (226) 268-9025
Meaghan.Rivard@stantec.com

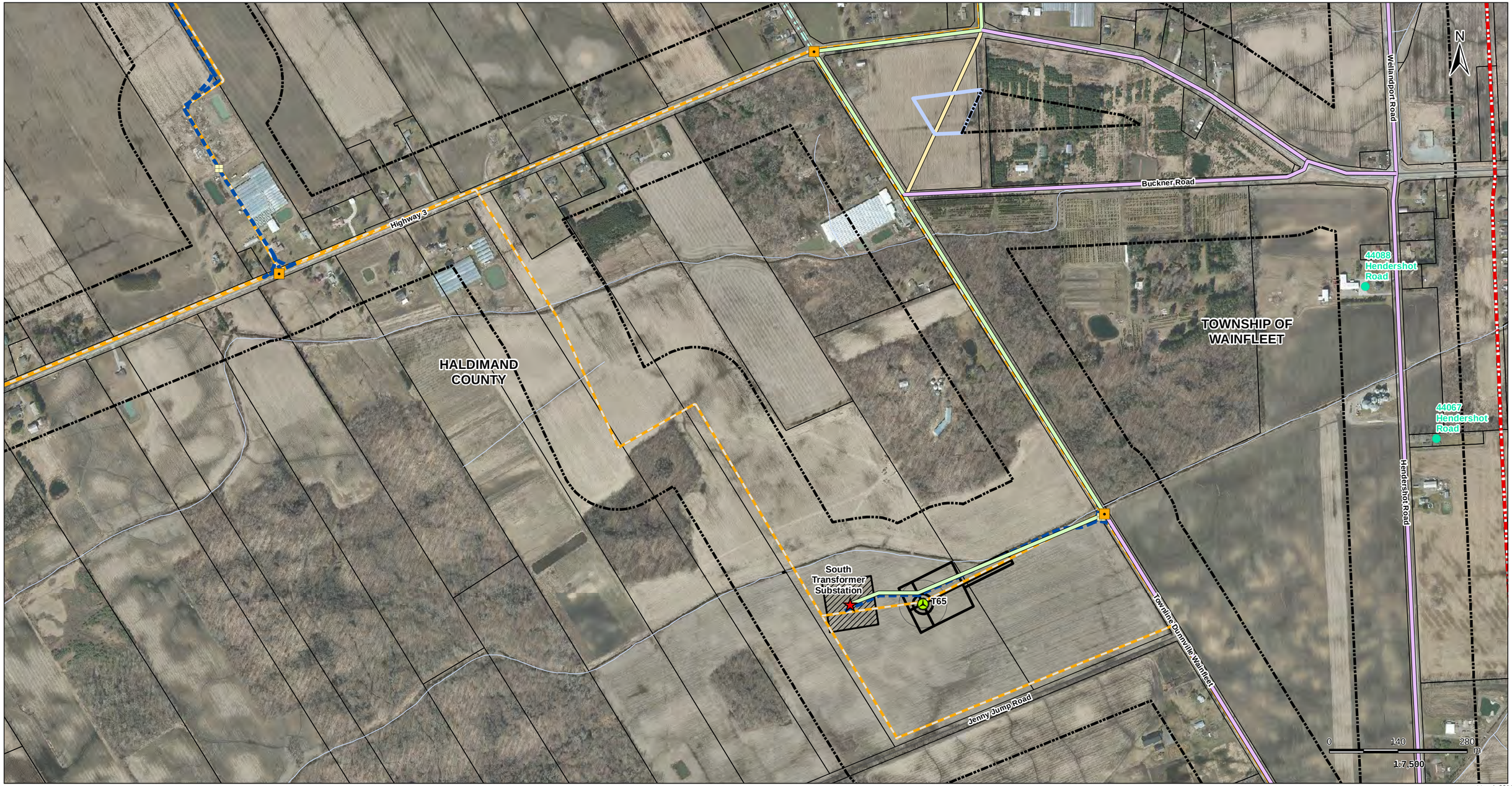
Colin Varley, MA, RPA
Associate, Senior Archaeologist
Phone: (613) 738-6087
Fax: (613) 293-3035
Colin.Varley@stantec.com

Attachments: Figure 2.3, Identified Heritage Resources

ks i:\01609\active\60950269\reports\amendments 2015\built heritage addendum_2015\modification doc #3 (met + buckner t-line)\let_160950269_addendum_buckner_final.docx

References

Stantec Consulting Ltd. 2013. *Heritage Assessment and Environmental Impact Study for the Niagara Region Wind Farm*.



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Revised: 2016-03-31 By: bcowper

March 2016
160950269

Stantec

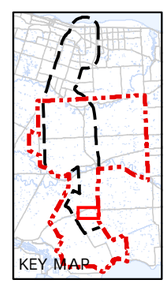
Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2010.
3. Orthoimagery © First Base Solutions, 2010.

Legend

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

Zone of Investigation Adjustments
- Area Added

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Transformer Substation Location
- Junction Box
- Proposed Culvert
- Modified Alternate Transmission Route
- Preferred Transmission Line Route (REA)
- Alternate Transmission Line Route
- Temporary Laydown Area
- Collector Lines – Underground or Overhead
- Potential Access Road
- Transformer Substation
- Roads
- Watercourse (MNR)
- Property Boundary
- Municipality Lower Tier



Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
2.3

Title
Identified Heritage Resources

From:	Muller, Joseph (MTCS)
To:	Rivard, Meaghan
Cc:	shiloh.berriman@enercon.de; Hedley, Kathleen (MOECC); Paul, Sarah (MOECC); Hamilton, James (MTCS)
Subject:	Niagara Region Wind Farm, Proposed Installation of Metrological Evaluation Towers (amendment)
Date:	Tuesday, January 05, 2016 1:48:39 PM
Attachments:	NRWF addendum#1 2016-01-05 CSU MTCS Letter.pdf

Hello Meaghan Rivard:

Please find attached our letter from the Culture Services Unit at the Ministry of Tourism, Culture and Sport on the above project, and contact me if you have any questions or would like to further discuss the file. Thank-you for your assistance,

Joe

Joseph Muller, RPP, MCIP
Heritage Planner
Ministry of Tourism, Culture and Sport
Culture Division | Programs and Services Branch | Culture Services Unit
401 Bay Street, Suite 1700
Toronto, Ontario M7A 0A7
Tel. 416.314.7145 | Fax. 416.212.1802

Ministry of Tourism, Culture and Sport

Culture Services Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel: 416 314-7145
Fax: 416 212-1802

Ministère du Tourisme, de la Culture et du Sport

Unité des services culturels
Direction des programmes et des services
Division de culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Tél: 416 314-7145
Téléc: 416 212-1802

Ontario

January 5, 2016

Meaghan Rivard
Stantec Consulting Ltd.
49 Frederick Street
Kitchener, ON N2H 6M7
E: Meaghan.Rivard@stantec.com

Project:	**Niagara Region Wind Farm**
Feed-in Tariff Number:	**FIT-FLKZ509**
Report Title:	**Proposed Installation of Metrological Evaluation Towers Niagara Region Wind, Heritage Assessment Review (amendment)**
Applicant:	**Niagara Region Wind Corporation**
Location:	**Townships of West Lincoln and Wainfleet and Town of Lincoln in the Regional Municipality of Niagara, and portions of Haldimand Country.**
MTCS File No.:	**00EA080**

Dear Meaghan Rivard:

This office has reviewed the above-mentioned report (the "Report"), which has been submitted to this ministry as required under O. Reg. 359/09, as amended (Renewable Energy Approvals under the *Environmental Protection Act*) (the "REA regulation"). This letter constitutes the Ministry of Tourism, Culture and Sport (the "Ministry") comments for the purposes of section 23(3)(a) of the REA regulation regarding the heritage assessment undertaken for the above project.

The Report recommends the following:

> **3. Recommendations**
>
> No impacts resulting from the proposed Met Towers were identified. Based on these findings, it was determined that the analysis, assessment, and recommendations of the HAR (Stantec, 2013) pertaining to the heritage resource at 214 Gore A Road remain unchanged as a result of the proposed project modifications.

Based on the information contained in the Report, the Ministry is satisfied that the heritage assessment process and reporting are consistent with the applicable heritage assessment requirements established in s. 23 of O. Reg. 359/09. Please note that the Ministry makes no representation or warranty as to the completeness, accuracy or quality of the heritage assessment report (please see Note 1).

This letter does not waive any requirements under the *Ontario Heritage Act*.

This letter does not constitute approval of the renewable energy project. Approvals or licences for the project may be required under other statutes and regulations. Please ensure that you obtain all required approvals and/or licences.

Please ensure that the proponent is aware that, if new information or substantive project changes arise after issuance of this letter, the applicant should discuss them with you to determine if any additional assessment or reporting is required. If additional reporting or revisions are required, they should be submitted to the Ministry for review. Upon completion of that review, the Ministry will determine if any revisions to the content of this letter are required.

Should you have any questions or require further information, please do not hesitate to contact me.

Sincerely,

Joseph Muller, RPP/MCIP
Heritage Planner
Joseph.Muller@Ontario.ca

cc. Shiloh Berriman, Project Coordinator
Enercon

Kathleen Hedley, Director
Environmental Approvals Branch, Ministry of the Environment and Climate Change (MoECC)

Sarah Paul, Director
Environmental Approvals Access and Service Integration Branch, MoECC

James Hamilton, Manager
Culture Services Unit, Ministry of Tourism, Culture and Sport

---

Note 1: In no way will the Ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional heritage resources are identified or the Report is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

From:	Rivard, Meaghan
To:	Hatcher, Laura (MTCS)
Cc:	Tripp, Bryan; Varley, Colin; Sebele, James
Subject:	Niagara Region Wind Centre Project - Modification Letter
Date:	Monday, December 21, 2015 2:08:00 PM
Attachments:	let_160950269_addendum_met.pdf
Importance:	High

Good afternoon Laura,
Please find attached letter for your review and comment.
Best,
Meaghan

Meaghan Rivard, MA, CAHP
Heritage Specialist
Stantec
49 Frederick Street Kitchener ON N2H 6M7
Phone: (519) 575-4114
Cell: (226) 268-9025
Fax: (519) 579-6733
Meaghan.Rivard@stantec.com

Stantec Consulting Ltd.
49 Frederick Street, Kitchener ON N2H 6M7

December 21, 2015
File: 160950269

Attention: Laura Hatcher, Team Lead: Heritage Land Use Planning
Ministry of Tourism, Culture, and Sport – Cultural Services Unit

Dear Ms. Hatcher,

Reference: Proposed Installation of Metrological Evaluation Towers, Niagara Region Wind, Heritage Assessment Review

Stantec Consulting Ltd. (Stantec) was retained by Niagara Region Wind Corporation (NRWC, "the Proponent") to prepare a Renewable Energy Approval (REA) Application for the Niagara Region Wind Farm ("the Project"). As part of the REA, a Heritage Assessment Report (HAR) entitled, Heritage Assessment, Niagara Region Wind Farm (Stantec, 2013), was completed. The HAR was submitted to the Ministry of Tourism Culture and Sport (MTCS) and a letter of satisfaction issued on April 12, 2013. No changes to the original document have been made since the original submission to MTCS.

Stantec was retained by the Proponent to review proposed modifications to the Project as they pertain to heritage resources. The purpose of this memo is to review modifications in relation to the findings of the HAR and to identify heritage resources, if any, that were not previously assessed. Where the modification may affect a previously identified heritage resource, the impact will be assessed. If heritage resources were identified as a result of the project modification, the memo will assess the resources based on *Ontario Regulation 9/06* and determine, if any, the potential negative impacts of the project on the heritage resources.

PROJECT DESCRIPTION

The proponent is proposing to develop, construct, and operate the 230 Megawatt (MW) Niagara Region Wind Farm 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 covers approximately 33,747 hectares and is generally bounded by Castor Gainsborough Road to the West; the Queen Elizabeth Way to the North; the north shore of Lake Erie to the South; and Balfour Street to the East (Stantec, 2013). 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 (Stantec, 2013).

Reference: Proposed Installation of Metrological Evaluation Towers, Niagara Region Wind, Heritage Assessment Review

PROPOSED MODIFICATION DESCRIPTION

The Proponent has proposed to install three Meteorological Towers (Met Towers) within the Project Study Area at various locations. The first tower is proposed to be built between Gore A Road and Townline Dunnville Wainfleet just south of the railway (Figure 1.1). It is situated in close vicinity to five turbines (T11, T12, T41, T72, and T91). The second tower is proposed to be built north of Concession Road 3 and just west of Caistor Gainsborough Road (Figure 1.2). It is situated in close vicinity to two turbines (T52 and T53). The third tower is proposed to be built north of Rymer Road and west of Dickhout Road (Figure 1.3). It is situated in close vicinity to one turbine (T05). All three proposed MET are positioned inside the original Project Location as indicated within the HAR (Stantec, 2013)

REPORT REVIEW AND IMPACT OF MODIFICATION

Review of the HAR (Stantec, 2013) determined a single cultural heritage resource, located at 214 Gore A Road and identified as CHR-114, was situated adjacent to a property where a Met Tower is proposed. Upon review, this property was determined to be listed on Haldimand County's Heritage Register and therefore an assessment of impacts related to the introduction of new Project infrastructure is required.

The property contains a timber frame barn with gambrel roof, is clad with vertical barn board, and is constructed on an 'L' shape plan. It is consistent with the character of the surrounding landscape. It was approved, by county council, for listing on October 20, 2004. The heritage attributes identified within the HAR were related exclusively to the design, physical, and contextual value of the barn; no views were identified as heritage attributes within the HAR. Heritage attributes for the listed property, as indicated within the HAR, are as follows:

- Timber frame construction;
- Gambrel roof;
- Vertical barn board;
- L-shape plan; and
- Consistent with the character of the surrounding landscape.

In order to determine the potential for Project impacts resulting from the proposed introduction of a MET on an adjacent property an assessment of potential impacts was completed. This was undertaken according to InfoSheet #5 in *Heritage Resources in the Land Use Planning Process, Cultural Heritage and Archaeology Policies of the Ontario Provincial Policy Statement, 2005*. No potential impacts were identified resulting from the proposed Met Tower. The assessment is contained within Table 1.

Reference: Proposed Installation of Metrological Evaluation Towers, Niagara Region Wind, Heritage Assessment Review

Table 1 Assessment of Potential Impacts

Impact	Relevance to 214 Gore A Road
Destruction of any, or part of any, *significant heritage attributes* or features.	Not anticipated – the proposed modification will not result in destruction or alteration.
Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance.	Not anticipated – the proposed modification will not alter heritage attributes that represent the CHVI of the property.
Shadows created that alter the appearance of a *heritage attribute* or change the viability of a natural feature or plantings, such as a garden	Not anticipated – the appearance of heritage attributes will not be altered due to shadow given the distance of approximately 820 metres and no natural features or plantings were identified.
Isolation of a *heritage attribute* from its surrounding environment, context or a *significant* relationship	Not anticipated – heritage attributes will not be isolated by the proposed modification nor will the character of the surrounding environment, context or a significant relationship be modified.
Direct or indirect obstruction of *significant* views or vistas within, from, or of built and natural features	Not anticipated – no significant views or vistas were identified.
A change in land use such as rezoning a battlefield from open space to residential use, allowing new *development* or *site alteration* to fill in the formerly open spaces	Not anticipated – the proposed modification will not result in a change in land use on the adjacent protected property.
Land disturbances such as a change in grade that alters soil, and drainage patterns that adversely affect an *archaeological resource*	Not applicable – archaeological resources are considered beyond the scope of the present study.

RECCOMENDATIONS

No impacts resulting from the proposed Met Towers were identified. Based on these findings, it was determined that the analysis, assessment, and recommendations of the HAR (Stantec, 2013) pertaining to the heritage resource at 214 Gore A Road remain unchanged as a result of the proposed project modifications.

We ask that the MTCS review the attached figures illustrating the proposed project modifications. Following review, if appropriate, we request confirmation of Stantec's review and MTCS comment regarding the proposed modification as related to recommendations of the Heritage Assessment Report.

Reference: Proposed Installation of Metrological Evaluation Towers, Niagara Region Wind, Heritage Assessment Review

Regards,
STANTEC CONSULTING LTD.

Meaghan Rivard, MA
Heritage Consultant
Phone: (519) 579-6733
Fax: (226) 268-9025
Meaghan.Rivard@stantec.com

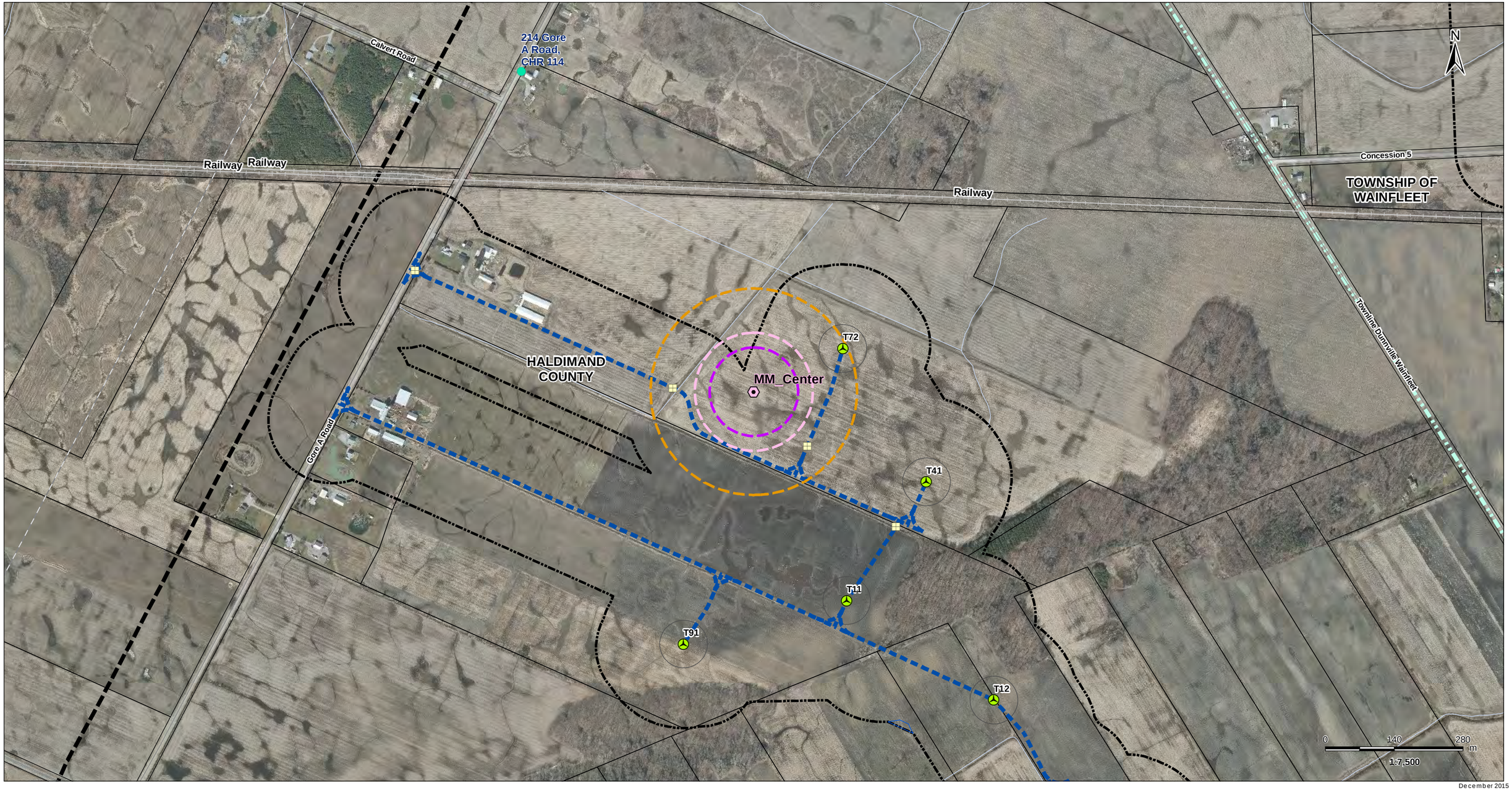
Colin Varley, MA, RPA
Associate, Senior Archaeologist
Phone: (613) 738-6087
Fax: (613) 293-3035
Colin.Varley@stantec.com

Attachments: Proposed MET and Heritage Resources

ks \\cd1220-f02\work_group\01609\active\60950269\reports\amendments 2015\built heritage addendum_2015\let_160950269_addendum_met.docx

References

Stantec Consulting Ltd. 2013. *Heritage Assessment and Environmental Impact Study for the Niagara Region Wind Farm*.



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Revised: 2015-12-11 By: bcowper

December 2015
160950269

Stantec

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, 2010.
3. Orthoimagery © First Base Solutions, 2010.

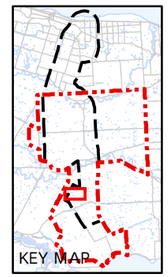
Legend

- Cultural Heritage Resource
- Proposed MET Tower Locations
- Proposed MET Tower 120m Buffer
- Proposed MET Tower Support Cables (90m)
- MET Tower Support Cables 120m Buffer
- Project Study Area
- Interconnector Study Area
- 120m Zone of Investigation

Zone of Investigation Adjustments
- Area Added

Proposed Project Components
- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Potential Access Road

Existing Features
- Road
- Abandoned Railway
- Existing Transmission Line
- Watercourse (MNR)
- Property Boundary
- Municipality Lower Tier

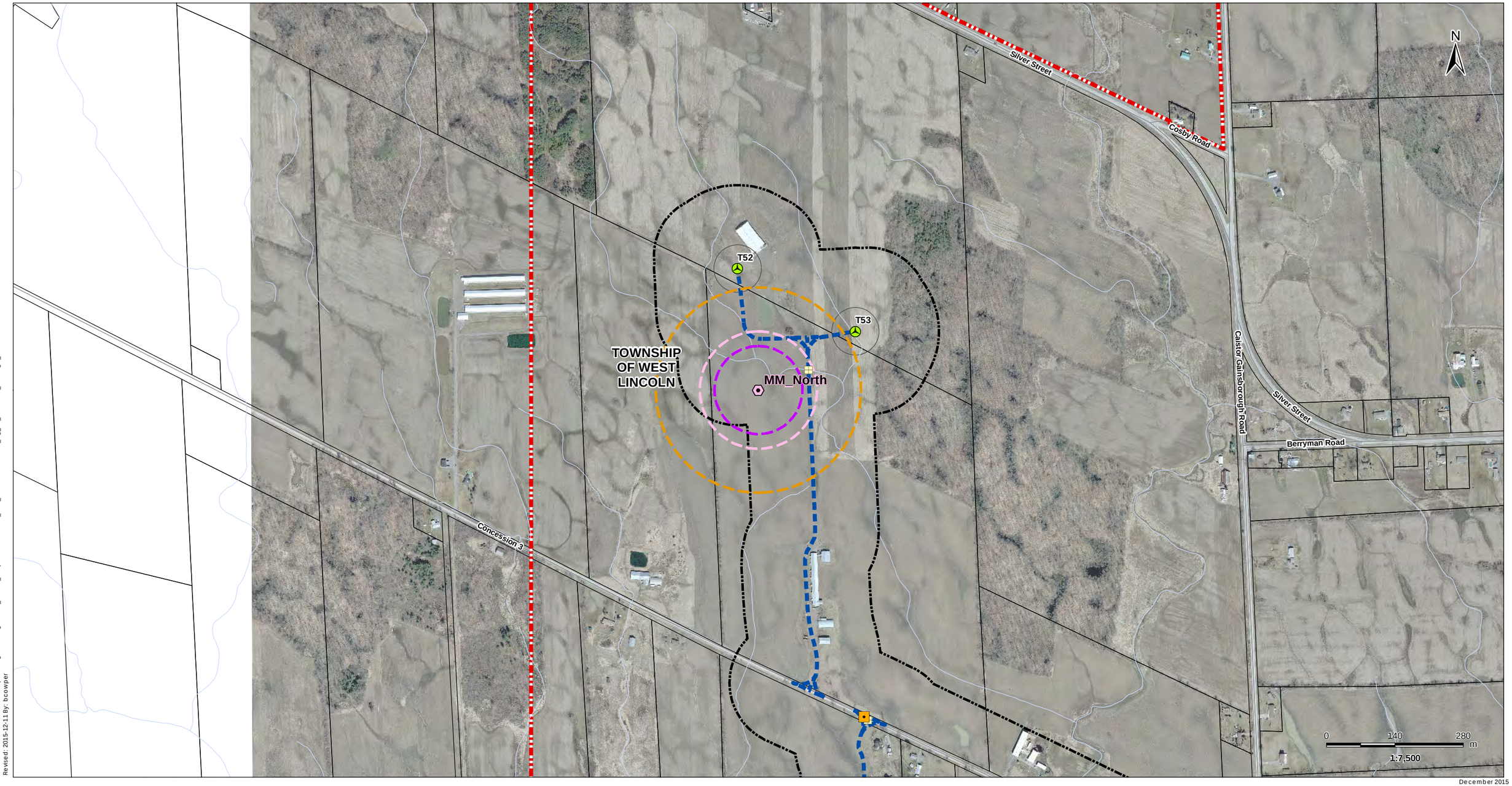


Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1.1

DRAFT

Title
Proposed MET and Heritage Resources



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Revised: 2015-12-11 By: bcowper

December 2015
160950269

Stantec

Notes
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3. Orthoimagery © First Base Solutions, 2010.

Legend

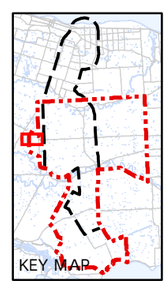
- Proposed MET Tower Locations
- Proposed MET Tower 120m Buffer
- Proposed MET Tower Support Cables (90m)
- MET Tower Support Cables 120m Buffer
- Project Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Junction Box
- Proposed Culvert
- Potential Access Road

Existing Features

- Road
- Watercourse (MNR)
- Property Boundary



Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1.2

DRAFT

Title
Proposed MET and Heritage Resources

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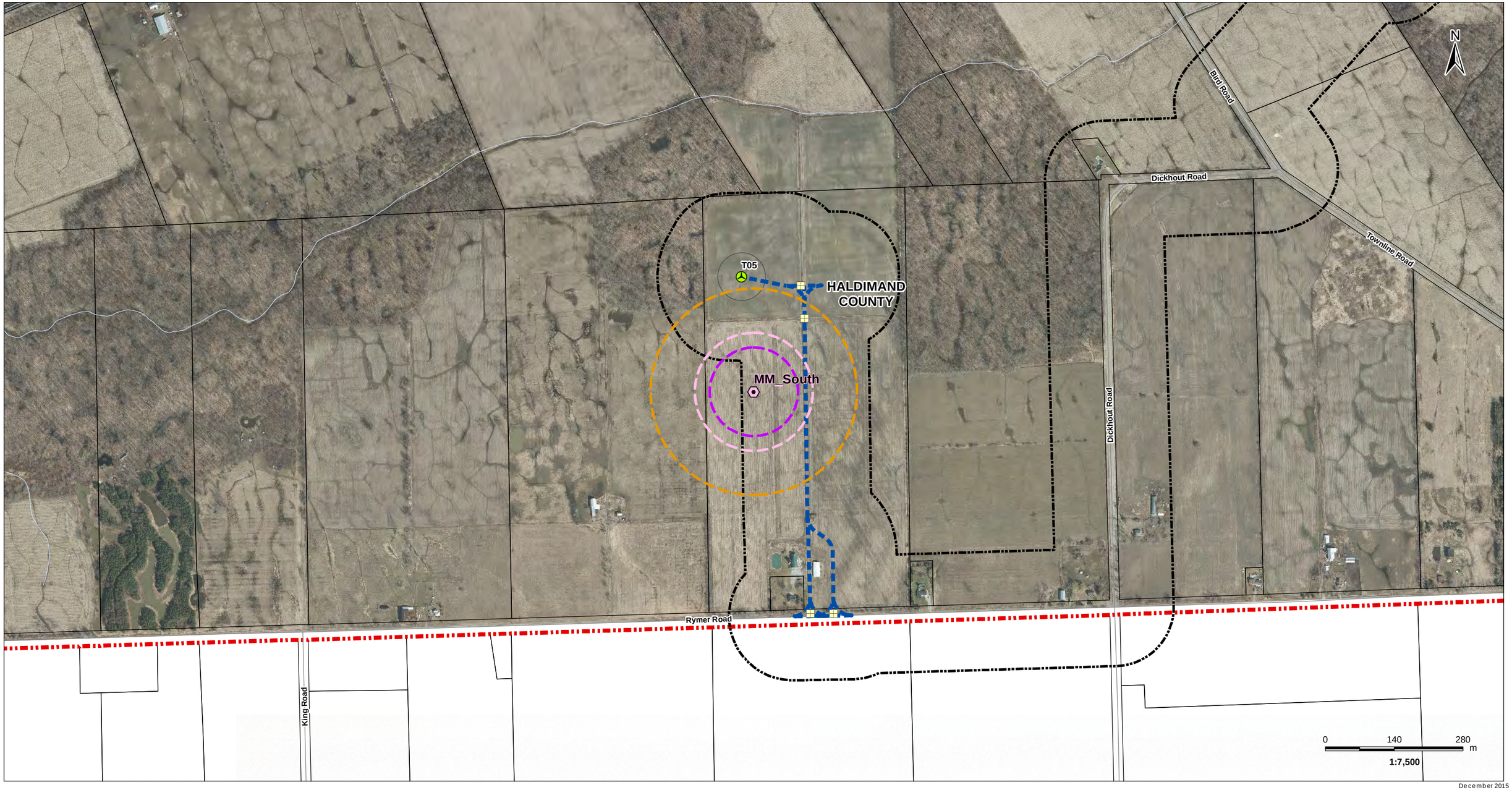
Revised: 2015-12-11 By: bcowper



December 2015
160950269

Stantec

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, 2010.
3. Orthoimagery © First Base Solutions, 2010.

Legend

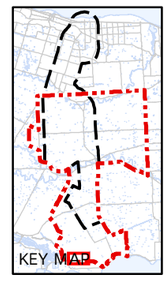
- Proposed MET Tower Locations
- Proposed MET Tower 120m Buffer
- Proposed MET Tower Support Cables (90m)
- MET Tower Support Cables 120m Buffer
- Project Study Area
- 120m Zone of Investigation

Proposed Project Components

- Proposed Turbine Location
- Turbine Blade Length
- Proposed Culvert
- Potential Access Road

Existing Features

- Road
- Watercourse (MNR)
- Property Boundary



Client/Project
FWRN LP
Niagara Region Wind Farm

Figure No.
1.3

DRAFT

Title
Proposed MET and Heritage Resources

Attachments: ENTERED INTO REGISTER Archaeological Report for P001-0878-2015, P001-0884-2016.pdf

From: Wilson, Jim (Ottawa)
Sent: Wednesday, March 16, 2016 1:36 PM
To: Muir, Jeff
Subject: FW: ENTERED INTO REGISTER: Archaeological Report for P001-0878-2015, P001-0884-2016 / *

From: pastport
Sent: Wednesday, March 16, 2016 11:35:26 AM (UTC-07:00) Mountain Time (US & Canada)
To: Wilson, Jim (Ottawa)
Cc: mohsen.keyvani@ontario.ca; adam.rosso@boralex.com; PastPort@ontario.ca
Subject: ENTERED INTO REGISTER: Archaeological Report for P001-0878-2015, P001-0884-2016 / *

Dear Jim Wilson,

The ministry has reviewed the Original report for PIF P001-0878-2015, P001-0884-2016 submitted by you as a condition of your licence.

This report has been deemed compliant with ministry requirements for archaeological fieldwork and reporting. It has been entered into the *Ontario Public Register of Archaeological Reports.* Please refer to the attached letter to see the result of this review.

Note: the ministry makes no representation or warrant as to the completeness, accuracy or quality of reports in the register.

Development proponents and approval authorities: the Ontario Ministry of Tourism, Culture and Sport has copied you on this email as you have been identified by the consultant archaeologist as either the proponent or approval authority for this project.

Please **do not** reply to this e-mail. The message will be undeliverable and we are unable to respond from this address.

If you have any questions about this report email us at: Archaeology@ontario.ca

Thank you,

Meagan Brooks

meagan.brooks@ontario.ca

Ministry of Tourism, Culture and Sport

Archaeology Programs Unit
Programs and Services Branch
Culture Division
401 Bay Street, Suite 1700
Toronto ON M7A 0A7
Tel.: (416) 314-7123
Email: meagan.brooks@ontario.ca

Ministère du Tourisme, de la Culture et du Sport

Unité des programmes d'archéologie
Direction des programmes et des services
Division de culture
401, rue Bay, bureau 1700
Toronto ON M7A 0A7
Tél. : (416) 314-7123
Email: meagan.brooks@ontario.ca

Ontario

Mar 16, 2016

Jim Wilson (P001)
Stantec Consulting
400 - 1331 Clyde Ottawa ON K2C 3G4

RE: Review and Entry into the Ontario Public Register of Archaeological Reports: Archaeological Assessment Report Entitled, "Stage 2 Archaeological Assessment: MET Towers and Modified Alternate Transmission Route Segment, Niagara Region Wind Project", Dated Mar 2, 2016, Filed with MTCS Toronto Office on Mar 15, 2016, MTCS Project Information Form Number P001-0878-2015, P001-0884-2016, MTCS File Number 26EA078

Dear Mr. Wilson:

This office has reviewed the above-mentioned report, which has been submitted to this ministry as a condition of licensing in accordance with Part VI of the Ontario Heritage Act, R.S.O. 1990, c 0.18.[1] This review has been carried out in order to determine whether the licensed professional consultant archaeologist has met the terms and conditions of their licence, that the licensee assessed the property and documented archaeological resources using a process that accords with the 2011 Standards and Guidelines for Consultant Archaeologists set by the ministry, and that the archaeological fieldwork and report recommendations are consistent with the conservation, protection and preservation of the cultural heritage of Ontario.

The report documents the assessment/mitigation of the study area as depicted in Figure 1, Figure 6-9 and Supplementary Tile 1 of the above titled report and recommends the following:

Location 1 does not fulfill the criteria for a Stage 3 archaeological investigation as per Section 2.2 of the MTCS' 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011b). The cultural heritage value or interest of Location 1 has been sufficiently documented. Therefore, no further archaeological assessment is recommended for Location 1.

The Stage 2 archaeological assessment for the other portions of the study area did not identify any additional archaeological resources (neither artifacts nor sites). Thus, in accordance with Section 2.2 and Section 7.8.3 of the MTCS' 2011 Standards and Guidelines for Consultant Archaeologists (Government of Ontario 2011b), no further archaeological assessment of the study area is required.

Based on the information contained in the report, the ministry is satisfied that the fieldwork and reporting for the archaeological assessment are consistent with the ministry's 2011 Standards and Guidelines for Consultant Archaeologists and the terms and conditions for archaeological licences. This report has been

entered into the Ontario Public Register of Archaeological Reports. Please note that the ministry makes no representation or warranty as to the completeness, accuracy or quality of reports in the register.

Should you require any further information regarding this matter, please feel free to contact me.

Sincerely,

Meagan Brooks
Archaeology Review Officer

cc. Archaeology Licensing Officer
Adam Rosso,FWRN LP
Mohsen Keyvani,MOECC, Environmental Approvals Branch

[1]In no way will the ministry be liable for any harm, damages, costs, expenses, losses, claims or actions that may result: (a) if the Report(s) or its recommendations are discovered to be inaccurate, incomplete, misleading or fraudulent; or (b) from the issuance of this letter. Further measures may need to be taken in the event that additional artifacts or archaeological sites are identified or the Report(s) is otherwise found to be inaccurate, incomplete, misleading or fraudulent.

From: Wilson, Jim (Ottawa)
Sent: Wednesday, March 02, 2016 4:14 PM
To: Muir, Jeff
Subject: FW: Your report package is being screened for completeness - P001-0878-2015, P001-0884-2016 / *

From: pastport
Sent: Wednesday, March 2, 2016 2:13:52 PM (UTC-07:00) Mountain Time (US & Canada)
To: Wilson, Jim (Ottawa)
Cc: PastPort@ontario.ca
Subject: Your report package is being screened for completeness - P001-0878-2015, P001-0884-2016 / *

Dear Jim Wilson,

The ministry has received your project report package associated with PIF number P001-0878-2015, P001-0884-2016 submitted on Mar 2, 2016.

We are now screening this report package to make sure it is complete and accurate. This process may take up to 10 business days.

Please note that your report filing due date will only be met once the report package passes the screening.

If the report package does not pass the screening before the due date, the report will become overdue and you will not be eligible to begin new fieldwork projects (submit new PIFs).

When the report passes the screening, the report will be considered 'filed'. Once this happens, you will receive an email to let you know. We will then either add the report to our queue to be reviewed or enter it into the *Ontario Public Register of Archaeological Reports* without technical review.

Please do not reply to this e-mail. The message will be undeliverable and we are unable to respond from this address.

If you have any questions about this report email us at:Archaeology@ontario.ca

Stage 2 Archaeological Assessment: MET Towers and Modified Alternate Transmission Route Segment, Niagara Region Wind Project

Various Lots and Concessions,
Regional Municipality of Niagara
and Haldimand County, Ontario

Prepared for:
FWRN LP.
4672 Bartlett Road South
Beamsville, Ontario L0R 1B1
Tel: (844) 363-6430

Prepared by:
Stantec Consulting Ltd.
200 - 835 Paramount Drive
Stoney Creek ON L8J 0B4
Tel: (905) 385-3234
Fax: (905) 385-3534

Licensee: Jim Wilson, MA
License Number: P001
PIF Numbers: P001-0878-2015 and P001-0884-2015
Project Number: 160961052

ORIGINAL REPORT

March 2, 2016

Table of Contents

LIST OF TABLES

LIST OF FIGURES

Executive Summary

A Stage 2 archaeological assessment of the proposed meteorological (MET) towers and the modified alternate transmission route segment was conducted by Stantec Consulting Ltd. (Stantec) on behalf of FWRN LP (FWRN) for the proposed Niagara Region Wind Project. The Stage 2 archaeological assessment conducted by Stantec was undertaken as part of an amendment to FWRN's Renewable Energy Approval under the Renewable Energy Approval regulation (Government of Ontario 2011a), as related to Ontario Regulation 359/09 sections 21 and 22 under Part V.0.1 of the *Environmental Protection Act* (Government of Ontario 1990a) and informed by the *Green Energy Act* (Government of Ontario 2009).

The Project, as approved under Approval Number 4353-9HMP2R, is currently under construction. FWRN is concurrently seeking approval for project changes that would be constructed, once approved. Due to proposed changes to the Project Location, Stantec was retained to conduct a Stage 2 archaeological assessment of additional lands affected by the proposed Project amendments. This amendment consists of three MET towers and a modified alternate transmission route segment. The Stage 2 archaeological assessment of the three MET tower locations and the modified alternate transmission route segment was conducted between December 18, 2015 and February 6, 2016 under PIF numbers P001-0878-2015 and P001-0884-2016 issued to Jim Wilson, MA, by the MTCS. The study area encompasses approximately 6.5 hectares within four parcels of land. Stantec's Stage 2 survey of the area of the MET towers and the modified alternate transmission route segment resulted in the identification of one archaeological site, Location 1.

Location 1 consists of a single piece of pre-contact Aboriginal chipping detritus and does not fulfill the criteria for a Stage 3 archaeological investigation as per Section 2.2 of the MTCS'2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b). The cultural heritage value or interest of Location 1 has been sufficiently documented. **Therefore, no further archaeological assessment is recommended for Location 1.**

The Stage 2 archaeological assessment for the other portions of the study area did not identify any additional archaeological resources (neither artifacts nor sites). Thus, in accordance with Section 2.2 and Section 7.8.3 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b), **no further archaeological assessment of the study area is required**.

The MTCS is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports.

The Executive Summary highlights key points from the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Licensed Archaeologist:	Jim Wilson, MA (P001)
Project Manager:	Chris Powell, MA
Licensed Field Director:	Krista Lane, BA (R382), Jeffrey Muir, BA (R304), Elizabeth Sonnenburg, Ph.D. (R262)
Field Technicians:	Ruth Dickau, Ph.D., Arthur Figura, MA (P083), Elizabeth Sonnenburg, Ph.D. (R262)
Report Writer:	Elizabeth Sonnenburg, Ph.D. (R262)
Quality Review:	Jeffrey Muir, BA (R304)
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Acknowledgements

Proponent Contact:	Adam Rosso, FWRN-LP
Ministry of Tourism, Culture and Sport:	Robert von Bitter

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

FWRN LP (FWRN) is proposing to develop the Niagara Region Wind Project (the Project) with a maximum name plate capacity of 230 megawatts (MW). The Project Location is located within the Townships of West Lincoln and Wainfleet and the Towns of Grimsby and Lincoln in Niagara Region, as well as the Geographic Townships of Moulton and Sherbrooke in Haldimand County (Figure 1).

The Project consists of 77 wind turbine generators, each with a rated capacity ranging from approximately 2.3 MW to 3.0 MW for a maximum installed name plate 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 megavolt ampere (MVA) base rated transformer with two stages of cooling (via fans). A 115kV transmission line transports power from each of the two transfer 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.

The Project, as approved under Approval Number 4353-9HMP2R, is currently under construction. FWRN is concurrently seeking approval for project changes that would be constructed, once approved. Due to proposed changes to the Project Location, Stantec was retained by FWRN to conduct a Stage 2 archaeological assessment of additional lands affected by the proposed Project amendments. This amendment consists of three proposed meteorological (MET) towers and a modified alternate transmission route segment. MET towers accurately measure the efficiency of wind usage and will be constructed at north, central, and south points within the Project Location. MET towers consist of a 135 metre tall latticed tower, with guide wire attached to three points on the ground 90 metres away from the tower. The approximate development footprint of each tower is 200 metres by 200 metres or four hectares (ha) each. The modified alternate transmission route segment consists of overhead poles that will be placed within a 20 metre wide corrido, taking into account any construction disturbance related to their installation. The approximate development footprint of this route will be approximately 300 metres long by 20 metres wide or 0.6 ha.

The Stage 1 archaeological assessment of the Niagara Region Wind Project (Stantec 2012) stated that the majority of Project Area had high archaeological potential and a Stage 2 archaeological assessment was recommended for all areas of potential ground disturbance. Portions of these areas were already assessed by Stantec during the Stage 2 archaeological

assessment of the Project (Stantec 2013). However, the construction of the MET towers and the modified alternate transmission route segment requires additional potential ground disturbance activities outside of the previously assessed areas. The study area is comprised of the portions where no Stage 2 archaeological assessment has been undertaken at the three proposed MET tower locations and the entire modified alternate transmission route segment (Figure 1). Therefore four parcels were identified for this Stage 2 archaeological assessment (Table 1).

Table 1: Summary of Parcels within the Study Area

Parcel	Proposed Infrastructure	Comment	Legal Description
MM_North	One MET tower measuring approximately 4 ha	Portions have already been subject to Stage 2 archaeological assessment	Part of Lot 2, Concession 4, Geographic Township of Caistor, former Welland County, now Township of West Lincoln, Regional Municipality of Niagara
MM_Center	One MET tower measuring approximately 4 ha	Portions have already been subject to Stage 2 archaeological assessment	Part of Lot 3, Gore A Concession, Geographic Township of Moulton, Haldimand County
MM_South	One MET tower measuring approximately 4 ha	Portions have already been subject to Stage 2 archaeological assessment	Part of Lot 11, Concession 3, Geographic Township of Moulton, Haldimand County
Modified Alternate Transmission Route Segment	Transmission line re-route measuring approximately 0.6 ha	No previous Stage 2 archaeological assessment	Part of Lot 42, Concession 5, Township of Wainfleet, former Welland County, now Regional Municipality of Niagara

The Stage 2 archaeological assessment conducted by Stantec was undertaken as part of an amendment to FWRN's Renewable Energy Approval under the Renewable Energy Approval regulation (Government of Ontario 2011a), as related to Ontario Regulation 359/09 sections 21 and 22 under Part V.0.1 of the *Environmental Protection Act* (Government of Ontario 1990a) and informed by the *Green Energy Act* (Government of Ontario 2009). This archaeological assessment is also subject to the *Ontario Heritage Act* (Government of Ontario 1990b) and the 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b).

1.1.1 Objectives

The objective of the Stage 2 assessment was to provide an overview of archaeological resources on the property and to determine whether any of the resources might be archaeological sites with cultural heritage value or interest and to provide specific direction for the protection, management and/or recovery of these resources. In compliance with the provincial standards and guidelines set out in the *Standards and Guidelines for Consultant*

Archaeologists (Government of Ontario 2011b), and subject to the *Ontario Heritage Act* (Government of Ontario 1990b), the objectives of the Stage 2 Property Assessment are as follows:

- To document all archaeological resources within the study area;
- To determine whether the study area contains archaeological resources requiring further assessment; and
- To recommend appropriate Stage 3 assessment strategies for archaeological sites identified.

Permission to access the study area to conduct the archaeological assessment was provided by Adam Rosso of FWRN.

1.2 HISTORICAL CONTEXT

1.2.1 Post-Contact Aboriginal Resources

The post-contact Aboriginal occupation of Southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking communities by the New York State Iroquois and the subsequent arrival of Algonkian speaking groups from northern Ontario at the end of the 17th century and the beginning of the 18th century (Konrad 1981; Schmalz 1991). This is the period in which the Mississaugas are known to have moved into southern Ontario and the lower Great Lakes watersheds (Konrad 1981). Mississauga oral traditions, as told by Chief Robert Paudash and recorded in 1904, indicate that after the Mississauga defeat of the Mohawk Nation, who retreated to their homeland south of Lake Ontario, a peace treaty was negotiated between those groups. Upon the Mississaugas' return they decided to settle permanently in Southern Ontario, including within the Niagara Peninsula. These events occurred around 1695 (Praxis Research Associates n.d.).

The study area falls within the Haldimand Tract and Treaty Number 3. The Haldimand Tract, where the proposed MET towers MM_Center and MM_South are located, is a parcel of land given to the Mohawk by the Crown to acknowledge their service to the British during the American Revolution and the resulting loss of lands in the United States (Six Nations Lands and Resources Department 2015). The Haldimand Tract:

> *…is a parcel or tract of land given to the Six Nations Indians, by Governor Haldimand October 25th, 1784 …and conveyed by Grant the 14th of January, 1793. … This Grant was composed of the following townships: Dunn, Sherbrooke, Moulton, Canborough, North and South Cayuga, Oneida and Seneca in Haldimand County; Tusc[aro]ra, Onondaga, Brantford and South Dumfries in Brant County; North Dumfries, Waterloo and Woolwich in Waterloo County; Pilkington and Nichol in Wellington County; and is described as a parcel or tract of land six miles on each side of the Ouse or Grand River from its mouth toward its source, to be bounded by the tract of land deeded December the 7th, 1792 by the Mississa[u]ga Chiefs and people to the Crown. This part was set aside as a suitable retreat for the Six Nation Indians who had shewn*

> *attachment and Fidelity to the British Government during the troublous times 1759 to 1783 and was granted to the Chiefs, Warriors, Women and People of the Six Nations and their heirs forever.*
>
> (Morris 1943:19-21)

Treaty Number 3, where the proposed MET tower MM_North and the modified alternate transmission route segment is located,

> *…was made with the Mississa[ug]a Indians 7th December, 1792, though purchased as early as 1784. This purchase in 1784 was to procure for that part of the Six Nation Indians coming into Canada a permanent abode.*
>
> *The area included in this Treaty is, Lincoln County excepting Niagara Township; Saltfleet, Binbrook, Barton, Glanford and Ancaster Townships, in Wentworth County; Brantford, Onondaga, Tusc[a]r[o]ra, Oakland and Burford Townships in Brant County; East and West Oxford, North and South Norwich, and Dereham Townships in Oxford County; North Dorchester Township in Middlesex County; South Dorchester, Malahide and Bayham Township in Elgin County; all Norfolk and Haldimand Counties; Pelham, Wainfleet, Thorold, Cumberland and Humberstone Townships in Welland County … .*
>
> (Morris 1943:17-18)

While it is difficult to exactly delineate treaty boundaries today, Figure 2 provides an approximate outline of the limits of the Haldimand Tract and Treaty Number 3 (denoted by the letters "E" and "D" respectively).

1.2.2 Euro-Canadian Resources

A historical background for the entire Niagara Region Wind Project is provided in Stantec's Stage 1 archaeological assessment report (Stantec 2012) and Stage 2 archaeological assessment report (Stantec 2013). Below is a description of the landowner information and structures for the four parcels that comprise the study area. The lots have been occupied and in agricultural use for over 100 years.

The proposed MET tower MM_North is located in the southern portion of Lot 2, Concession 4, Geographic Township of Caistor, former Lincoln County. The 1876 *Illustrated Historical Atlas of the Counties of Lincoln and Welland, Ontario* (Page 1876) indicates that this property was owned by E.B. Cosby (Figure 3). There are two structures and an orchard adjacent to an unnamed tributary of Beaver Creek at the southwestern corner of the property, outside of the study area.

The proposed MET tower MM_Center is located in the southwest part of Lot 3, Gore A Concession, Geographic Township of Moulton, Haldimand County. The 1879 *Illustrated Historical Atlas of the County of Haldimand, Ont*. (Page 1879) indicates that this property was located in

one of the large tracts of land in the township owned by William McMillan (Figure 4). There are no structures depicted on the lot.

The proposed MET tower MM_South is located on the centre-west portion of Lot 11, Concession 3, Geographic Township of Sherbrooke, Haldimand County. The 1879 *Illustrated Historical Atlas of the County of Haldimand, Ont.* (Page 1879) indicates that this property was owned by the Estate of Samuel Niece (Figure 3). There are two structures depicted on the southern boundary of the lot, outside of the study area.

The modified alternate transmission route segment is located on the southwestern corner of Lot 42, Concession 5, Wainfleet Township. The *1876 Illustrated Historical Atlas of the Counties of Lincoln and Welland, Ontario* (Page 1876) indicates that this property was owned by M. Burton (Figure 5). The lot is bounded by what is presently Highway 3 to the north, Townline Road to the west, and Buckner Road to the south. At the northwest corner of Highway 3 and Townline Road is a structure, which is still standing today. The atlas also shows an orchard surrounding the structure, outside of the study area.

Although landowner information is available on the historic maps, it should be recognized that historical county atlases were produced primarily to identify factories, office, residences and landholdings of subscribers and were funded by subscriptions fees and therefore, landowners who did not subscribe were not always listed on the maps (Caston 1997:100). Moreover, associated structures were not necessarily depicted or placed accurately (Gentilcore and Head 1984).

1.2.3 Reports with Relevant Background Information

The rationale for fieldwork strategies was informed in part by reports previously written for the Project. Table 2 lists the archaeological assessment reports referring specifically to the areas affected by the construction of the MET towers and the modified alternate transmission route segment.

Table 2: Archaeological Reports Related to the Study Area

Year	Title	Author	PIF Number
2012	*Niagara Region Wind Farm Stage 1 Archaeological Assessment, Various Lots, Concession 1-6 Gainsborough Township, Concessions 7-10 Clinton Township, Regional Municipality of Niagara and Various Lots, Moulton Township, Haldimand County, Ontario*	Stantec	P002-263-2011
2013	*Niagara Region Wind Project Final Stage 2 Archaeological Assessment, Various Lots, Concession 1-6 Gainsborough Township, Concessions 7-10 Clinton Township, Regional Municipality of Niagara and Various Lots, Moulton Township, Haldimand County, Ontario*	Stantec	P002-289-2012

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The proposed MET tower MM_North is situated in the Iroquois Plain physiographic region, as identified by Chapman and Putnam (1984). This region is described as:

> *The lowland bordering Lake Ontario, when the last Glacier was receding but still occupied the St. Lawrence Valley, was inundated with by a body of water known as Lake Iroquois which emptied eastward at Rome, New York State. Its old shorelines, including cliffs, bars, beaches, and boulder pavements are easily identifiable features…. The Iroquois plain extends around the western part of Lake Ontario, from the Niagara River to the Trent River…, its width varying from a few hundred meters to about eight miles.*
>
> (Chapman and Putnam 1984:190)

The soils at the proposed MET tower MM_North consist of Haldimand clay loam. Haldimand clay loam is uniform in texture and composition throughout the entire region, is relatively stone free, and is imperfectly drained (Presant and Kingston 1989).

The proposed MET towers MM_Center and MM_South and the modified alternate transmission route segment are situated in the Haldimand Clay Plain physiographic region, as identified by Chapman and Putnam (1984). This region is described as:

> *Although it was all submerged in Lake Warren, the till is not all buried by stratified clay; it comes to the surface generally in low morainic ridges in the north. In fact, there is in that area a confused intermixture of stratified clay and till. The northern part has more relief than the southern part where the typically level lake plains occur.*
>
> (Chapman and Putnam 1984:156)

The soils at the proposed MET tower MM_Center consist of Berrien and Wauseon soils which are comprised of sand overlying silty clays. The soils at the proposed MET tower MM_South is comprised of Lincoln soils, which are coarse sands overlying heavy clays. Berrien, Wauseon, and Lincoln soils are relatively stone-free and poorly drained (Presant and Acton 1984). Finally, the soils at the proposed modified alternate transmission route segment are composed of Plainfield and Sandy Hills soils. Plainfield soils are wind deposited sands that drain rapidly but imperfectly in places. Sandy Hill soils are a sandy loam that have poor drainage (Presant and Acton 1984).

The closest potable water source to MM_North is an unnamed tributary of Beaver Creek located approximately 150 metres to the southwest. The closest potable water source to MM_Center is an unnamed tributary of Maple Creek located approximately 1100 metres to the south. Additionally, an intermittent seasonal stream, likely a relic tributary of Maple Creek, is located

approximately 250 metres south of MM_Center. The closest potable water source to MM_South is Broad Creek, located approximately 600 metres to the north. The closest source of potable water to the proposed modified alternate transmission route segment is North Forks Creek, located approximately 900 metres to the north.

1.3.2 Pre-contact Aboriginal Resources

This portion of southern Ontario has been occupied by First Nations peoples since the retreat of the Wisconsin glacier approximately 11,000 years ago. Local environmental conditions were significantly different from what they are today. Ontario's first peoples would have crossed the landscape in small groups in search of food, particularly migratory game species. In this area, caribou may have been a Paleo-Indian diet staple, supplemented by wild plants, small game, birds, and fish. Given the low density of populations on the landscape at this time and their mobile nature, Paleo-Indian sites are small and ephemeral. They are sometimes identified by the presence of fluted points. Sites are frequently located adjacent to the shorelines of large glacial lakes (Ellis and Deller 1990).

Archaeological records indicate subsistence changes around 8,000 B.C. at the start of the Archaic Period in southern Ontario. Since the large mammal species that formed the basis of the Paleo-Indian diet became extinct or moved north with the warming of the climate, Archaic populations had a more varied diet, exploiting a range of plants and bird, mammal, and fish species. Reliance on specific food resources like fish, deer, and several nut species became more noticeable through the Archaic Period and the presence of warmer, more hospitable environs led to expansion of group and family sizes. In the archaeological record, this is evident in the presence of larger sites. The coniferous forests of earlier times were replaced by stands of mixed coniferous and deciduous trees by about 4,000 B.C. The transition to more productive environmental circumstances led to a rise in population density. As a result, Archaic sites become more abundant over time. Artifacts typical of these occupations include a variety of stemmed and notched projectile points; chipped stone scrapers; ground stone tools (e.g., celts, adzes) and ornaments (e.g., bannerstones, gorgets); bifaces or tool blanks; animal bone; and chert waste flakes, a byproduct of the tool making process (Ellis et al. 1990).

Significant changes in cultural and environmental patterns occurred in the Early and Middle Woodland periods (*circa* 950 B.C. to 800 AD). Occupations became increasingly more permanent in this period, culminating in major semi-permanent villages by roughly 1,000 years ago. Archaeologically, the most significant changes by Woodland peoples were the appearance of artifacts manufactured from modeled clay and the emergence of more sedentary villages. The earliest pottery was crudely made by the coiling method and early house structures were simple oval enclosures. The Early and Middle Woodland periods are also characterized by extensive trade in raw materials, objects and finished tools, with sites in Ontario containing trade items with origins in the Mississippi and Ohio River valleys (Spence et al. 1990; Fox 1990).

The Late Woodland period in this area of Ontario is marked by the emergence of the Neutral Iroquoians, one of several discrete groups that emerge from this period. Neutral settlements include large villages of several longhouses and a number of associated smaller satellite villages (hamlets), seasonally occupied sites with only one or two small "cabins" (usually associated with working horticultural fields), and camps for specialized extractive activities such as hunting and fishing (Smith 1990).

Discrete clusters of politically allied Neutral villages have been identified from the late pre-contact and early post-contact periods. The Project Area is situated in close proximity to the Lower Grand River cluster, located on both sides of the Grand River above and below the town of Cayuga; the Upper Twenty Mile Creek cluster to the west; and the Grimsby cluster to the north (Lennox and Fitzgerald 1990).

Table 3 provides a general outline of the cultural chronology of the Regional Municipality of Niagara and Haldimand County, based on Ellis and Ferris (1990).

Table 3: Cultural Chronology for the Regional Municipality of Niagara and for Haldimand County

Period	Characteristics	Time	Comments
Early Paleo-Indian	Fluted Projectiles	9,000 – 8,400 B.C.	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8,400 – 8,000 B.C.	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8,000 – 6,000 B.C.	slow population growth
Middle Archaic	Brewerton-like points	6,000 – 2,500 B.C.	environment similar to present
Late Archaic	Lamoka (narrow points)	2,000 – 1,800 B.C.	increasing site size
	Broad Points	1,800 – 1,500 B.C.	large chipped lithic tools
	Small Points	1,500 – 1,100 B.C.	introduction of bow hunting
Terminal Archaic	Hind Points	1,100 - 950 B.C.	emergence of true cemeteries
Early Woodland	Meadowood Points	950 - 400 B.C.	introduction of pottery
Middle Woodland	Dentate/Pseudo-Scallop Pottery	400 B.C. - A.D.500	increased sedentism
	Princess Point	A.D. 550 - 900	introduction of corn
Late Woodland	Early Ontario Iroquoian	A.D. 900 - 1300	emergence of agricultural villages
	Middle Ontario Iroquoian	A.D. 1300 - 1400	long longhouses (100m +)
	Late Ontario Iroquoian	A.D. 1400 - 1650	tribal warfare and displacement
Contact Aboriginal	Various Algonkian Groups	A.D. 1700 - 1875	early written records and treaties
Late Historic	Euro-Canadian	A.D. 1796 - present	European settlement

1.3.3 Previously Identified Archaeological Sites and Surveys

In order to compile an inventory of archaeological resources, the registered archaeological site records kept by the MTCS were consulted. In Ontario, information concerning archaeological sites stored in the ASDB is maintained by the MTCS. This database contains archaeological sites registered according to the Borden system. Under the Borden system, Canada is divided into grid blocks based on latitude and longitude. A Borden Block is approximately 13 kilometres east to west and approximately 18.5 kilometres north to south. Each Borden Block is referenced by a four-letter designator and sites within a block are numbered sequentially as they are found. The study area under review is within Borden Blocks AfGu, AfGv, and AgGv.

Information concerning specific site locations is protected by provincial policy, and is not fully subject to the *Freedom of Information and Protection of Privacy Act*. The release of such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to all media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MTCS will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

Table 4 presents the archaeological sites registered within a one-kilometre radius of each parcel within the study area, according to the ASDB and Stantec reporting (Government Ontario n.d.; Stantec 2013).

Table 4: Registered and Unregistered Sites within One Kilometre of the Proposed Structures Within the Study Area

Borden Number	Site Name	Cultural Affiliation	Within One Kilometre Of
AgGv-119	NRWC-23	Pre-contact Aboriginal	MM_North
AgGv-123	NRWC-35	Pre-contact Aboriginal	MM_North
AgGv-127	AC 33	Pre-contact Aboriginal	MM_North
N/A	AC 34	Pre-contact Aboriginal	MM_North
N/A	IF 72	Pre-contact Aboriginal	MM_North
N/A	IF 73	Pre-contact Aboriginal	MM_North
AfGv-136	NRWC-29	Middle Archaic to Middle Woodland	MM_Center
AfGv-140	IF-6	Late Woodland	MM_Center
AfGv-141	IF-7	Early Woodland	MM_Center
N/A	IF-65	Pre-contact Aboriginal	MM_Center
AfGv-142	AC-37	Pre-contact Aboriginal	MM_South
AfGv-143	NRWC-41	Pre-contact Aboriginal	MM_South
N/A	IF-77	Pre-contact Aboriginal	MM_South

Borden Number	Site Name	Cultural Affiliation	Within One Kilometre Of
N/A	IF-78	Pre-contact Aboriginal	MM_South
AfGv-147	SE102(7)	Pre-contact Aboriginal	modified alternate transmission route segment
AfGu-1	Huffman Burial	Unknown	modified alternate transmission route segment

To Stantec's knowledge, the only archaeological field work conducted within 50 metres of all three proposed MET Towers and the modified alternate transmission route segment has been concerned with the Niagara Region Wind Project (Stantec 2012; Stantec 2013). Two archaeological sites have been identified within close proximity of the proposed MET Towers: NRWC-23 (AfGv-119) and NRWC-41 (AfGv-143).

NRWC-23 (AfGv-119) is located on the southeast corner of the impact area of tower MM_North. NRWC-23 (AfGv-119) was also discovered during the Stage 2 archaeological assessment of the Niagara Region Wind Project and consists of a broken Onondaga chert blade and 12 pieces of lithic debitage. The site was recommended for Stage 3 archaeological assessment, but has been avoided as part of the Project infrastructure (Stantec 2013).

NRWC-41 (AfGv-143) is located approximately 50 metres to the northeast of MM_South. NRWC-41 (AfGv-41) was originally located during the Stage 2 archaeological assessment of the Niagara Region Wind Project (Stantec 2013) and consists of a lithic scatter of Onondaga chert debitage. The site was recommended for Stage 3 archaeological assessment but has been avoided as part of the Project infrastructure (Stantec 2013).

1.3.4 Existing Conditions

The Stage 2 archaeological assessment of the proposed MET towers (MM_North, MM_Center, and MM_South) and the modified alternate transmission route segment was conducted between December 18, 2015 and February 6, 2016 under PIF numbers P001-0878-2015 (for the MET towers) and P001-0884-2016 (for the modified alternate transmission route segment) issued to Jim Wilson, MA, by the MTCS. All four parcels are located on ploughed and weathered fields. Each proposed MET tower encompasses an area of four ha and is accessed by existing access roads constructed for the Project, although only portions of each MET tower location require Stage 2 field work since previous archaeological assessment has been conducted under PIF number P002-289-2012. The modified alternate transmission route segment is approximately 300 metres north-south and 20 metres east-west (or 0.6 ha) and is accessed from Buckner Road. The topography of all four parcels is generally flat to gently rolling.

2.0 FIELD METHODS

The Stage 2 assessment involved a survey of the land to be impacted by the proposed MET towers and the modified alternate transmission route segment where previous Stage 2 field work had not already been conducted. The areas assessed during the Stage 2 archaeological assessment consist of approximately 6.5 ha of ploughed and weathered agricultural fields.

A Topcon FC-25 handheld GPS unit running Magnet GIS software using the North American Datum (NAD) 83, with a minimal accuracy of four to six metres and loaded with shapefiles provided by FWRN, was used to help identify the boundaries of the study area in the field.

The Stage 2 archaeological assessment of the three proposed MET tower locations and the proposed modified alternate transmission route segment was conducted between December 18, 2015 and February 6, 2016 (Table 5). During the Stage 2 field work, field, weather and lighting conditions were suitable and at no time were they detrimental to the recovery of archaeological material. Photos 1 to 8 demonstrate the current land conditions within the study area, as per the MTCS' *2011 Standards and Guidelines for Consultant Archaeologists* (Section 7.8.6 Standards 1a and b; Government of Ontario 2011b). Figures 6 to 9 provide an illustration of the Stage 2 assessment methods, as well as photograph locations and directions.

Table 5: Field and Weather Conditions

Date	Weather	Field Conditions	PIF Number
December 18, 2015	Cool, overcast	Soil visibility 100% MM_Center	P001-0878-2015
January 9 , 2016	Cool, overcast	Soil visibility 100% MM_North and MM_South	P001-0878-2015
February 6, 2016	Cool, overcast	Soil visibility 95% modified alternate transmission route segment	P001-0884-2016

Table 6 provides a summary of the areas assessed during the 2013 Stage 2 archaeological assessment and the areas assessed during the current Stage 2 archaeological assessment.

Table 6: Summary of Stage 2 Archaeological Assessment for the Study Area

Parcel	Area Surveyed in 2013 (ha)	Area Surveyed in This Report (ha)	Total Area Surveyed (ha)	Figure	Photo
MM_North	1.88	2.06	3.94	6	1, 2
MM_Center	2.06	1.90	3.96	7	3, 4
MM_South	2.02	1.95	3.97	8	5, 6
Modified alternate transmission route segment	0.00	0.60	0.60	9	7, 8

Field Methods
March 2, 2016

All three MET tower locations and the modified alternate transmission route segment consist of ploughed and weathered agricultural fields and was subject to pedestrian survey at a five metre interval in accordance with Section 2.1.1 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b).

During the pedestrian survey, when archaeological resources were identified (in this case a single artifact, Location 1, found along the modified alternate transmission line segment), the survey transect was decreased to a one-metre interval and spanned a minimum 20 metre radius around the identified artifact. This approach was used to determine if the artifact was an isolated find or part of a larger surface scatter, as per Section 2.1.1 Standard 7 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b).

For the isolated find, the artifact was collected and a UTM coordinate was taken in accordance with Section 5.0 Standard 2a of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b). A UTM coordinate was also taken on a fixed reference landmark of a standard iron bar. All UTM coordinates were taken using a Topcon FC-25 handheld GPS unit with Magnet Field software at an accuracy of four to six metres. All UTM coordinates are located in zone 17T and are based upon NAD 83.

3.0 RECORD OF FINDS

The Stage 2 archaeological assessment was conducted employing the methods described in Section 2.0 of this report. An inventory of the documentary record generated by fieldwork is provided in Table 7.

Table 7: Inventory of Documentary Record

Document Type	Current Location of Document Type	Additional Comments
16 Pages of Field Notes	Stantec office in Hamilton	In original field book and photocopied in project file
6 Maps Provided by Client	Stantec office in Hamilton	Hard and digital copies in project file
142 Digital Photographs	Stantec office in Hamilton	Stored digitally in project file

One archaeological resource was identified during the Stage 2 field assessment, Location 1. Location 1 is located on a small sandy knoll at the northeastern end of a ploughed agricultural field

Location 1 consists of one piece of chipping detritus manufactured from Onondaga chert. The chert type identification was accomplished visually using reference materials located in the Stantec Hamilton office.

Onondaga formation chert is from the Middle Devonian age, with outcrops occurring along the north shore of Lake Erie between Long Point and the Niagara River (Eley and von Bitter 1989). It is a high quality raw material frequently utilized by pre-contact people and often found at archaeological sites in southern Ontario. Onondaga chert occurs in nodules or irregular thin beds, it is a dense non-porous rock that may be light to dark grey, bluish grey, brown or black and can be mottled with a dull to vitreous or waxy lustre (Eley and von Bitter 1989).

Based upon Lennox *et al*. (1986:79-81), the piece of chipping detritus has been classified as a tertiary flake (Plate 1). The artifact is stored in one Bankers box. It will be temporarily housed at the Stantec Hamilton office until formal arrangements can be made for a transfer to an MTCS collections facility. Table 8 provides a catalogue of the Stage 2 artifact assemblage recovered from Location 1.

Table 8: Location 1 Artifact Catalogue

Cat. #	Context	Artifact	Frequency	Chert	Morphology
1	Surface Find 1	chipping detritus	1	Onondaga	tertiary

4.0 ANALYSIS AND CONCLUSIONS

The Stage 2 archaeological assessment of the three proposed MET tower locations and the modified alternate transmission route segment resulted in the documentation of one pre-contact Aboriginal findspot, Location 1, composed of one piece of chipping detritus manufactured from Onondaga chert.

Chipping detritus is the waste product from the production of lithic tools and is the most often recovered artifact on pre-contact Aboriginal archaeological sites in Southern Ontario. A piece of chipping detritus is generally considered a non-diagnostic artifact and cannot help place the archaeological site within a specific time period or cultural group.

Isolated finds of lithic material are common within the vicinity of the study area. Of the total of 16 registered archaeological sites within a one kilometre radius of the study area, seven are listed as isolated findspots, and another four are lithic scatters. One of the archaeological sites closest to Location 1, AfGv-147, is a small lithic scatter.

Given the isolated nature of the chipping detritus recovered at Location 1, the cultural heritage value or interest of Location 1 is judged to be sufficiently documented. Location 1 does not fulfill any of the criteria for a Stage 3 archaeological investigation as per Section 2.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b).

5.0 RECOMMENDATIONS

Location 1 does not fulfill the criteria for a Stage 3 archaeological investigation as per Section 2.2 of the MTCS' 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b). The cultural heritage value or interest of Location 1 has been sufficiently documented. **Therefore, no further archaeological assessment is recommended for Location 1.**

The Stage 2 archaeological assessment for the other portions of the study area did not identify any additional archaeological resources (neither artifacts nor sites). Thus, in accordance with Section 2.2 and Section 7.8.3 of the MTCS' *2011 Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011b), **no further archaeological assessment of the study area is required**.

The MTCS is asked to review the results presented and to accept this report into the Ontario Public Register of Archaeological Reports.

6.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Tourism, Culture and Sport as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18 (Government of Ontario 1990). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Tourism, Culture and Sport, a letter will be issued by the ministry stating that there are no further concerns with regard to alterations to archaeological sites by the proposed development.

It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed fieldwork on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeological Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48(1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48(1) of the *Ontario Heritage Act*.

The *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Government and Consumer Services.

7.0 BIBIOGRAPHY AND SOURCES

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8.0 IMAGES

8.1 PHOTOGRAPHS

Photo 1: Field Conditions at MM_North, facing south

Photo 2: Field Conditions at MM_North, facing south

Photo 3: Pedestrian Survey at Five Metre Intervals at MM_Center, facing southwest

Photo 4: Field Conditions at MM_Center, facing north

Photo 5: Field Conditions at MM_South, facing south

Photo 6: Field Conditions at MM_South, facing west

Photo 7: Pedestrian Survey at Five Metre Intervals, Modified Alternate Transmission Route Segment, facing north

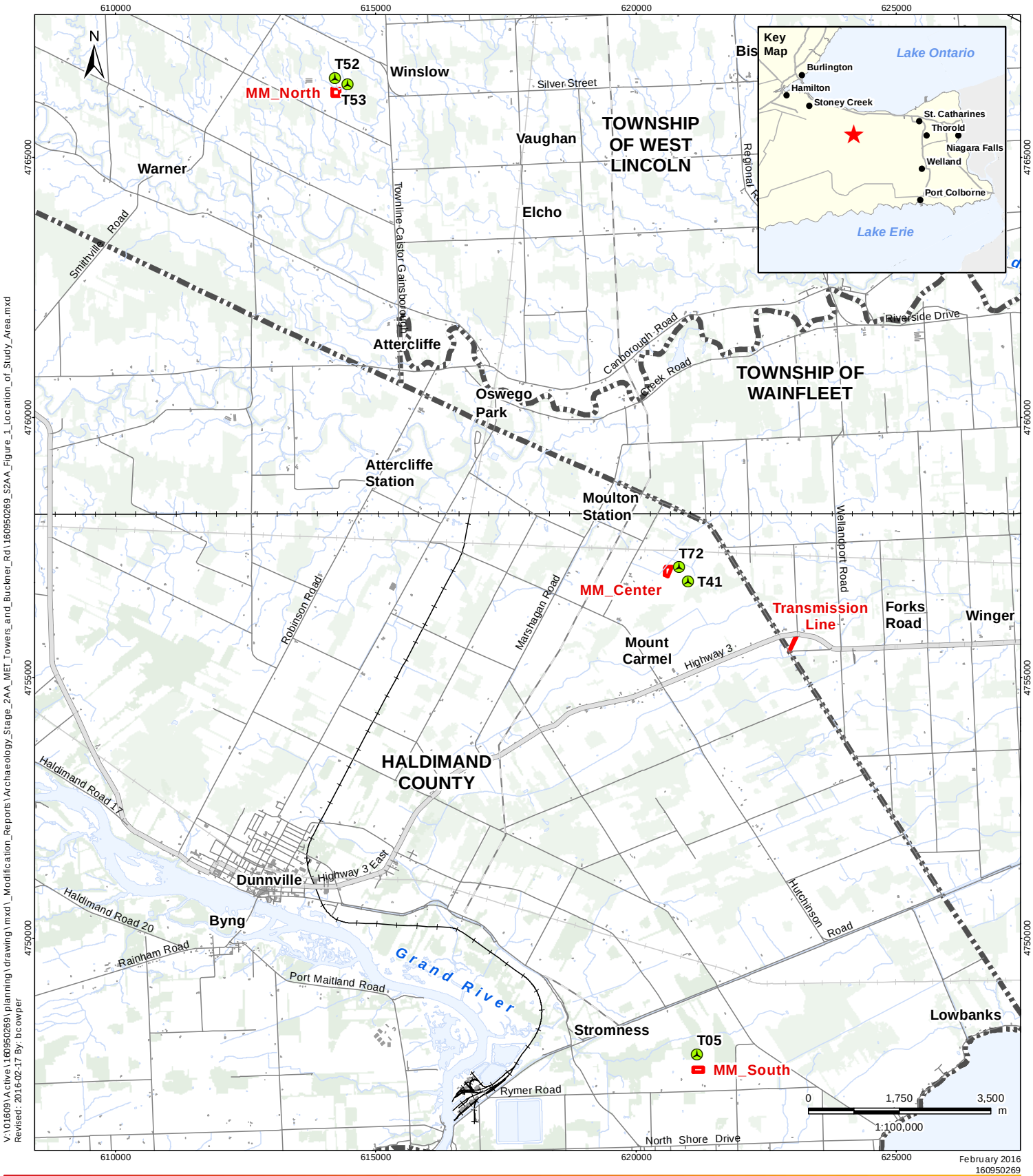
Photo 8: Pedestrian Survey Intensification at One Metre Intervals, Modified Alternate Transmission Route Segment, facing east

8.2 ARTIFACTS

Plate 1: Location 1 Chipping Detritus

9.0 MAPS

All maps will follow on succeeding pages. Maps identifying exact site locations do not form part of this public report; they may be found in the supplementary documentation.



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Revised: 2016-02-17 By: bcowper

February 2016
160950269

Stantec

Legend

- Study Area
- Proposed Turbine Location
- Road
- Expressway / Highway
- Active Railway
- Abandoned Railway
- Existing Structures
- Existing Transmission Line
- Watercourse
- Waterbody
- Wooded Area
- Municipality Lower Tier

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, 2013.

Client/Project

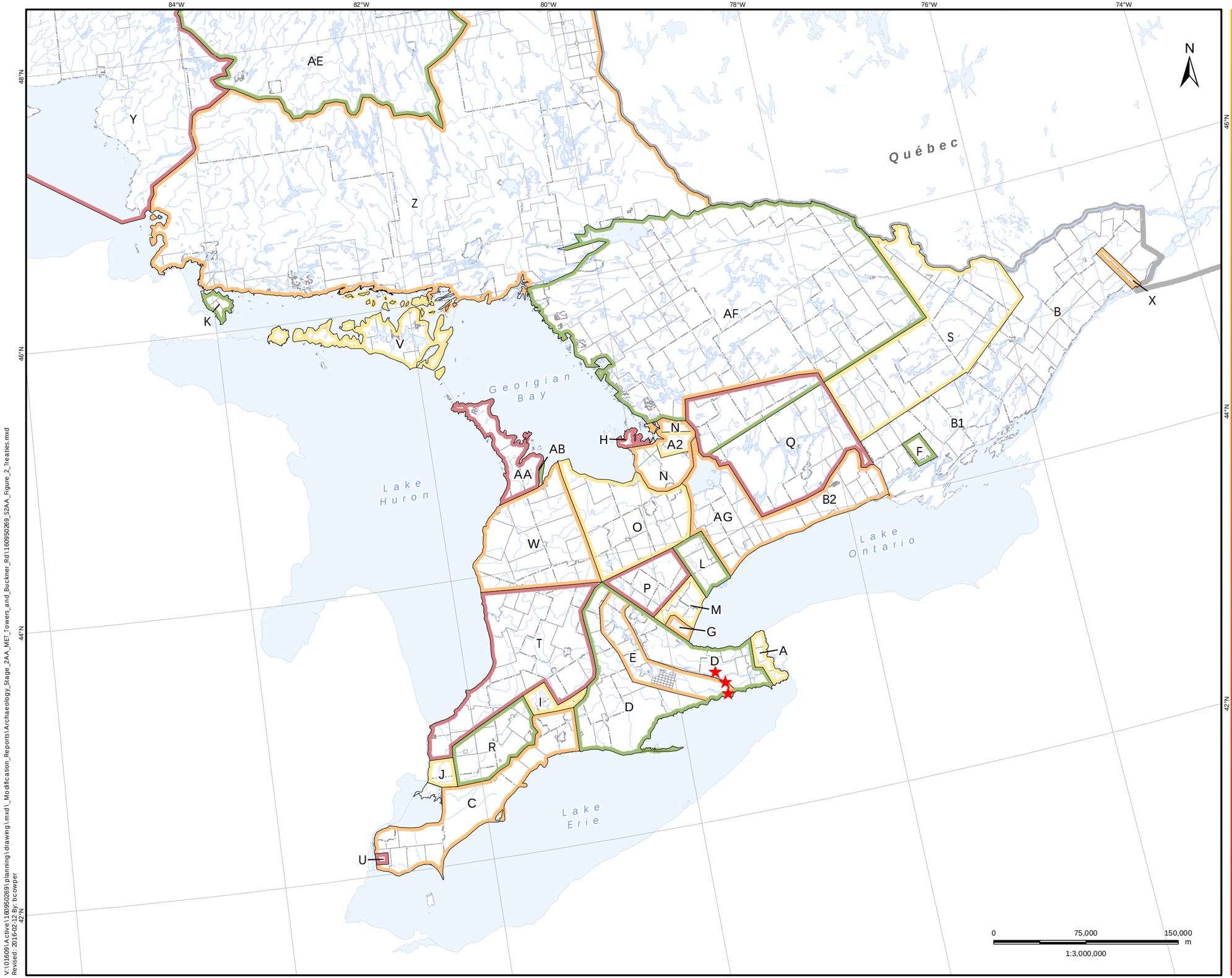
FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

1

Title

Location of Study Areas



Stantec

Legend

- Study Area
- Municipal Boundary - Upper Tier
- Municipal Boundary - Lower or Single Tier
- Watercourse
- Waterbody

A Treaty No. 381, May 9th, 1781 (Mississauga and Chippewa)
B1 Crawford's Purchase, October 9th, 1783 (Mississauga)
B2 Crawford's Purchases, 1784, 1787 And 1788 (Mississauga)
A2 John Collins' Purchase, 1785 (Chippewa)
C Treaty No. 2, May 19th, 1790 (Odawa, Chippewa, Pottawatomi, and Huron)
D Treaty No. 3, December 2nd, 1792 (Mississauga)
E Haldimand Tract:from the Crown to the Mohawk, 1793
F Tyendinaga:from the Crown to theMohawk, 1793
G Treaty No. 3 3/4:from the Crown to Joseph Brant, October 24th, 1795
H Treaty No. 5, May 22nd, 1798 (Chippewa)
U Treaty No. 6, September 7th, 1796 (Chippewa)
J Treaty No. 7, September 7th, 1796 (Chippewa)
L Treaty No. 13, August 1st, 1805 (Mississauga)
M Treaty No. 13A, August 2nd, 1805 (Mississauga)
N Treaty No.16, November 18th, 1815 (Chippewa)
O Treaty No. 18, October 17th, 1818 (Chippewa)
P Treaty No. 19, October 28th 1818 (Chippewa)
Q Treaty No. 20, November 5th, 1818 (Chippewa)
R Treaty No. 21, March 9th, 1819 (Chippewa)
S Treaty No. 27, May 31st, 1819 (Mississauga)
T Treaty No. 27½, April 25th, 1825 (Ojibwa and Chippewa)
U Treaty No. 35, August 13th, 1833 (Wyandot or Huron)
V Treaty No. 45, August 9th, 1836 (Chippewa and Odawa, "For All Indians To Reside Thereon")
W Treaty No. 45½, August 9th, 1836 (Saugeen)
X Treaty No. 57, June 1st, 1847 (Iroquois of St. Regis)
Z Treaty No. 61, September 9th, 1850 (Robinson Treaty:Ojibwa)
AA Treaty No. 72, October 30th, 1854 (Chippewa)
AB Treaty No. 82, February 9th, 1857 (Chippewa)
AF Williams Treaty, October 31st and November 15th, 1923 (Chippewa and Mississauga)
AG Williams Treaty, October 31st, 1923 (Chippewa)

Notes

1. Coordinate System: NAD 1983 Statistics Canada Lambert
2. Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.
3. Treaty boundaries adapted from MNR July 1980, based on map compiled by J.L. Morris 2 March 1943. For cartographic representation only.

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Niagara Region Wind Corporation
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

2

Title

Treaties and Purchases
(Adapted from Morris 1943)

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Revised: 2016-02-18 By: bcowper

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Stantec

Legend

Study Property

Client/Project

FWRN-LP (formerly Niagara Region Wind Corporation)
Niagara Region Wind Farm

Figure No.

3

Title

Portion of 1876 Historic Map of Caistor Township

Notes

1. Historic Map reference: Page, H.R. and Co. 1876. Illustrated Historical Atlas of the Counties of Lincoln and Welland, Ontario. Toronto: H.R. Page and Co.
2. Not to Scale.

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Revised: 2016-02-18 By: bcowper

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Stantec

Legend

Study Property

Notes

1. Historic Map reference: Illustrated Historical Atlas of the County of Haldimand, Ont. Toronto: H.R. Page & Co., 1879.
2. Not to Scale

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Niagara Region Wind Farm

Figure No.

4

Title

Portion of 1879 Historic Map of Moulton and Sherbrooke Townships

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Revised: 2016-02-18 By: bcowper

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Stantec

Legend

Study Area

Notes

1. Historic Map reference: Page, H.R. and Co. 1876. Illustrated Historical Atlas of the Counties of Lincoln and Welland, Ontario. Toronto: H.R. Page and Co.
2. Not to Scale.

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Niagara Region Wind Farm

Figure No.

5

Title

Portion of 1876 Historic Map of Wainfleet Township

614000

614500

N

T53

MM_North

1

2

0 30 60 m

1:1,750

614000

614500

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Archaeology_Stage_2AA_MET_Towers_and_Buckner_Rd\160950269_S2AA_Figure_6-9_Survey_Methods_Results.mxd
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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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3. Orthoimagery © First Base Solutions, 2010.

Legend

- Study Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Stage 2 Assessment

- Pedestrian Survey, at 5m Intervals
- Previously Surveyed (Stantec 2013)
- Photograph Location

Client/Project

FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

6

Title

Stage 2 Results
MM_North

620500

621000

4757000

N

T72

3

4

MM_Center

T41

0 30 60 m

1:1,750

620500

621000

4757000

February 2016
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Revised: 2016-02-12 By: bcowper

Stantec

Legend

- Study Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Stage 2 Assessment

- Pedestrian Survey, at 5m Intervals
- Previously Surveyed (Stantec 2013)
- Photograph Location

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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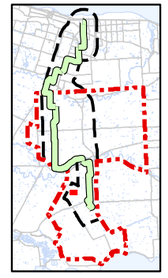

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FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

7

Title

Stage 2 Results
MM_Center

621000

621500

4747500

MM_South

5

6

N

0 30 60 m

1:1,750

V:\01609\Active\160950269\planning\drawing\mxd_Modification_Reports\Archaeology_Stage_2AA_MET_Towers_and_Buckner_Rd\160950269_S2AA_Figure_6-9_Survey_Methods_Results.mxd
Revised: 2016-02-12 By: bcowper

February 2016
160950269

Stantec

Legend

- Study Area
- Proposed MET Tower Locations
- Proposed MET Tower Support Cables (90m)

Stage 2 Assessment

- Pedestrian Survey, at 5m Intervals
- Previously Surveyed (Stantec 2013)
- Photograph Location

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.

8

Title

Stage 2 Results
MM_South

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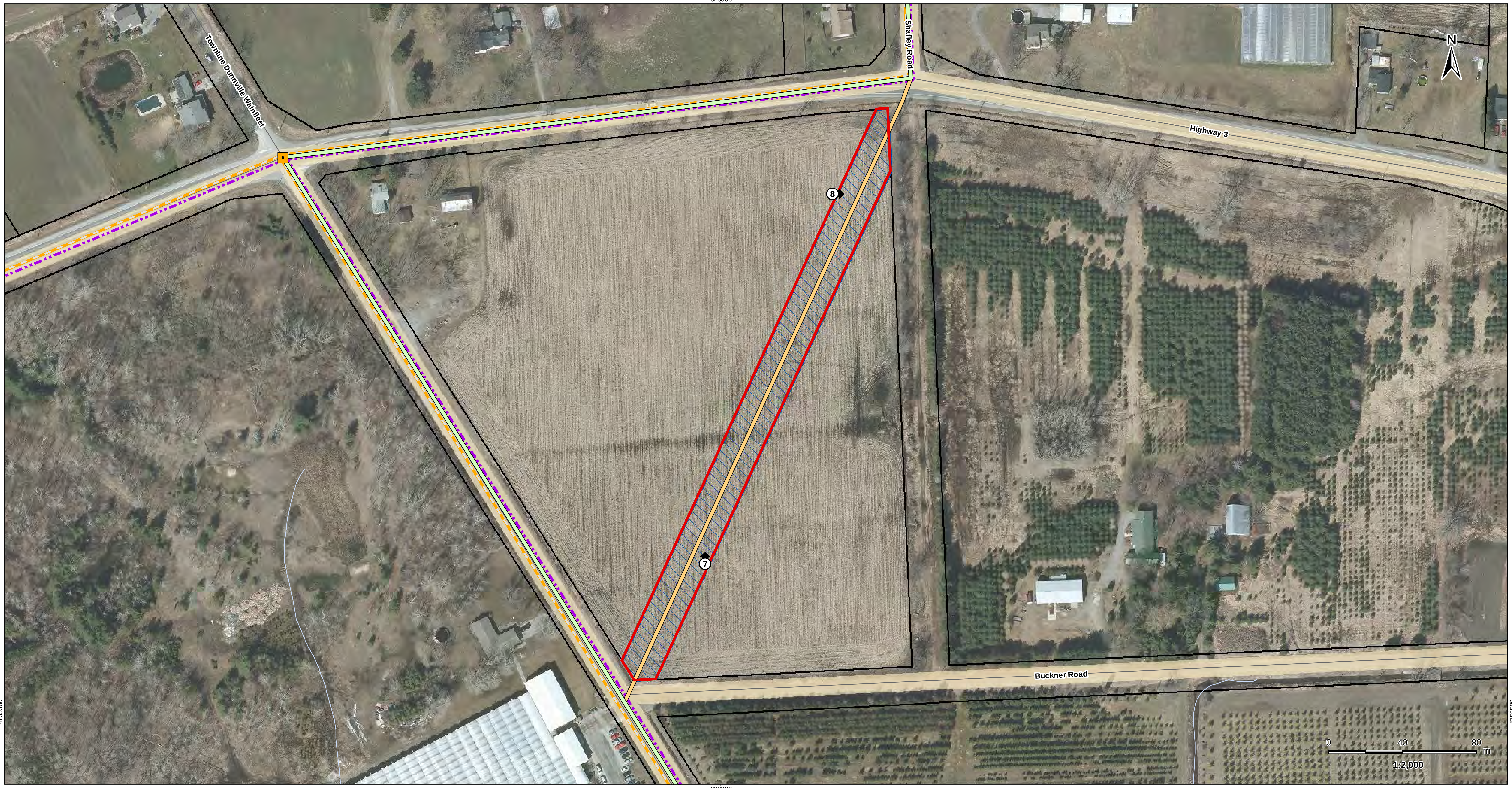

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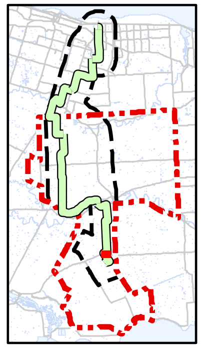
Legend
Study Area
Preferred Transmission Route (REA)
Modified Alternate Transmission Route
Stage 2 Assessment
Pedestrian Survey, at 5m Intervals
Photograph Location

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, 2010.
3. Orthoimagery © First Base Solutions, 2010.



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FWRN LP
Niagara Region Wind Farm
Stage 2 Archaeological Assessment

Figure No.
9

Title
Stage 2 Results
Transmission Line

10.0 CLOSURE

This report documents work that was performed in accordance with generally accepted professional standards at the time and location in which the services were provided. No other representations, warranties or guarantees are made concerning the accuracy or completeness of the data or conclusions contained within this report, including no assurance that this work has uncovered all potential archaeological resources associated with the identified property.

All information received from the client or third parties in the preparation of this report has been assumed by Stantec to be correct. Stantec assumes no responsibility for any deficiency or inaccuracy in information received from others.

Conclusions made within this report consist of Stantec's professional opinion as of the time of the writing of this report, and are based solely on the scope of work described in the report, the limited data available and the results of the work. The conclusions are based on the conditions encountered by Stantec at the time the work was performed. Due to the nature of archaeological assessment, which consists of systematic sampling, Stantec does not warrant against undiscovered environmental liabilities nor that the sampling results are indicative of the condition of the entire property.

This report has been prepared for the exclusive use of the client identified herein and any use by any third party is prohibited. Stantec assumes no responsibility for losses, damages, liabilities or claims, howsoever arising, from third party use of this report. We trust this report meets your current requirements. Please do not hesitate to contact us should you require further information or have additional questions about any facet of this report.

Yours truly,

STANTEC CONSULTING LTD.

Quality Review: 

(signature)

Jeffrey Muir, BA (R304)

Independent Review: 

(signature)

Colin Varley, MA, RPA (P002)