Bornish Wind Energy Centre
Natural Heritage Evaluation of Significance Report

Prepared for:
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Project No. 1231

Date: March 2012

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Bornish Wind Energy Centre
Natural Heritage Evaluation of Significance Report

Project Team:

Staff	Role
Andrew Ryckman	Project Manager/Biologist
David Stephenson	Senior Terrestrial and Wetland Biologist
Charlotte Moore	Terrestrial and Wetland Biologist
Andrew Dean	Terrestrial and Wetland Biologist
Heather Wright	Terrestrial and Wetland Biologist
Kaitlin Powers	Terrestrial and Wetland Biologist
Katharina Walton	Terrestrial and Wetland Biologist
Katherine Clapham	Terrestrial and Wetland Biologist
Kenneth Burrell	Terrestrial and Wetland Biologist
Mike Wolosinecky	Terrestrial and Wetland Biologist
Nathan Miller	Terrestrial and Wetland Biologist
Patrick Deacon	Terrestrial and Wetland Biologist
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Report submitted on March 28, 2012

Andrew G. Ryckman

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1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in April 2011 by GL-Garrad Hasson on behalf of NextEra Energy Canada, ULC (NextEra) to conduct a natural environment resource assessment in accordance with the Renewable Energy Approval (REA) Regulation, Ontario Regulation 359/09. This assessment includes a records review, site investigation, evaluation of significance, and impact assessment of any potentially significant natural features or wildlife habitats at a proposed 72.9 MW wind energy generating facility in North Middlesex, Middlesex County Ontario. The analysis of the natural heritage features and biological factors affecting the proposed site is one issue being considered. Other factors, such as land ownership, social impacts, and cultural impacts are also being assessed by other team members, and will be addressed under separate covers as outlined by the REA Regulation.

The Bornish Wind Energy Centre ('the Project') will be owned and operated by Bornish Wind, LP, a wholly-owned subsidiary of NextEra. The project is located in northwestern Middlesex County in the Township of North Middlesex, Ontario. The Bornish Wind Energy Centre is approximately 3.3 km south of the Town of Parkhill, Ontario, with the general project area bound to the north by Nairn/Elginfield Road, to the south by Townsend Line, and to the east and west by Broken Front/Scout Road and Fort Rose Road. A transmission line is proposed to run north along Kerwood Road from the substation to Elginfield Road/Nairn Road. This transmission line is then proposed to continue eastward along Nairn Road to an existing 500 kV line and interconnection point located west of Petty Street. The location of the project area was defined early in the planning process for the proposed wind energy facility, based on the availability of wind resources, approximate area required for the proposed project, and availability of existing infrastructure for connection to the electrical grid. The project area was used to facilitate information collection, the Records Review and inform site investigations.

The Bornish Wind Energy Centre is proposed to consist of up to 45 GE 1.6-100 (1.62 MW) turbines installed for a total installed capacity of 72.9 MW. However, locations for 48 turbines will be permitted. The proposed GE 1.6-100 turbine is a 3-bladed, upwind, horizontal-axis turbine. The turbine has a total rotor diameter of 100 m, which results in a swept area of 7,854 m^2 and is designed to operate at between 9.75 and 16.18

revolutions per minute (rpm). The turbine rotor and nacelle are mounted on top of an 80 m tubular tower that is manufactured in sections from steel plates. Each turbine is mounted on a steel reinforced concrete foundation and equipped with a transformer, which is located outside the base of the tower.

As identified in the REA Regulation, the proposed layout of these features is collectively referred to as the 'project location'. The project location is defined as per the Natural Heritage Assessment Guide for Renewable Energy Projects (July 2011) as "*a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project*." As described herein, the project location boundary is the outer limit of where site preparation and construction activities will occur (i.e. temporary disturbance areas), and where permanent infrastructure will be located, including the air space occupied by turbine blades.

In accordance with Section 25 of the REA Regulation, NRSI has conducted a thorough records review of available background resources to identify any potentially significant natural features within 120 m of the project location. This includes areas within 120 m of turbine blade tip as well as any areas that may be used as temporary lay-down areas, crane pads, access roads, collection, distribution, and transmission lines. For the purposes of this report, NRSI will refer to the areas within 120 m of the project location as the 'project area.'

Current land uses within the project area consists mainly of agriculture, with major crops including soybeans, corn, wheat, hay as well as existing residential and farm buildings. Natural features are generally small and isolated from other features; however, several large contiguous woodlands are present within the Bornish project area. Habitats within the project area include woodlands, swamps, meadows, thickets, drainage ditches, ponds, creeks and hedgerows. See Figure 1 for a map of the project area and natural features.

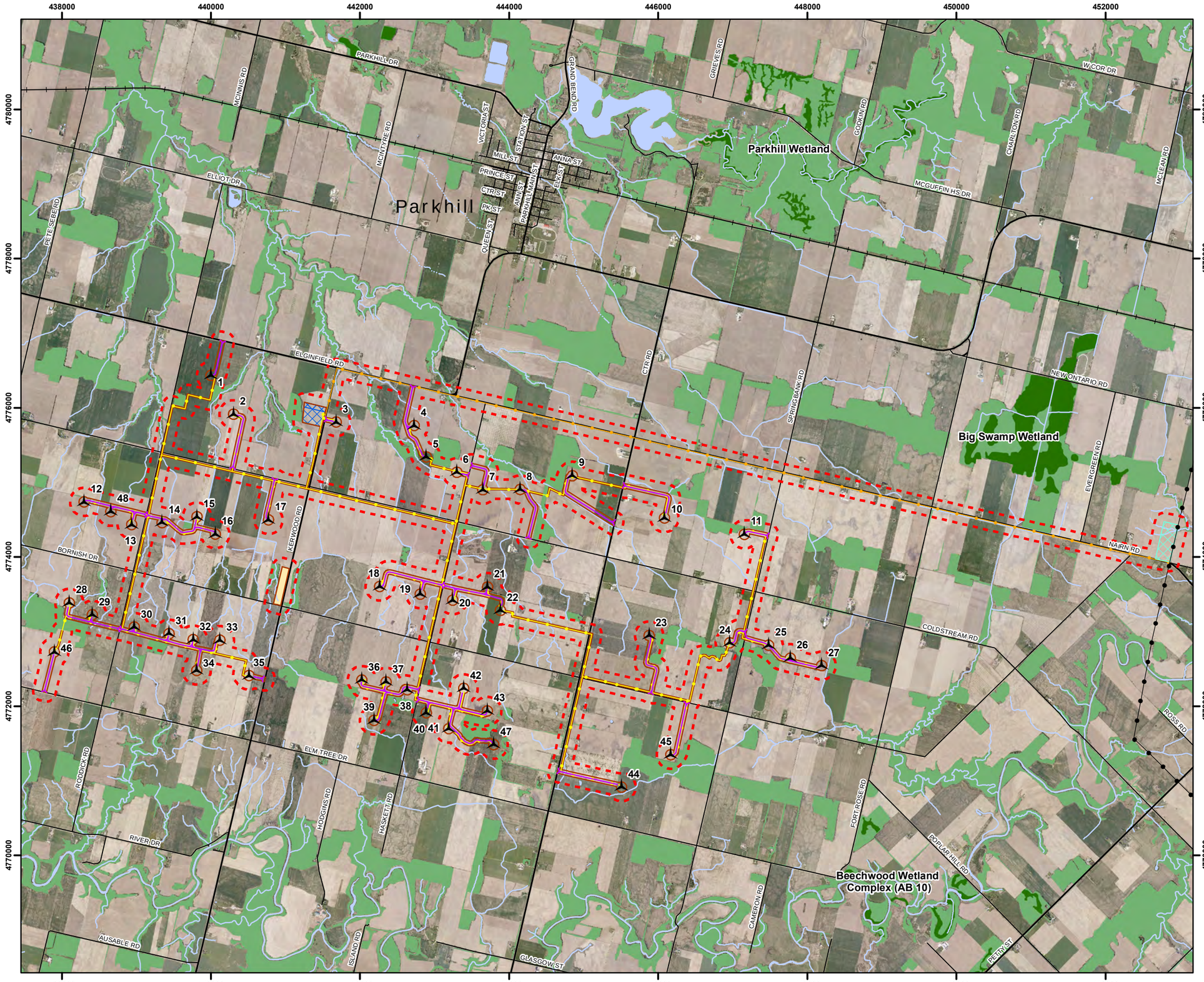
As part of this project, NRSI has considered all aspects relating to provincially Threatened and Endangered species. However, since these species are addressed as

part of the *Endangered Species Act* (2007), they have not been discussed within any of these Natural Heritage Assessment reports. These species will be address in full detail, including a description and results of field assessments, potential impacts, and recommended mitigation measures, as part of a separate *Approval and Permitting Requirements Document (APRD)* to be submitted to the MNR under a separate cover, where necessary.

Figure 1

Bornish Wind Energy Centre

Project Area and Natural Features



Path: X:\1231_BornishWindFarm\NRSI_1231_Fig1_BornishWF_NaturalFeatures_50K_2011_12_22_GCS.mxd

Legend

- Project Area (120m Buffer)
- Turbine
- Access Road
- Collector System
- Interconnection Line
- Project Location
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Primary Road
- Secondary Road
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Provincially Significant Wetland (PSW)
- Other Wetland
- Wooded
- ANSI, Life Science
- ANSI, Earth Science

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Source: Data provided by MNR. Copyright: Queen's Printer Ontario. Imagery: GL Garrad Hassan, 2011.

Project: 1231 March 30, 2012	NAD83 - UTM Zone 17 Scale: 1:50,000 (11x17")

0 1 2 3 Kms

N

2.0 REA Requirements

Ontario Regulation (O. Reg.) 359/09 – *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the REA Regulation) made under the *Environmental Protection Act* identifies the requirements for the development of renewable energy projects in Ontario. In accordance with the REA Regulation, the Bornish Wind Energy Centre, classified as a Class 4 wind facility, is required to complete a REA.

Section 27 of the REA Regulation requires that, if any candidate significant natural feature is identified within 120m of the project location, a natural heritage evaluation of significance should be undertaken. This evaluation of significance should utilize evaluation criteria or procedures established or accepted by the Ministry of Natural Resources. In conjunction with the evaluation of significance, Subsection 4 of the REA Regulation requires that a report be prepared that sets out the following:

1. For each natural feature shown on the map mentioned in paragraph 3 of subsection 26 (3), a determination of whether the natural feature is provincially significant, significant, not significant, or not provincially significant.
2. A summary of the evaluation criteria or procedures used to make the determinations mentioned in paragraph 1.
3. The name and qualifications of any person who applied the evaluation criteria or procedures mentioned in paragraph 2.
4. The dates of the beginning and completion of the evaluation

This Natural Heritage Assessment report has been organized and prepared to satisfy the requirements of the evaluation of significance as outlined in the REA Regulation.

3.0 Staff Roles

The requirements of the REA process indicate that the name and qualifications of all staff participating in the evaluation of significance should be included. As a result, the qualifications and roles of all staff participating in the site investigations at the Bornish Wind Energy Centre have been outlined in the following sections.

Andrew Ryckman, B.Sc.
Andrew is a Terrestrial and Wetland Biologist with 7 years of environmental experience. He routinely manages the natural heritage aspects of renewable energy projects, with specific expertise relating to bats and herpetofauna. Andrew is certified in Ecological Land Classification (2010), and has successfully completed a Bat Conservation International (BCI) Acoustic Monitoring Workshop (2008).

Andrew's role in the Project was to act as the project manager, overseeing all aspects of the Natural Heritage Assessment, including all associated field work and reporting. He was the main contact point for agency staff and assisted with the preparation of all appropriate reports. Andrew also worked with other staff to evaluate the significance of several of the natural features, including completing bird surveys within the project area.

David E. Stephenson, M.Sc.
David specializes in natural resource inventories and evaluations, management, research and impact studies. He has managed numerous projects which have focused on the identification of important natural features and evaluation of the significance and sensitivity of these features. As a wetland specialist, David has worked extensively in wetland habitats throughout Ontario including the evaluation of over 150 wetlands using the standard Ontario Wetland Evaluation System (OWES). David has managed numerous studies focusing on development impacts on wetland ecology and functions and has developed solutions and recommendations for development proposals in and around wetlands, within the Wetlands Policy. David is OWES certified.

David's role in this project was to supervise the wetland boundary delineations and information collection within the project area.

Charlotte Moore, B.E.S.
Charlotte is a Terrestrial and Wetland Biologist with three field seasons of experience in butterfly ecology and various other environmental projects. Charlotte has completed her Bachelor of Environmental Studies and is a candidate for a Master of Environmental Studies (2013) at the University of Waterloo. Her Masters research will involve measuring the success of past restoration efforts using butterfly abundance and diversity in the riparian zones of several creeks. Other environmental projects Charlotte has worked on include the use of Ecological Land Classification (ELC), bat habitat assessments, breeding bird surveys and reptile studies.

Charlotte assisted with ELC surveys and was the main author for this report.

Andrew Dean, B.E.S.
Andrew is a Terrestrial and Wetland Biologist with two years of environmental consulting and not-for-profit work experience, monitoring both for the protection of natural areas within construction projects and for the rehabilitation of former aggregate extraction sites. He has a keen interest in botany and plant ecology and is a member of the Field Botanists of Ontario, the North American Native Plant Society and the Society for Ecological Restoration of Ontario (SERO) and is certified in the Ecological Land Classification (ELC) for Southern Ontario (2011).

Andrew was responsible for completing ELC surveys and wildlife habitat assessments.

Heather Wright, B.E.S.
Heather is a Field Biologist with experience in conducting vegetation inventories and reptile and mammal surveys. Heather graduated with a Bachelor of Environmental Studies from the University of Waterloo and completed a post-graduate certificate program in Ecosystem Restoration from Niagara College.

Her contributions to the project include assistance with ELC and reptile surveys.

Kaitlin Powers, B.E.S.
Kaitlin is a Terrestrial and Wetland Biologist with over 2 years experience working as an environmental technician in both public and private sectors. As a graduate in Environment and Resources Studies from the University of Waterloo, Kaitlin specialized her studies in ecological restoration and is a member of the Society for Ecological Restoration of Ontario (SERO). She is certified in ELC for northeastern Ontario (2011).

Kaitlin was responsible for completing ELC and reptile surveys, as well as assisting with wetland habitat assessments.

Katharina Walton, B.E.S.
Katharina is a Terrestrial and Wetland Biologist who focuses on natural area inventories and evaluations. She has participated in numerous studies focusing on characterizing aquatic, terrestrial and wetland resources. She is certified in the use of the ELC system for mapping and describing vegetation communities. She has conducted numerous inventories of vascular flora, breeding birds, mammals, reptiles and amphibians. Katharina has been involved in the monitoring of vegetation, breeding birds, amphibians, deer populations and bird migration for a number of studies across Ontario.

Katharina was responsible for conducting reptile surveys.

Katherine Clapham
Katherine is a former contract staff at NRSI with more than 2 years of experience working in the environmental field. During her consulting experience, Katherine has conducted aquatic, bat habitat and acoustic bat assessments throughout

Ontario. Katherine is also certified in the OMNR Wetland Evaluation System (1993).

Katherine was responsible for assisting with wildlife habitat assessments, as well as acoustic and visual bat monitoring.

Kenneth Burrell, B.E.S.
Kenneth is a Terrestrial and Wetland Biologist who has 6 years of experience working on a variety of environmental projects. He specializes in bird ecology but has over 4 years of experience conducting floral inventories and wildlife studies focused on amphibians, reptiles, bats, and mammals. Kenneth has worked on multiple stages for a variety of renewable energy projects, primarily focusing on wind power. Kenneth has completed his Bachelor of Environment and Resource Studies and is a candidate for a Masters of Environment and Resource Studies (2013) at the University of Waterloo. His Masters research will involve studying spring bird migration at Pelee Island, Ontario. Kenneth is also certified in ELC for Northeastern Ontario (2011).

Kenneth's role in the project consisted of completing bird surveys near the project area.

Mike Wolosinecky, B.E.S.
Mike is a Terrestrial and Wetland Biologist that has more than 2 years of practical work experience in environmental monitoring and restoration of terrestrial and aquatic ecosystems; primarily in parks and protected areas. His interests are focused on Species at Risk management and restoration ecology and he is a member on the Society for Ecological Restoration, Ontario Chapter. He has participated in various terrestrial and aquatic projects including bat abundance monitoring, fisheries biomass surveys and post construction mortality monitoring for various wind energy projects.

Mike's role in the project was to facilitate bat monitoring throughout the field work period, including setting up the acoustic monitoring stations and participating in visual surveys.

Nathan Miller, M.Sc.
Nathan graduated from the University of Guelph with a B.Sc. in Wildlife Biology and an M.Sc. in Integrative Biology. Research for Nathan's M.Sc. focused on the migration and conservation of the monarch butterfly throughout Canada and the United States. Nathan also has extensive experience conducting research on a wide range of wildlife species including birds, mammals, herptiles, insects and plants, which were acquired while working as a naturalist for the Ministry of Natural Resources in Algonquin Park and as an environmental consultant. Nathan is also certified in ELC for Northeastern Ontario (2011).

Nathan was responsible for completing ELC and bird surveys near the project area.

Patrick Deacon, B.E.S.

Patrick is a Terrestrial and Wetland Biologist with 4 years of environmental consulting experience. He regularly conducts vegetation inventories and community mapping, and specializes in ecological restoration with particular focus on Species At Risk, tallgrass prairie ecosystems, and invasive species management. Pat is also certified in ELC for Northeastern Ontario (2011).

Patrick was responsible for completing ELC surveys, assisting with wetland habitat assessments and visual and acoustic bat monitoring.

Gerry Schaus, B.A., GIS-AS

Gerry has over 4 years' experience in the renewable energy sector and regularly does mapping for wind, solar and hydroelectric projects. This work includes mapping of natural features, vegetation communities, and aquatic habitats, terrestrial monitoring, constraints and proposed turbine layouts. Gerry has also completed a number of receptor surveys for proposed wind projects using Trimble GPS and a laser offset to accurately gather building points without ever needing to step on private property. Additionally, Gerry has significant experience working with AutoCAD and (AutoCAD) Map3D. This expertise allows for the easy integration of CAD plans with GIS layers or vice versa.

Gerry's role in the Project was as GIS technician. He reviewed and collected all available background mapping resources, digitized information gathered from site investigations, and integrated this information to generate this project's mapping.

4.0 Summary of Records Review

In accordance with the REA Regulation, an area of at least 120m beyond the project location was examined during the Records Review Report for natural heritage features, including Areas of Natural and Scientific Interest (ANSI), wetlands, woodlands, valleylands, and wildlife habitat (NRSI 2012a). Numerous agencies were contacted to compile a comprehensive records review, including the Ministry of Natural Resources' (MNR) Renewable Energy Operation Team (REOT) and the Ausable Bayfield Conservation Authority. NRSI also utilized numerous background review sources, such as the Biodiversity Explorer, Ontario Breeding Bird Atlas (OBBA), Ontario Herpetofauna Atlas, and the Atlas of the Mammals of Ontario (OMNR 2010c; Cadman et al. 2007; Oldham & Weller 2000; Dobbyn 1994). The comprehensive results of the records review have been summarized in Table 1 and Table 2. The Summary of Records Review of the Bornish Wind Energy Centre, below, outlines the presence of natural areas and wildlife habitat that have the potential to overlap with, or occur within 120m of, the project location.

Table 1. Summary of Records Review of the Bornish Wind Energy Centre

Criteria	Result
1. Within 120m of a Provincial Park or Conservation Reserve	The Bornish Wind Energy Centre is not located within 120m of a Provincial Park or Conservation Reserve.
2. In a Natural Feature	The results of this records review indicate that project components (i.e. disturbance area, cabling, access roads etc.) of the Bornish Wind Energy Centre overlap with 9 woodlands. Based on review of air photos, these woodlands are expected to consist of deciduous forest with vegetation associations that are representative of this region of southwestern Ontario. The extent to which project locations overlap with natural areas is variable and will be further examined and addressed in the site investigation phase of the project.
3. Within 50m of a ANSI-ES	No ANSI-ES is located within 50m of the project location
4. Within 120m of a Natural Feature	
a) ANSI-LS	No ANSI-LS is located within 120m of the project location.
b) Coastal Wetland	No coastal wetlands are located within 120m of the project location.
c) Northern Wetland	No northern wetlands are found within 120m of the project location.
d) Southern Wetland	Three unevaluated southern wetlands within designated Environmentally Significant Areas have been identified within 120m of the project location. Wetlands may also be located within woodland boundaries.
e) Valleyland	No known valleylands are located within 120m of the project location.
f) Wildlife Habitat	40 woodlands are located within 120m of the project location, which could potentially provide several types of Significant Wildlife Habitat (SWH).

Criteria	Result
	Other natural features such as naturalized drainage ditches and hedgerows have been identified within 120m of the project location and could also provide SWH. These features will be surveyed to determine if they are used as animal movement corridors or provide habitat for species of conservation concern. Several species of conservation concern were identified as potentially occurring within the Bornish project area. Candidate habitats for these species will be investigated for potential Significant Wildlife Habitat. All of these wildlife habitats should be examined during the site investigation phase and/or the evaluation of significance phase of this project to identify other habitat features and identify the significance of each natural feature.
g) Woodland	40 woodlands are located within 120m of the project location, including 9 that may overlap with the project location. Basemapping indicate these wooded areas range in size from <1 ha to 137.2 ha. These woodlands are expected to be primarily dominated by mid-aged to mature deciduous tree species; however young woodlands, treed plantations, or occasional coniferous woodlands may also be present within 120m of the project location.

As part of the records review, a detailed review of potential significant wildlife habitats which could occur within the project area was undertaken (Table 2). This information was used to guide the site investigation phase of the NHA. Wildlife habitats were confirmed to be either: 1) not applicable to the project area or 2) known to not occur within the project area based on criteria set out by the Ministry of Natural Resources (OMNR 2000; 2011a), and therefore are not discussed further.

Table 2. Summary of Candidate Significant Wildlife Habitats Identified during the Records Review

Significant Wildlife Habitat	Present Within 120 m of Project Location	Present Within Project Location	Site Investigation Required (Y/N)
Seasonal Concentration Areas			
Winter Deer Yards	No	No	**No**
Colonial-Nesting Bird Breeding Habitat (swallows)	Unknown	Unknown	**Yes**
Colonial-Nesting Bird Breeding Habitat (tree/shrub)	Unknown	Unknown	**Yes**
Colonial-Nesting Bird Breeding Habitat (ground)	Unknown	Unknown	**Yes**
Waterfowl Stopover and Staging Areas (terrestrial)	Unknown	Unknown	**Yes**
Waterfowl Stopover and Staging Areas (aquatic)	Unknown	Unknown	**Yes**
Waterfowl Nesting Habitat	Unknown	Unknown	**Yes**
Shorebird Migratory Stopover Areas	N/A	N/A	**No**
Landbird (including songbird) Migratory Stopover Areas	N/A	N/A	**No**
Raptor Winter Feeding and Roosting Areas	Unknown	Unknown	**Yes**
Wild Turkey Winter Range	N/A	N/A	**No**
Turkey Vulture Summer Roosting Areas	N/A	N/A	**No**
Reptile Hibernacula (snakes)	Unknown	Unknown	**Yes**
Bat Hibernacula	Unknown	Unknown	**Yes**
Bat Maternity Colonies	Unknown	Unknown	**Yes**
Amphibian Breeding Habitat (woodland)	Unknown	Unknown	**Yes**
Amphibian Breeding Habitat (wetland)	Unknown	Unknown	**Yes**
Migratory Butterfly Stopover Areas	N/A	N/A	**No**
Rare Vegetation Communities and Specialized Wildlife Habitat			
Alvars	Unknown	Unknown	**Yes**
Tall-grass Prairies	Unknown	Unknown	**Yes**
Savannahs	Unknown	Unknown	**Yes**
Rare Forest Types	Unknown	Unknown	**Yes**
Talus Slopes	Unknown	Unknown	**Yes**
Rock Barrens	Unknown	Unknown	**Yes**
Sand Barrens	Unknown	Unknown	**Yes**
Great Lakes Dunes	N/A	N/A	**No**
Forests Providing High Diversity of Habitats	N/A	N/A	**No**
Old-growth or Mature Forest Stands	Unknown	Unknown	**Yes**
Foraging Areas with Abundant Mast	N/A	N/A	**No**
Turtle Nesting Habitat	Unknown	Unknown	**Yes**
Turtle-Over-wintering Habitat	Unknown	Unknown	**Yes**
Woodland Raptor Nesting Habitat	Unknown	Unknown	**Yes**
Osprey Nesting/Bald Eagle, Foraging, and Perching Habitat	Unknown	Unknown	**Yes**
Moose Calving Areas	N/A	N/A	**No**

Significant Wildlife Habitat	Present Within 120 m of Project Location	Present Within Project Location	Site Investigation Required (Y/N)
Moose Aquatic Feeding Zone	N/A	N/A	**No**
Mineral Licks	N/A	N/A	**No**
Mink, Otter, Marten, and Fisher Denning Sites	Unknown	Unknown	**Yes (Mink Only)**
Highly Diverse Areas	N/A	N/A	**No**
Cliffs	No	No	**No**
Seeps and Springs	Unknown	Unknown	**Yes**
Amphibian Movement Corridors	Unknown	Unknown	**Yes**
Habitats of Species of Conservation Concern			
Marsh Bird Breeding Habitat	Unknown	Unknown	**Yes**
Woodland Area Sensitive Breeding Birds	Unknown	Unknown	**Yes**
Open Country Breeding Bird Habitat	Unknown	Unknown	**Yes**
Shrub/Early Successional Bird Breeding Habitat	Unknown	Unknown	**Yes**
Terrestrial Crayfish	Unknown	Unknown	**Yes**
Habitat for Special Concern Species	Unknown	Unknown	**Yes**
Habitat for S1-S3, and SH (Possibly Extirpated Historically) Species and Communities	Unknown	Unknown	**Yes**

5.0 Site Investigation Summary

In accordance with the REA Regulation, NRSI biologists have completed a comprehensive site investigation of the Bornish Wind Energy Centre project area (NRSI 2012b). The site investigations focused on conducting Ecological Land Classification (ELC) and wildlife habitat surveys. The results of the investigations have been summarized in Table 3 below. Candidate significant natural features identified include woodlands, wetlands, valleylands, species of conservation concern and significant wildlife habitat. Each feature identified in Table 3 as being carried forward to the evaluation of significance phase of this project will be addressed in this report. For mapping and reporting purposes, each feature has been assigned a unique identifier (Table 3). As outlined in Appendix D of the Natural Heritage Assessment Guide for Renewable Energy Projects (OMNR 2011b), any habitats that are within 120m of a project component with no operational impact have been carried forward as generalized wildlife habitat. It is possible that some habitat types that are identified as generalized wildlife habitat in the following sections will also have specific sites that require a full evaluation of significance.

Table 3. Summary of Candidate Natural Features and Wildlife Habitats Identified During Site Investigations for the Bornish Wind Energy Centre

Feature ID	Distance to Closest Turbine (from blade tip)	Distance to Other Project Infrastructure	**EOS Required (Y/N/Generalized)**
WOD-001 Woodland	>120	5	**Yes**
WOD-002 Woodland	78	6	**Yes**
WOD-003 Woodland	42	6	**Yes**
WOD-004 Woodland	56	>0.1	**Yes**
WOD-006 Woodland	93	Overlapping	**Yes**
WOD-007 Woodland	49	5	**Yes**
WOD-008 Woodland	44	Overlapping	**Yes**
WOD-009 Woodland	42	4	**Yes**
WOD-010 Woodland	55	>0.1	**Yes**
WOD-012/WOD 021 Woodland	47	92	**Yes**
WOD-013 Woodland	>120	28	**Yes**
WOD-014 Woodland	57	>0.1	**Yes**
WOD-015 Woodland	76	5	**Yes**
WOD-016	48	0.4	**Yes**
WOD-018 Woodland	40	7	**Yes**
WOD-020 Woodland	>120	110	**Yes**
WOD-022 Woodland	48	82	**Yes**
WOD-023 Woodland	63	14	**Yes**
WOD-024 Woodland	21	9	**Yes**
WOD-025 Woodland	>120	35	**Yes**
WOD-027 Woodland	>120	6	**Yes**
WOD-028 Woodland	90	6	**Yes**
WOD-029 Woodland	82	2	**Yes**
WOD-030 Woodland	89	73	**Yes**
WOD-031 Woodland	70	64	**Yes**
WOD-038 Woodland	>120	72	**Yes**

WOD-039 Woodland	>120	37	**Yes**
WOD-045 Woodland	>120	15	**Yes**
WOD-046 Woodland	>120	12	**Yes**
WOD-047 Woodland	>120	20	**Yes**
WOD-048 Woodland	>120	5	**Yes**
WOD-050 Woodland	>120	3	**Yes**
WOD-051 Woodland	>120	51	**Yes**
WOD-052 Woodland	>120	10	**Yes**
WOD-053 Woodland	>120	15	**Yes**
WET-002 Wetland	A: >120	A: 91	**Yes**
WET-002 Wetland	B: 45	B: 12	**Yes**
WET-002 Wetland	C: 109	C: 24	**Yes**
WET-003 Wetland	100	6	**Yes**
WET-008 Wetland	>120	92	**Yes**
WET-010 Wetland	55	>0.1	**Yes**
WET-014 Wetland	70	5	**Yes**
WET-018 Wetland	115	50	**Yes**
WET-025 Wetland	>120	35	**Yes**
WET-030 Wetland	88	>120	**Yes**
VAL- 004 Valleyland	56	>0.1	**Yes**
VAL-047 Valleyland	>120	20	**Yes**
RWA 002 Raptor Wintering Area	>120	>0.1	**Yes**
BMA 002 Bat Maternity Colony	42	4	**Yes**
BMA 003 Bat Maternity Colony	44	>0.1	**Yes**
BMA 008 Bat Maternity Colony	57	>0.1	**Yes**
BMA 009 Bat Maternity Colony	49	5	**Yes**
BMA 010 Bat Maternity Colony	76	5	**Yes**
BMA 011 Bat Maternity Colony	48	0.4	**Yes**
BMA 012 Bat Maternity Colony	93	>0.1	**Yes**

BMA 013 Bat Maternity Colony	48	82	**Yes**
BMA 016 Bat Maternity Colony	63	14	**Yes**
BMA 017 Bat Maternity Colony	21	9	**Yes**
AWO 001 Amphibian Breeding Habitat (Woodland)	88	10	**Yes**
AWO 002 Amphibian Breeding Habitat (Woodland)	93	>0.1	**Yes**
AWO 003 Amphibian Breeding Habitat (Woodland)	100	6	**Yes**
Bat Maternity Colony	>120	N/A	**Generalized**
Snake Hibernaculum	>120	<120 to UL	**Generalized**
Amphibian Breeding Habitat (Woodland)	N/A	>120 to AR	**Generalized**
SCC: Woodland Vole	N/A	N/A	**Generalized**
SCC: Carey's Sedge	N/A	N/A	**Generalized**
SCC: Awnless Wild Rye	N/A	N/A	**Generalized**
SCC: Yellow Stargrass	N/A	N/A	**Generalized**
SCC: Winged Loosestrife	N/A	N/A	**Generalized**
SCC: Slim-flowered Muhly	N/A	N/A	**Generalized**
SCC: Woodland Bulrush	N/A	N/A	**Generalized**
SCC: Blue-ringed Dancer	N/A	N/A	**Generalized**
SCC: Double-striped Bluet	N/A	N/A	**Generalized**
SCC: Pronghorn Clubtail	N/A	N/A	**Generalized**

[1] Both instances of project component overlap with woodlands are where directional drilling will occur, resulting in no direct loss of habitat, and no actual project overlap.

6.0 Evaluation of Significance Methodology

In accordance with the REA Regulation, NRSI biologists have completed a comprehensive records review and site investigations to confirm site-specific ecological functions of the Bornish Wind Energy Centre. The results of these tasks have provided the information required to guide the evaluation of significance for several features within the project area. NRSI has reviewed all natural features within the project area and compared the site-specific conditions and results of field investigations to available evaluation criteria to determine the significance of each feature. The methodology and evaluation criteria used to determine significance are outlined in the following sections.

6.1 Survey Dates

In accordance with the REA Regulation, NRSI recorded dates, times, duration, and weather conditions during each evaluation of significance. This information has been summarized in Table 4. Detailed descriptions of staff roles and qualifications can be found in Section 3.0 of this report.

Table 4. Evaluation of Significance Survey Details

Staff Name(s)	Purpose	Date (2011)	Start Time (hrs)	Duration (hrs)	Weather Conditions		
					Temp (°C)	Beaufort Wind	Cloud Cover (%)
Pat Deacon and Justin Becker	Visual Bat Monitoring	June 20	2120	1	15	2	95
Pat Deacon and Kaitlin Powers	Acoustic Bat Monitoring	June 21	1340	4 nights*	26	4	50
Pat Deacon and Justin Becker	Visual Bat Monitoring	June 21	2127	1.25	26	4	75
Pat Deacon and Kaitlin Powers	Acoustic Bat Monitoring	June 22	1045	4 nights	23	4	100
Pat Deacon and Kaitlin Powers	Acoustic Bat Monitoring	June 22	1140	4 nights	23	4	70
Pat Deacon and Kaitlin Powers	Acoustic Bat Monitoring	June 22	1325	4 nights	--	3	--
Pat Deacon and Kaitlin Powers	Visual Bat Monitoring	June 22	2220	1.25	19	1-2	100
Pat Deacon and Katherine Clapham	Acoustic Bat Monitoring	June 23	1505	5 nights	23	3	100
Pat Deacon and Katherine Clapham	Acoustic Bat Monitoring	June 23	1530	5 nights	23	3	90
Pat Deacon and Katherine Clapham	Acoustic Bat Monitoring	June 23	1610	5 nights	23	4	--
Pat Deacon and Kaitlin Powers	Visual Bat Monitoring	June 23	2055	2.5	20	3	100
Pat Deacon and Katherine Clapham	Acoustic Bat Monitoring	June 24	1145	4 nights	17	3	100
Pat Deacon and Katherine Clapham	Visual Bat Monitoring	June 24	2130	2.5	18	4	100
Katherine Clapham and Andrew Dean	Acoustic Bat Monitoring	June 25	1301	4 nights	19	1	100
Andrew Dean and Katherine Clapham	Acoustic Bat Monitoring	June 25	1638	4 nights	22	1	40
Pat Deacon and Katherine Clapham	Visual Bat Monitoring	June 25	2141	2.25	16	0	10
Graham Wright and Andrew Dean	Acoustic Bat Monitoring	June 26	1220	4 nights	22	2	40
Graham Wright and	Acoustic Bat Monitoring	June 26	1307	4 nights	22	2	90

Staff Name(s)	Purpose	Date (2011)	Start Time (hrs)	Duration (hrs)	Weather Conditions		
					Temp (℃)	Beaufort Wind	Cloud Cover (%)
Andrew Dean							
Graham Wright and Andrew Dean	Acoustic Bat Monitoring	June 26	1400	4 nights	24	3	40
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 28	1237	4 nights	24	3	60
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 28	1420	4 nights	24	3	20
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 28	1501	4 nights	24	3	20
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 28	1545	4 nights	24	3	70
Katherine Clapham and Andrew Dean	Visual Bat Monitoring	June 28	2100	1.25	17	4	40
Katherine Clapham and Ian Riemenschneider	Visual Bat Monitoring	June 28	2107	4	17	3	70
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 29	1301	4 nights	14	0	100
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 29	1400	4 nights	14	0	100
Katherine Clapham and Ian Riemenschneider	Visual Bat Monitoring	June 29	2111	2.25	18	0	10
Justin Becker and Graham Wright	Visual Bat Monitoring	June 29	2122	0.75	18	0	20
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 30	1300	4 nights	23	0	30
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 30	1309	4 nights	23	0	30

Staff Name(s)	Purpose	Date (2011)	Start Time (hrs)	Duration (hrs)	Weather Conditions		
					Temp (℃)	Beaufort Wind	Cloud Cover (%)
Katherine Clapham and Ian Riemenschneider	Acoustic Bat Monitoring	June 30	1430	4 nights	23	0	30
Katherine Clapham and Ian Riemenschneider	Visual Bat Monitoring	June 30	2051	2.25	19	0	0
Justin Becker and Graham Wright	Visual Bat Monitoring	June 30-	2105	0.75	16	0	60
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 2	1350	4 nights	25	2	30
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 2	1418	4 nights	25	2	60
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 2	1445	4 nights	25	2	60
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 2	1507	4 nights	25	2	60
Mike Wolosinecky and Andrew Dean	Acoustic Bat Monitoring	July 3	1308	2 nights	29	2	20
Mike Wolosinecky and Andrew Dean	Acoustic Bat Monitoring	July 3	1339	4 nights	29	3	23
Justin Becker and Graham Wright	Acoustic Bat Monitoring	July 4	1430	1 night	26	3	0
Charlotte Moore and Kaitlin Powers	Acoustic Bat Monitoring	July 4	1435	4 nights	25	3	5
Graham Wright, Justin Becker, Kaitlin Powers and Charlotte Moore	Acoustic Bat Monitoring	July 4	1520	4 nights	26	3	0
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 5	1514	12 nights	31	1	50
Katherine Clapham and Mike	Acoustic Bat Monitoring	July 5	1548	10 nights	31	1	50

Staff Name(s)	Purpose	Date (2011)	Start Time (hrs)	Duration (hrs)	Weather Conditions		
					Temp (℃)	Beaufort Wind	Cloud Cover (%)
Wolosinecky							
Katherine Clapham and Mike Wolosinecky	Visual Bat Monitoring	July 5	2105	2.75	26	2	20
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 6	1244	1	27	0	30
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 6	1325	1	28	0	30
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 6	1418	2 nights	28	0	30
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 6	1501	1	28	0	30
Katherine Clapham and Mike Wolosinecky	Visual Bat Monitoring	July 6	2100	2.75	--	0	10
Katherine Clapham and Pam Tucciarone	Acoustic Bat Monitoring	July 7	1354	1	24	1	80
Katherine Clapham and Pam Tucciarone	Visual Bat Monitoring	July 7	2100	3.25	23	0	80
Graham Wright and Justin Becker	Visual Bat Monitoring	July 7	2130	0.75	19	1	60
Katherine Clapham and Pam Tucciarone	Acoustic Bat Monitoring	July 8	1516	2 nights	26	1	5
Katherine Clapham and Pam Tucciarone	Visual Bat Monitoring	July 8	2100	2.5	23	0	10
Graham Wright and Justin Becker	Visual Bat Monitoring	July 8	2305	0.75	24	0	10
Katherine Clapham and Mike Wolosinecky	Acoustic Bat Monitoring	July 9	1400	1	29	2	20
Katherine Clapham and Mike Wolosinecky	Visual Bat Monitoring	July 9	2100	2.75	28	2	25

Staff Name(s)	Purpose	Date (2011)	Start Time (hrs)	Duration (hrs)	Weather Conditions		
					Temp (℃)	Beaufort Wind	Cloud Cover (%)
Graham Wright and Justin Becker	Visual Bat Monitoring	July 9	2302	1.25	21	2	60
Katherine Clapham and Justin Becker	Acoustic Bat Monitoring	July 10	1445	3 nights	30	1	50
Mike Wolosinecky and Justin Becker	Visual Bat Monitoring	July 10	2103	0.75	23	2	30
Mike Wolosinecky and Kaitlin Powers	Visual Bat Monitoring	July 11	2100	2.75	24	3	50
Andrew Dean and Sophie Gibbs	Visual Bat Monitoring	July 11	2115	2.25	25	0	0
Mike Wolosinecky and Kaitlin Powers	Visual Bat Monitoring	July 12	2120	1.5	22	3	80
Andrew Dean and Sophie Gibbs	Visual Bat Monitoring	July 12	2227	0.75	23	2	95
Katharina Walton and Heather Wright	Reptile Surveys	September 12	1130	.5	24	3	5
Kaitlin Powers and Heather Wright	Reptile Surveys	September 27	1450	.5	25	2	25
Kaitlin Powers and Pat Deacon	Ontario Wetland Evaluation System Surveys	September 30	0900	7.5	10	5	100
Kaitlin N. Powers and Kim Watson	Reptile Surveys	October 4	1450	.5	18	4	0
Graham Wright and Mitch Ellah	Reptile Surveys	October 7	1050	.5	19	1-2	0

*One night of monitoring is approximately 6 hours of passive acoustic monitoring

6.2 Woodlands

During the site investigation phase of the NHA, NRSI biologists used modified Ecological Land Classification (ELC) for southern Ontario (Lee et al. 1998) to identify woodlands within the project area during the site investigation of this project. Through this vegetation mapping technique, several woodland communities were confirmed within 120 m of proposed development activities of the Bornish Wind Energy Centre. Surveys included area searches of the habitat where access was granted, in order to compile a comprehensive vegetation inventory. These investigations documented the following: community classification, substrate, topographic features, plant form, canopy cover, size class analysis, snags, deadfall/logs, community age and domination of vegetation within the canopy, sub-canopy, understory and groundcover. Candidate significant wildlife habitat assessments were also completed, which are outlined below in Section 5.6. This ELC mapping was completed using the 2008 draft revisions to the ELC manual (Lee 2008).

To evaluate the significance of each woodland feature identified, ecological characteristics (form, function, and attributes) were compared to the evaluation criteria for significant woodlands, as described in Table 7-2 of the Natural Heritage Reference Manual (OMNR 2010a) as a desktop exercise. These evaluation criteria include four (4) broad categories: woodland size, ecological functions, uncommon characteristics, and economic and social functional values. The general evaluation criteria for significant woodland criteria have been summarized in Table 5. All of the criteria identified in Table 5 continue to rely, at least in part, on meeting minimum area thresholds as outlined in the Natural Heritage Assessment Guide (OMNR 2011b).

Table 5. Woodland Evaluation of Significance Criteria

Evaluation Criteria	Standards of Significance
Woodland Size Criteria	
Woodland Cover	- If woodlands account for between 5-15% (Middlesex County;12.3%) of the total land use, woodlands 4ha in size or greater are significant. - The largest woodland in the planning area (or sub-unit) should be considered significant.
Ecological Functions Criteria	
Woodland Interior	- Woodlands with any interior habitat when woodland cover is less than 15% should be significant. - Interior habitat can be initially identified by any forested habitat no closer than 100m from any woodland edge.
Proximity to Other Woodlands	- Woodlands that may provide ecological benefit to other nearby (within 30m) significant natural features or fish habitat may be considered significant, providing they meet the area threshold according to the woodland cover for the lower-tier or single-tier municipality.
Linkages	- Woodlands that provide linkage functions between other significant features within a specified distance (e.g., 120m) may be considered significant.
Water Protection	- Woodlands may be significant if they are within a sensitive watershed, or in close proximity to other hydrological features, including sensitive headwaters, fish habitat, and groundwater discharge.
Woodland Diversity	- A naturally occurring composition of native forest species that have shown significant decline south and east of the Canadian Shield may be significant. - If high native diversity throughout forested features is noted, a woodland may be significant.
Uncommon Characteristics Criteria	
Woodland Characteristics	- A woodland may be significant if it contains a unique species composition. - A vegetation community with a provincial S-Rank of S1, S2, or S3 may be considered significant. - Woodlands containing habitat for a rare, uncommon, or restricted woodland plant species may be considered significant. - Native woodlands showing characteristics of old woodlands or those with large tree stems may be considered significant.
Economic and Social Functional Values	
Woodland Values	- Woodlands providing high productivity and economically valuable products may be considered significant. - Highly valuable, and sustainable, services, such as air-quality improvement, may result in significance. - Woodlands with noted educational, cultural, or historical values may be considered significant.

6.3 Wetlands

Wetlands within the project area were initially identified through the use of Ecological Land Classification for southern Ontario (Lee et al. 1998), including substrate sampling (soil augers) where right-of-entry was granted for the site. This vegetation community classification system allows for the assessment of vegetation communities for

preliminary delineations of upland, lowland, and wetland habitats among other community types, as well as facilitates the identification of wetland indicator species.

All wetlands that are located within 120m of the Bornish project location (but not overlapping) have been assumed to be provincially significant, consistent with Appendix C of the Natural Heritage Assessment Guide (OMNR 2011b). Using this Appendix, NRSI biologists assessed the characteristics and functions of these potential wetlands, which can be found below in Table 6.

Since no wetlands are found overlapping with the Bornish project location, a full wetland evaluation, following the Ontario Wetland Evaluation System (OMNR 2002) for southern Ontario was not completed.

Table 6. Wetland Characteristics and Ecological Functions to be Assessed

Characteristic/ Ecological Function	OWES Manual Section (south)	OWES Name	Field visit specified (if possible)	Details
Wetland Size (ha)	N/A	SIZE1	No	- Necessary to understand magnitude of impacts on area affected by project
Biological Component				
Wetland Type	1.1.2	WLTYPE	No - Field visit recommended as confirmation of bogs and fen wetland types is most readily accomplished through field work	- Assists in understanding whether changes in hydrology will impact wetland function - Provides a gauge for the presence of Species at Risk or provincially significant species
Site Type	1.1.3	SITE	No - Field visit recommended as confirmation of isolated and palustrine site types is most readily accomplished through field work	- Assists in understanding if changes in hydrology will impact wetland function
Vegetation Communities	1.2.2	VEG	Yes	- Assists in establishing wetland types - Can be used to predict faunal types in order to assess varying impacts - Provides a gauge for the presence of Species at Risk and special features - Can be estimated through ortho-rectified aerial photography if property cannot

				be accessed
Proximity to Other Wetlands	1.2.4	WPROX	No	- Provides hydrological connections in order to estimate downstream impacts
Interspersion	1.2.5	INTER	No	- Can be used to predict faunal types in order to assess varying impacts - Can be estimated once vegetation communities known
Open Water Types	1.2.6	OPWAT	No - Field visit recommended as confirmation of open water type is most readily accomplished through field work in most cases	- Assists in understanding whether changes in hydrology will impact wetland function - Can be estimated through ortho-photography
Hydrological Component				
Flood Attenuation (Total)	3.1	FLOOD	No	- Assists in understanding whether changes in hydrology will impact wetland function (e.g. isolated wetlands have high flood retention which could be altered due to grading etc…)
Water Quality Improvement (Total)	3.2	WQI	Yes	- Assists in understanding whether changes in hydrology will impact wetland function - Provides information to determine whether activities will change components of wetlands water budget - Must be assessed on site unless property cannot be accessed (some sub-components can be assessed using desktop procedures)
Shoreline Erosion Control	3.4	SEC	No	- Relevant for shoreline vegetation removal - Activities that change topography and slope can change vegetation that grows in the wetland and affect erosion
Groundwater Recharge (Total)	3.5	TGR	Yes	- Assists in understanding whether changes in hydrology will impact wetland function - Particularly important to understanding effects of alterations to topography and water flow - Must be assessed on site unless property cannot be accessed
Special Features Component				
Species Rarity (Total)	4.1.2	RTOT2	Yes	- Must be assessed on site unless property cannot be accessed - Where property cannot be

				accessed, applicants should use information obtained from MNR district/NHIC during records review
Significant Features and Habitats(Total)	4.2	SGFT	Yes	- Essential to determining whether fundamental changes to habitat could occur - Must be assessed on site unless property cannot be accessed - Where property cannot be accessed, applicants should use information obtained from district/NHIC during records review
Fish Habitat (Total)	4.2.6	FISHAB	Yes	- Must be assessed on site unless property cannot be accessed - Provides understanding necessary to devise strategies for ensuring that - Discharges and mean concentration of sediments do not affect fish habitat - Provides understanding of water temperature which could be affected

6.4 Valleylands

Site-specific field investigations, in conjunction with the records review and agency consultation, have been used to identify candidate significant valleylands within the project area. For the identified valleylands, site-specific characteristics were evaluated against criteria outlined in the Natural Heritage Assessment Guide (OMNR 2011b). These criteria, used to evaluate the significance of valleylands, include a review of landform-related functions, ecological functions, and restored ecological functions. The general evaluation criteria for significant valleyland criteria have been summarized in Table 7 below.

Table 7. Valleyland Evaluation of Significance Criteria

Evaluation Criteria	Standards of Significance
Landform-related Functions and Attributes	
Surface Water Functions	- Valleylands with areas of water conveyance from catchment areas of 50ha or greater may be considered significant. - Areas of active or historic erosion may be considered significant valleylands. - Areas of active or historic deposition characterized by alluvial soils forming bottomlands, terraces, levees and instream or river-mouth deltas or islands may be considered significant valleylands. - Valleylands with associated wetlands important to water attenuation, storage and release may be considered significant.
Ecological Features	
Degree of Naturalness	- Valleylands with areas of contiguous woodland, wetland and/or meadow (considered cumulatively), may be considered significant. - The proportion of valleyland that has natural vegetation cover vs. a cultural use (greater than 25% natural vegetation cover should be considered significant). - Proportion of valleyland that has natural riparian vegetation may be considered significant. - Valleylands with riparian vegetation greater than 30m in width on each side of surface water features should be considered significant. - Valleylands with high Floristic Quality Index (FQI) score in the context of the local watershed should be considered significant.
Linkage Function	- The proportion of the valleyland with continuous natural vegetation corridors with a minimum width of 100m may be considered significant valleylands. - Valleyland areas with functional ecological connections to other natural areas within the watershed both inside and outside the valleylands may be considered significant. - Valleyland areas that are determined to provide important wildlife corridors may be considered significant valleylands.
Restored Ecological Functions	
Restoration Potential and Value	- Valleylands where restoration will provide important ecological benefits such as linkage function, improvement of habitat for rare species, reduced fragmentation effects, and/or increased core natural areas, may be considered significant. -Valleyland areas where restoration will provide a minimum 30m corridor of riparian vegetation on each side of the surface water features may be considered significant valleylands. - Valleyland areas where the public is interested in assisting in the implementation of ecological restoration may be considered significant valleylands. - Valleyland areas that are in public ownership and that would benefit from restoration may be considered significant valleylands. - Valleyland areas where restoration would buffer existing natural areas from the effects of adjacent development may be considered significant.

6.5 Wildlife Habitat

For the review of candidate significant wildlife habitat, NRSI biologists have consulted the Significant Wildlife Habitat Technical Guide (OMNR 2000) and the subsequent Significant Wildlife Habitat Ecoregion Criteria Schedules for Ecoregion 7E addendum (OMNR 2011a). These documents identify a wide variety of candidate significant wildlife

habitat and criteria used to evaluate their respective significance. Evaluation criteria have been separated into the four (4) broad groups of significant wildlife habitat: seasonal concentration areas, rare vegetation communities and specialized wildlife habitat, habitats of species of conservation concern, and animal movement corridors. Each of these categories of wildlife habitat is described in more detail in the sub-sections below.

6.5.1 Seasonal Concentration Areas

Several candidate seasonal concentration areas have been identified within the Bornish Wind Energy Centre project area. The site-specific wildlife surveys, including seasonal studies of birds, bats, and other wildlife, in conjunction with vegetation mapping have been compared with the criteria outlined in the documents mentioned above, to evaluate the significance of seasonal concentration areas within the project area. The survey methods and general evaluation criteria for the wildlife habitats that have been carried forward from the Site Investigation Report are outlined in Table 8.

Table 8. Seasonal Concentration Area Evaluation of Significance Criteria

Concentration Area	Evaluation Methods	Standards of Significance
Raptor Winter Feeding and Roosting Areas	Pre-construction surveys will be conducted. **PROPOSED:** Thirty minute visual raptor surveys focused on identifying raptors along woodland and field edge habitat. Surveys will be conducted on 3 visits in January 2012, with another 3 visits occurring in February 2012 (depending on January results). See Appendix I for detailed survey methodology.	The use of these habitats by one or more Short-eared Owls or at least 10 individuals and two of the following listed species: • Rough-legged Hawk • Red-tailed Hawk • Northern Harrier • American Kestrel • Snowy Owl Short-eared Owl (**Special Concern)**[1]. To be significant a site must be used regularly (3 in 5 years) for a minimum of 20 days by the above number of birds[1].
Bat Maternity Colonies	At stations surveyed in 2011 had ten (10) nights each of acoustic monitoring and visual surveys were conducted within each maternity colony, following the then-current *Bats and Bat Habitats* provincial guidelines (OMNR 2010). Acoustic monitoring consisted of an ultrasound microphone that recorded for at least 5hrs after dusk for 10 nights at the candidate maternity colony. Detectors were placed within 10m of the identified candidate snag/cavity tree. Monitoring stations were considered to have adequate area coverage (1 station per km^2) as per the 2010 Draft Bat Guidelines (OMNR). Visual surveys occurred for 10 nights at the same monitoring location. Each visual survey lasted for 10 minutes and was conducted between dusk and midnight, when bats are most active. **PROPOSED:** For habitats identified after the release of the July 2011 guidelines, a single 1.5hr visual point count survey will occur at each of up to 10 snags per hectare (maximum 30 snags), depending on site access. Surveys will be in accordance with Bats and Bat Habitats (OMNR 2011). If during the surveys candidate habitat is reassessed to not be suitable candidate habitat and does not meet habitat requirements, the	Maternity Colonies with confirmed use by; • >20 Northern Myotis • >10 Big Brown Bats • >20 Little Brown Myotis • >5 Adult Female Silver-haired Bats[1]

	specific candidate feature will not be monitored further and will not be carried forward to the EIS. See Appendix II for detailed survey methodology.	

[1]: OMNR Significant Wildlife Habitat Ecoregion 7E Criterion Schedule: Addendum to SWHTG (Working Draft) (2011a)

6.5.2 Rare Vegetation Communities and Specialized Wildlife Habitat

No rare vegetation communities are documented within the Bornish project area.

Specialized wildlife habitat is outlined in the Significant Wildlife Habitat Technical Guide (OMNR 2000) and its addendum, Draft Significant Wildlife Habitat Ecoregion 7E Criteria Schedules (OMNR 2011a) and can include a variety of habitats that are required for the long-term survival of certain species, or species groups. Survey methods and general evaluation criteria used in the evaluation of significance of the wildlife habitat types carried forward from the site investigation are outlined in Table 9 below.

Table 9. Specialized Wildlife Habitat Evaluation of Significance Criteria

Habitat Type	Evaluation Methods	Standards of Significance
Amphibian Breeding Habitat (Woodland)	**PROPOSED:** Two daytime visits to conduct salamander egg mass surveys throughout candidate amphibian breeding habitats with standing water. The first visit will occur approximately two weeks after the first warm rain when ice break up is occurring (mid to late March) and the second in early to mid April. Three (3) evening amphibian call surveys (depending on site access), occurring once in each of April, May and June. Each survey will last 3 minutes, following accepted Marsh Monitoring Program protocol. During each survey, biologists will record species and calling abundance codes, along with other appropriate information (date, time, weather, etc.). If during the surveys candidate habitat is reassessed to not be suitable candidate habitat and does not meet habitat requirements, the specific candidate feature will not be monitored further and will not be	Presence of a wetland, lake, or pond within or ≤120m from a woodland of any size, and presence of breeding population of ≥20 individuals (adult, juvenile, egg/larval mass) of ≥1 of the following: • Eastern Newt • Blue-spotted Salamander • Spotted Salamander • Gray Treefrog • Spring Peeper • Chorus Frog • Wood Frog.[1] Amphibian corridors should consist of native vegetation, roadless area, no gaps such as fields, waterways or bodies, and undeveloped areas are most significant[1].

	carried forward to the EIS. Should results from the above surveys lead the designation of any of these habitats as significant, the surrounding habitat of these locations will be searched for the presence of amphibian movement corridors. See Appendix III for detailed survey methodology.	

[1]: OMNR Significant Wildlife Habitat Ecoregion 7E Criterion Schedule: Addendum to SWHTG (Working Draft) (2011b)

6.5.3 Habitats of Species of Conservation Concern

No habitats of species of conservation concern have been carried forward from the site investigation phase; therefore, none will be carried forward to the environmental impact study.

6.5.4 Animal Movement Corridors

Animal movement corridors are typically considered linear features that connect two or more significant or otherwise ecologically important habitats. These features are important for several reasons, including promoting genetic flow, protection from predators, and connectivity to habitats required for breeding, foraging, and/or hibernating.

The significance of animal movement corridors has been evaluated using the SWHTG (OMNR 2000) and subsequent Ecoregion 7E Criteria Schedules addendum (OMNR 2011a) as a desktop exercise. Corridors linking the most significant features also represent the most significant corridors. The dimensions of the corridor, including length and width, also present important considerations for determination of significance. Wider and shorter corridors are often more readily used by a variety of wildlife species, with the least disturbances. Other considerations include target species within the corridors, continuity of the corridor, and general habitat structure and corridor composition (OMNR 2000).

The presence of amphibian movement corridor features will be examined should pre-construction amphibian surveys lead to the identification of significant amphibian

breeding (woodland) habitat. Criteria for both amphibian breeding (woodland) habitat and amphibian movement corridors are provided in Table 9 above.

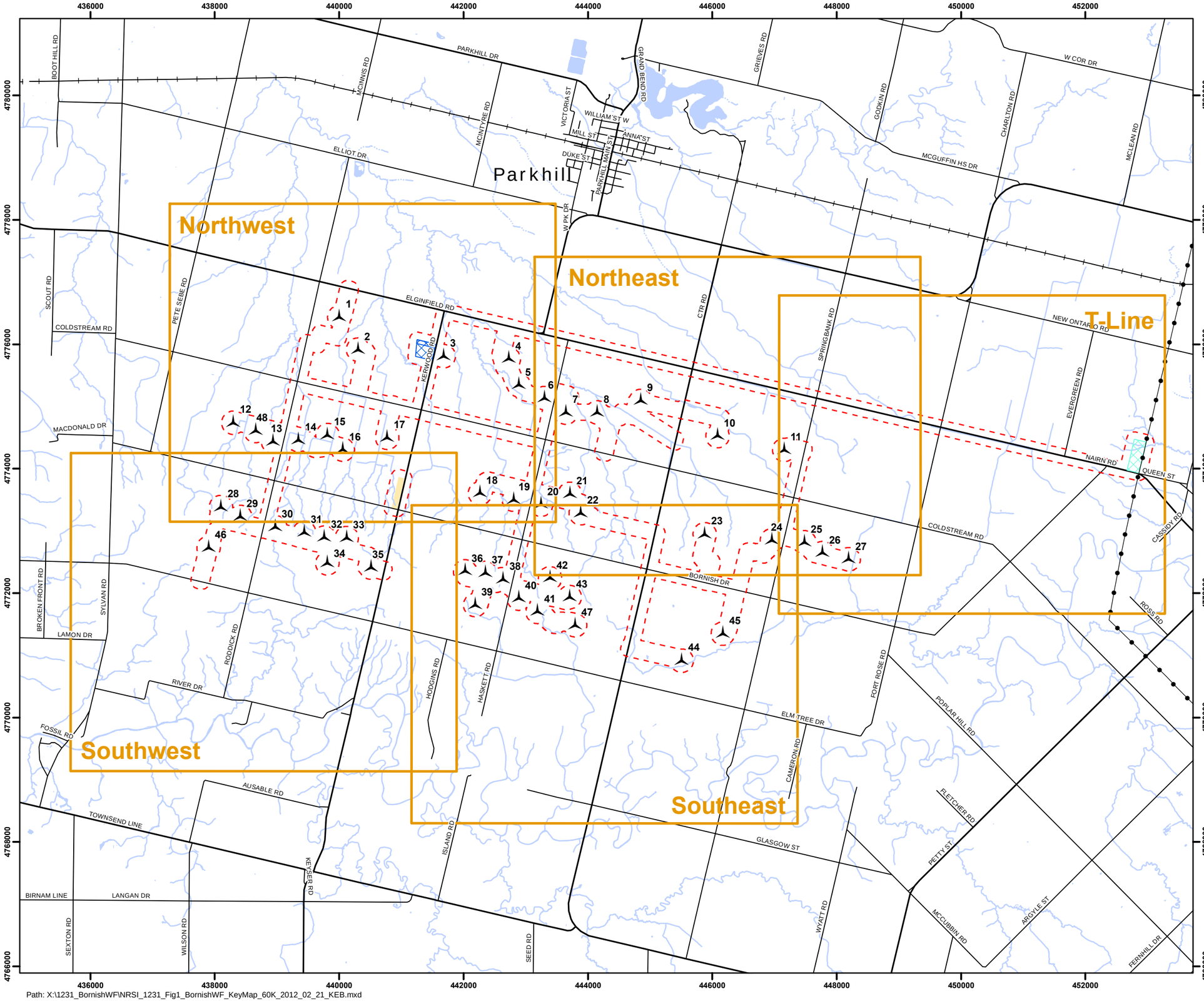
7.0 Woodlands

Site-specific field investigations and basemapping have revealed 35 woodlands within the Bornish Wind Energy Centre project area. Each of these natural features requires an evaluation of significance in order to determine whether they need to be carried forward to the Environmental Impact Statement (EIS). A summary of the evaluation of significance of these woodlands is provided in Table 10, which also details the specific location of these natural features in relation to project components that can be found in Figures 3-7. Woodlands in Table 10 have been evaluated based on the criteria outlined above in Table 5.

Figure 2

Bornish Wind Energy Centre

Key Map



Legend

- Map Extent
- Project Area (120m Buffer)
- Turbine
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Primary Road
- Secondary Road
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody

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Project: 1231 April 2, 2012	NAD83 - UTM Zone 17 Scale: 1:50,000 (11x17")

0 1.5 3 4.5
Kms

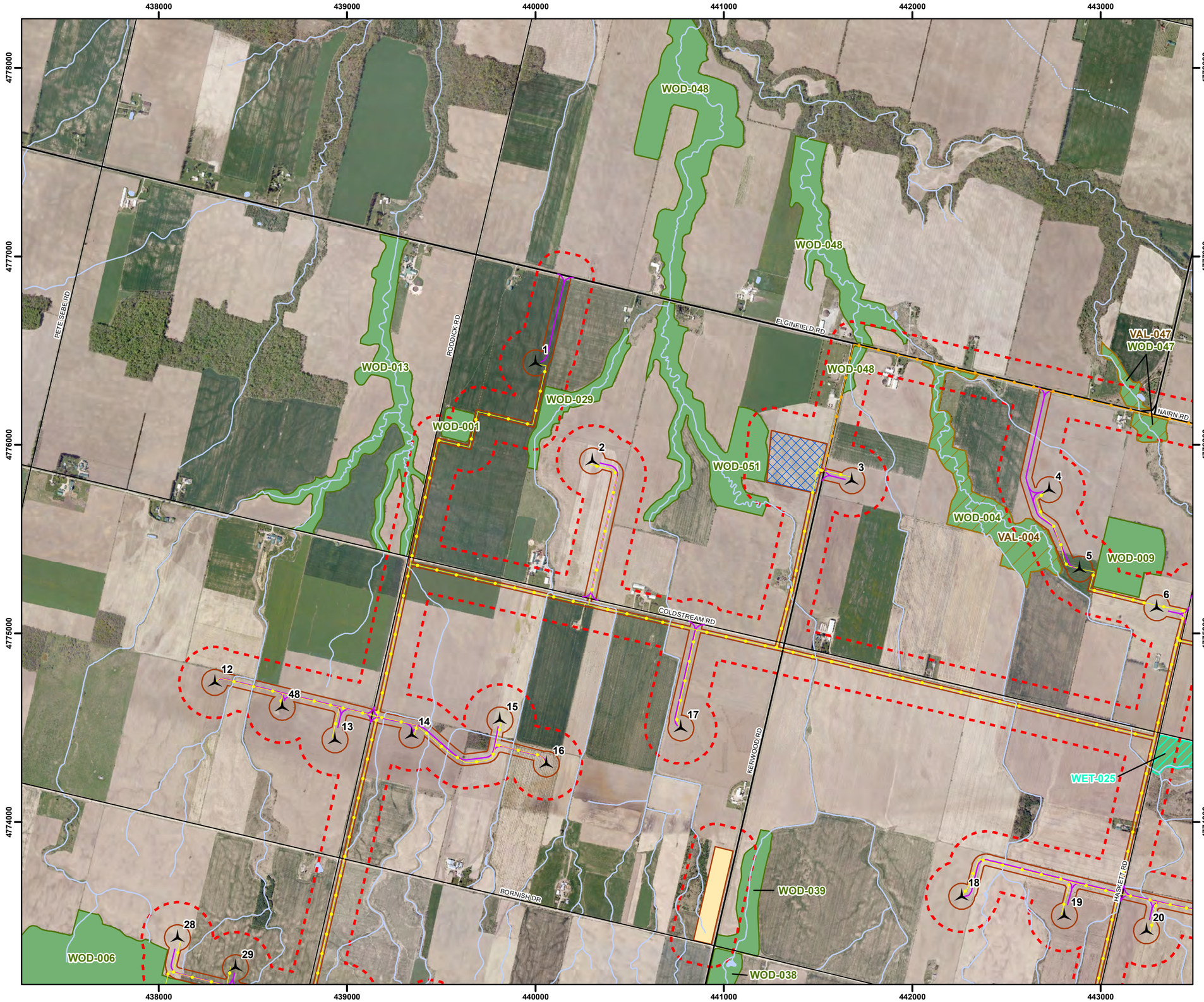
N

Path: X:\1231_BornishWF\NRSI_1231_Fig1_BornishWF_KeyMap_60K_2012_02_21_KEB.mxd

Figure 3

Bornish Wind Energy Centre

Significant Natural Features - Northwest



Legend

- Project Area (120m)
- Project Location
- Turbine
- Access Road
- Transmission Line
- Collector System
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Primary Road
- Secondary Road
- Railroad
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Valleyland (VAL)
- Wetland (WET)
- Woodland (WOD)

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Project: 1231
Date: February 24, 2012

NAD83 - UTM Zone 17
Scale: 1:20,000 (11x17")

0 200 400 600 800 1,000 Metres

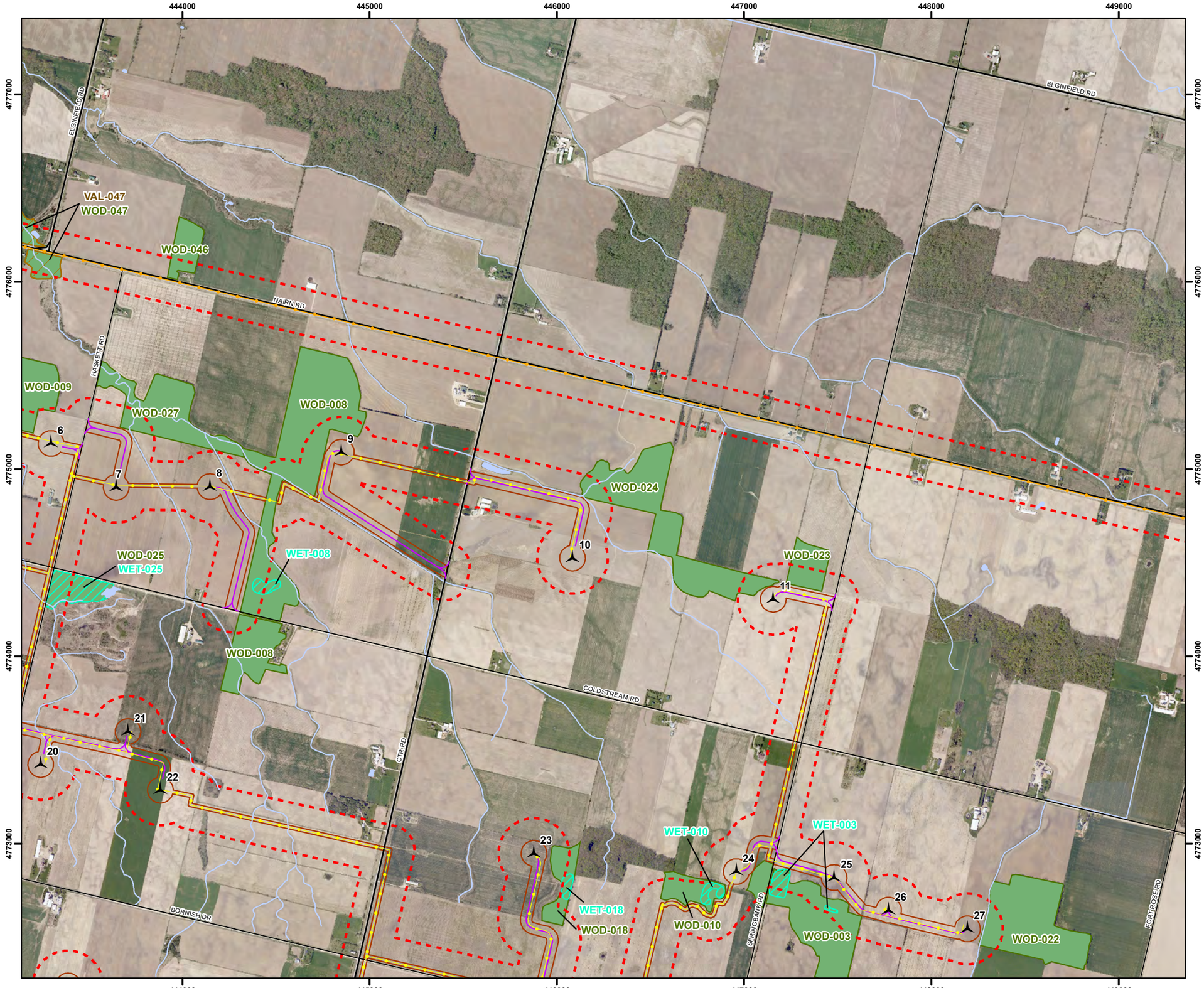
N

Path: X:\1231_BornishWindFarm\SI_EOS_Mapping\NRSI_1231_Fig3_BornishWF_EOS_NaturalFeatures_20K_2012_02_28_KEB.mxd

Figure 4

Bornish Wind Energy Centre

Significant Natural Features - Northeast



Legend

- Project Area (120m)
- Project Location
- Turbine
- Access Road
- Transmission Line
- Collector System
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Primary Road
- Secondary Road
- Railroad
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Valleyland (VAL)
- Wetland (WET)
- Woodland (WOD)

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Project: 1231 Date: February 24, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")

0 200 400 600 800 1,000 Metres

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Path: X:\1231_BornishWindFarm\SI_EOS_Mapping\NRSI_1231_Fig4_BornishWF_EOS_NaturalFeatures_20K_2012_02_28_KEB.mxd