BORNISH WIND ENERGY CENTRE
Natural Heritage Assessment
Addendum II Report

Prepared for:
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Project No. 1231 Date: February 2013

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

BORNISH WIND ENERGY CENTRE
Natural Heritage Assessment Addendum II Report

Project Team:

Staff	Role
Andrew Ryckman	Project Manager/Biologist
Charlotte Moore	Terrestrial and Wetland Biologist
Shawn MacDonald	GIS Technician

Report submitted on February 8, 2013

Andrew G. Ryckman

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1.0 Project Description

Natural Resource Solutions Inc. (NRSI) was retained in April 2011 by GL-Garrad Hassan 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 included 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 3.3km 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 Bornish Wind Energy Centre is proposed to consist of up to forty-five GE 1.6-100 (1.62 MW) turbines installed for a total installed capacity of 72.9MW. However, locations for forty-eight 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 80m 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 the REA Regulation, the proposed layout of these features is collectively referred to as the 'project location'. For the purposes of this report, NRSI will refer to the areas within 120m of the project location as the 'project area'.

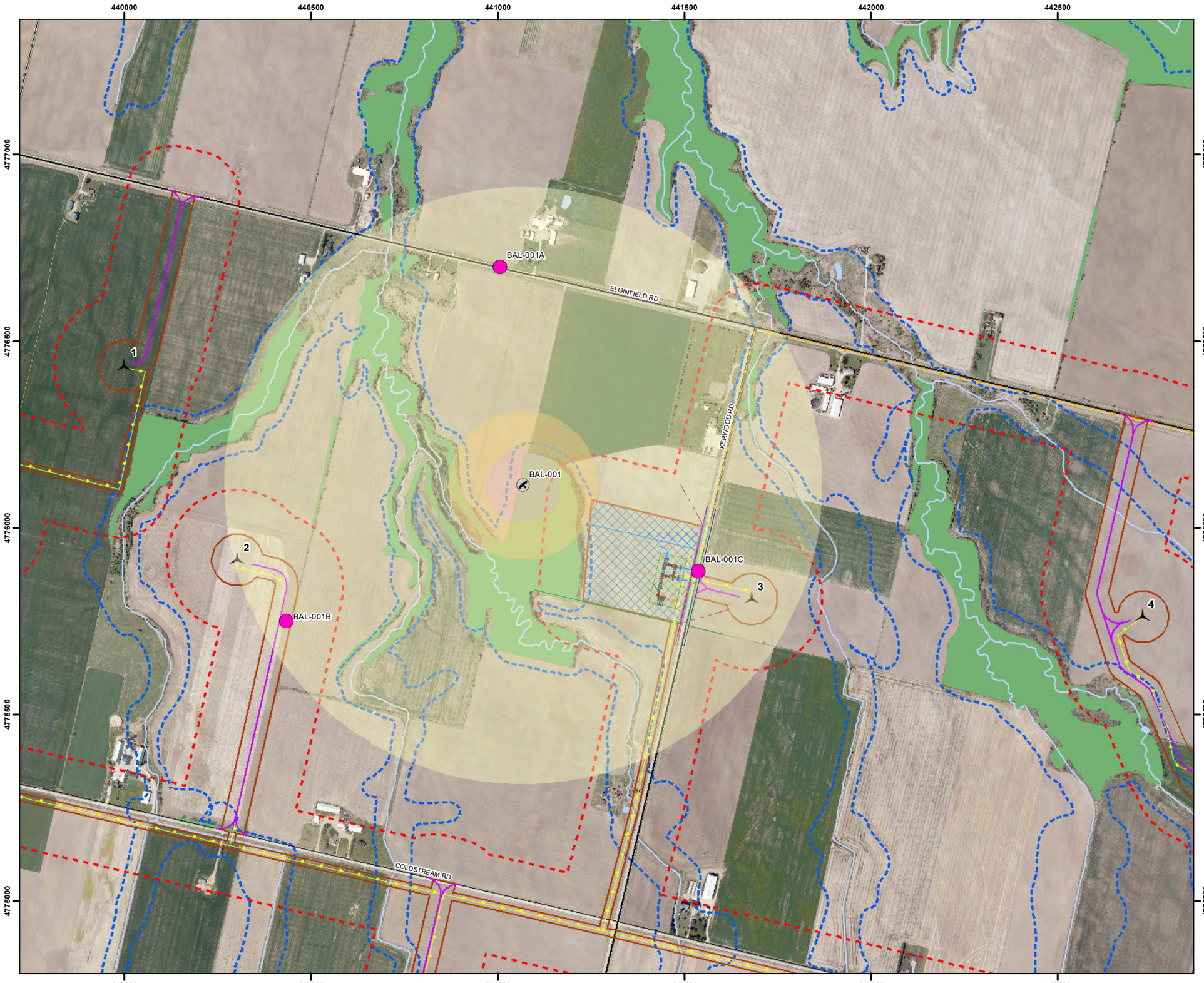
The records review, site investigation, evaluation of significance, and environmental impact study (EIS) for the Bornish Wind Energy Centre were completed by NRSI over the course of 2011/2012 as part of the Natural Heritage Assessment (NHA). The original Bornish Wind Energy Centre NHA (NRSI 2012) confirmation was granted on April 2, 2012 by the Ministry of Natural Resources' Renewable Energy Operations Team.

As a result of new information obtained relating to the potential for significant wildlife habitat within the project area, this Addendum has been prepared to address the presence of a potential bald eagle (*Haliaeetus leucocephalus*) nest site, and the appropriate objectives and any necessary mitigation measures or contingency plans associated with the documentation of this nest. The location of this nest, as well as the baseline primary (100m), secondary (200m), and tertiary (up to 800m) zones from the nest, have been shown in relation to the project location on Figure 1. There have been no changes to the layout since MNR approval of this project.

Figure 1

Bornish Wind Energy Centre

Candidate Eagle Nest Location



Legend

- Project Area (120m Buffer)
- Candidate Bald Eagle Nest
- Bald Eagle Survey Location
- Primary Zone (0-100m)
- Secondary Zone (100-200m)
- Tertiary Zone (200-800m)
- Turbine
- Access Road
- Collector System
- Interconnection Line
- Substation & Operations Building Area
- Project Location
- Primary Road
- Secondary Road
- Permanent Watercourse
- Open Aquatic
- Wooded
- Regulation Limit (ABCA)

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Aquatic, Terrestrial and Wetland Biologists

Project: 1231
January 25, 2013

NAD83 - UTM Zone 17
Scale: 1:10,000 (11x17")

0 100 200 300 400 500 Meters

N

X:\1231_BornishWindFarm\NRSI_1231_Fig1_BornishWF_NaturalFeatures_BaldEagleBuffersCombined_10K_2013_01_21_SWM.mxd

2.0 Staff Roles

The requirements of the REA process indicate that the name and qualifications of staff participating in the NHA should be provided. This staffing information is provided in the Bornish Wind Energy Centre NHA (NRSI 2012) and the qualifications and roles of key staff participating in the addendum to the Bornish Wind Energy Centre NHA have been outlined below.

Andrew Ryckman, B.Sc.
Andrew is a Terrestrial and Wetland Biologist with 8 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 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 corresponding reports including this addendum.

Charlotte Moore, B.E.S.
Charlotte is a Terrestrial and Wetland Biologist with 3 years 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. 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 is certified in the Ontario Wetland Evaluation System (2012).

Charlotte coordinated the field work for the project, and assisted with all aspects of the NHA, including the preparation of this addendum report.

Shawn MacDonald B.A., GIS-AS
Shawn has more than 5 years of experience in renewable energy mapping and asset management systems. As a Geographic Information Systems (GIS) Analyst, Shawn specializes in projects relating to wind, solar and hydro electric power. Shawn has a variety of project and field experience using GIS, GPS and AutoCAD technology throughout all stages of a renewable energy project. This experience is not limited to renewable energy alone as Shawn has been involved in a number of projects relating to terrestrial and aquatic habitat mapping, environmental restoration and spatial/3D analysis.

Shawn'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.

3.0 Overview of Project Changes

In the time since MNR confirmation was received for the Bornish Wind Energy Centre's NHA, new information relating to candidate significant wildlife habitat has been obtained. There have not been any changes in layout since the previous MNR approval. The purpose of this report can be summarized by the following:

- New candidate significant wildlife habitat (potential bald eagle nesting habitat),
- Pre-construction surveys to determine significance of the above habitat,
- Performance objective, mitigation measures, and contingency plans, should the above habitat be determined to be significant, and
- No new layout changes.

As there have been no changes to the layout since the approval was granted by the MNR, complete maps for the Bornish Wind Energy Centre are not provided in this report, but can be reviewed in the previously approved NHA, with minor changes presented in the first addendum report.

4.0 Amendments to the Records Review

The project area initially examined for the Bornish Wind Energy Centre Records Review Report extended beyond the previously proposed project area to help compensate for any later changes in the project's layout. Upon review of the changes to the project's layout, all project areas of the current layout were previously studied and included with the Records Review submission to the MNR. Thus, there are no records of new habitats of seasonal concentrations of animals, rare vegetation communities or specialized habitats for wildlife, species of conservation concern, or other natural features that need to be amended in the NHA.

5.0 Amendments to the Site Investigation

Field work completed specific to the Bornish Wind Energy Centre, which included site-specific field work within woodland WOD-051 (where this nest was later identified) did not reveal any indication that a stick nest might be present. The presence of this additional candidate significant wildlife habitat, bald eagle and osprey nesting, foraging and perching habitat, was identified through field work completed on another project. As a result of this finding, Table 1 has been prepared to identify the proximity of this candidate habitat in relation to project components as presented in the layout provided in the previous NHA (see Figure 1). These distances reflect the base model of bald eagle nesting habitat, which includes an 800m habitat zone around the nest location.

Table 1. Updated Distances between Project Components and Natural Features in the Bornish Wind Energy Centre

Feature ID	Feature Type	Distances from Nest Location (m)	Distances Using Base Model of Bald Eagle Nesting Habitat[1]	Amendment to the EOS and/or EIS Required? (Y/N)
BAL-001	Bald Eagle Nesting, Foraging, and Perching Habitat	WT – 634 (T3), 741 (T2) AR – 524 OL – 508 UL – 480 SI – 187	WT – Overlapping (Tertiary) AR – Overlapping (Tertiary) OL – Overlapping (Tertiary) UL – Overlapping (Tertiary) SI – Overlapping (Secondary)	**Yes – Surveys will be required to confirm the use of this habitat, and refine the boundaries of the habitat based on site-specific conditions.**

[1] *Bald Eagle Habitat Management Guidelines* (OMNR 1987)

Legend
WT: Wind Turbine
AR: Access Road
OL: Overhead Line
UL: Underground Line
SI: Supporting Infrastructure
EOS: Evaluation of Significance
EIS: Environmental Impact Study

The large stick nest was observed on the northwest edge of woodland WOD-051 (see Figure 1), and at the time of observation a single adult bald eagle was observed perched in close proximity to the nest. Further studies of the bald eagle behaviour, sight-lines, landscape features, and nest success (if applicable) are required to further refine the boundaries of this candidate significant wildlife habitat.

6.0 Amendments to the Evaluation of Significance

As part of this addendum, NRSI biologists have reviewed the potential for changes to the Evaluation of Significance phase of this project. In accordance with the REA Regulation, an evaluation of significance of the candidate significant bald eagle nesting, foraging and perching habitat identified in the site investigation is required. The evaluation of significance will follow monitoring protocol developed in conjunction with the MNR, and will be used to identify and delineate habitat zones as described in *Bald Eagle Habitat Management Guidelines* (OMNR 1987).

As a result of the timing of the Bornish Wind Energy Centre project development, NRSI could not evaluate the significance of the newly identified candidate significant bald eagle nesting, foraging, and perching habitat (BAL-001) within the appropriate season timing prior to the submission and approval of this Addendum to the NHA. For the purposes of this report, NRSI has treated this habitat as significant with the commitment to conduct pre-construction monitoring within this habitat to confirm whether the feature is significant, and further delineate the extent of the habitat zones. Significance will be determined following the provincial criteria outlined in the Significant Wildlife Habitat Ecoregion 7E Criterion Schedule (OMNR 2012), an addendum to the Significant Wildlife Habitat Technical Guide (OMNR 2000). The specific criteria used to determine significance of this habitat has been outlined in Table 2 below.

Table 2. Bald Eagle Nesting, Foraging and Perching Evaluation of Significance Criteria

Concentration Area	Ecoregion 7E Criteria (OMNR 2012)
Bald Eagle Nesting, Foraging and Perching Habitat	One or more active Bald Eagle nests in an area.

According to the Draft Ecoregion 7E Criterion Schedule Addendum to the SWHTG (OMNR 2012), the Bald Eagle nest, plus a 400m to 800m zone around the nest is considered to be the Significant Wildlife Habitat. As well, the *Bald Eagle Habitat Management Guidelines* (OMNR 1987) outline the 3 habitat zones for nest trees, which include the primary zone (0-100m), secondary zone (100-200m) and tertiary zone (200-400m, and up to 800m). For the purpose of this addendum, the 3 distance buffer zones have been delineated around the nest site (see Figure 1) following the base model of 0-100m, 100-200m, and 200-800m. Surveys will be completed to determine if the nest is

active and may be conducted to further refine this habitat delineation. If the Activity Assessment confirms the nest to be active and the Behavioural Study is not conducted (refer to protocol below), the Activity Assessment surveys will be conducted from February 15-August 15 (or whenever the chicks leave the nest) and the candidate bald eagle habitat feature BAL-001 and an 800m radius around the nest will be considered Significant Wildlife Habitat. In addition to the Activity Assessment surveys, Behavioural Surveys may be conducted to refine the habitat boundary based on Bald Eagle habitat use (e.g. flight paths). Pre-construction survey methods are outlined below in Table 3. If the Proponent chooses to complete the Behavioural Studies, these surveys will begin once the nest has been confirmed to be active by the Activity Assessment. The start date for the Activity Assessment is February 15 and the Behavioural Studies can start any time following that date. If only the Activity Assessment surveys are conducted, these will occur from February 15 to August 15 (or until the nest is confirmed as active or inactive, to be determined in consultation with the MNR) and will investigate if the nest, originally observed in 2012, is an active nest. The Activity Assessment will occur from BAL-001A (see Figure 1) and consist of a 60 minute point count observing the nest. If the Activity Assessment denies the presence of an active nest, no Behavioural Studies will be required. The Activity Assessment survey design has been established to focus on documenting the presence of breeding (or potentially breeding) bald eagles at the known nest site. The Behavioural Studies are characterized by regular surveys (twice a week) to document all observed activity in an attempt to observe the eagle's movements and map all flight corridors and habitats that are being used by the adults, and likely to be used by any successful juveniles. This study will consist of a 2 hour point count from BAL-001A and 1 hour point counts at each of BAL-001B and BAL-002C (see Figure 1 for point count locations), totaling 4 hours of behavioural observations. Exact survey locations may change slightly (in consultation with the MNR) at the time of the survey depending on specific sight-lines and property access.

If this habitat is determined to be significant, by the presence of an active nest, the base model of the habitat zones (OMNR 1987) may be refined using site-specific field data and behavioural observations. These habitat zones will be used to determine the appropriate mitigation measures, if any, that should be implemented at the Bornish Wind Energy Centre.

According to the REA Regulation, if any significant natural features are present within 120m of the project location an EIS must be completed. Potential impacts, mitigation measures, and follow-up programs associated with this candidate significant bald eagle nesting, foraging and perching habitat, which has been treated as significant for this memo, are discussed in Section 7.0 of this report.

A summary of the characteristics, pre-construction survey commitments, and evaluation criteria, is provided in Table 3 below.

Table 3. Summary of Bald Eagle Nesting, Foraging, and Perching Habitat within the Bornish Wind Energy Centre Project Area

Feature ID	Size (ha)	Composition	Distance to Project Location (m)	Evaluation Methods	Evaluation Results	Provincial Criteria	Significance	EIS Required (Y/N/Generalized)
BAL-001 Bald Eagle Nesting, Foraging, and Perching Habitat	Up to 800m radius around nest (201.1ha)	FODM5-2 FODM5-5 WOMM3 OAGM1 CVR IAG	WT – Overlapping[1] AR – Overlapping[1] OL – Overlapping[1] UL – Overlappig[1] SI – Overlapping[2]	**<u>Bald Eagle Activity Assessment</u>** These surveys are designed to confirm the presence of an active bald eagle nest. These surveys will consist of surveys once every 15 days, beginning on February 15 and will continue until May 15 (or until the nest has been confirmed or denied to be active, as determined in consultation with the MNR) to document any eagle activity (courtship, nesting building or incubation) around the nest. Surveys will be completed during day light hours at a suitable vantage point, BAL-001A (see Figure 1), which is located further than 500m from the nest to avoid disturbance, and will occur for 60 minutes on each visit. If the Activity Assessment confirms the nest is active, these surveys will cease and the Behavioural Study will begin (if the proponent chooses to complete them). If the Activity Assessment confirms the nest to be active and the Behavioural Study is not conducted (refer to protocol below), the Activity Assessment surveys will be conducted from February 15-August 15 (or whenever the chicks leave the nest) and the candidate bald eagle habitat feature BAL-001 and an 800m radius around the nest	The presence of an active nest will be confirmed through pre-construction surveys. If an active nest is present, the Behavioural Study methods may be used to define the habitat zones based on site-specific landscape and habitat features, as well as observed behaviour of nesting bald eagles. Results will be provided to the MNR after completion of the pre-construction surveys.	The presence of one or more active Bald Eagle nests. Habitat zones will be delineated following criteria identified in the *Bald Eagle Habitat Management Guidelines* (MNR 1987), such as sight lines, perching habitat, and foraging habitat.	Presumed	**Yes**

Feature ID	Size (ha)	Composition	Distance to Project Location (m)	Evaluation Methods	Evaluation Results	Provincial Criteria	Significance	EIS Required (Y/N/Generalized)
				(see Figure 1) will be considered Significant Wildlife Habitat. If the Activity Assessment denies the presence of an active bald eagle nest, the Behavioural Study will not be required to be completed and no buffer, or associated mitigation measures, will be applied to the habitat. **Bald Eagle Behavioural Study** If no indication of breeding or nesting activity is documented by the end of the Activity Assessment (see above) on May 15th (or earlier, as decided in consultation with the MNR), the site will be confirmed inactive and Behavioural Surveys will not be conducted. The proponent may choose to complete the Behavioural Study, on the condition that the Activity Assessment confirms the presence of an active bald eagle nest. The Behavioural Study will focus on the flight patterns, sight lines, perching habitat, and foraging habitat of the nesting eagles in order to refine the habitat zones around the nest. These surveys will comply with the Behavioural Studies outlined in the *Birds and Bird Habitats: Guidelines for Wind Power Projects* (OMNR 2011). If conducted, these surveys will occur twice a week from the date when the Activity Assessment confirms the nest is active. The surveys could start as early as				

Feature ID	Size (ha)	Composition	Distance to Project Location (m)	Evaluation Methods	Evaluation Results	Provincial Criteria	Significance	EIS Required (Y/N/Generalized)
				mid-February and last until the chicks have left the nest (approximately August 15) (up to 53 visits), from vantage points, BAL-001A, BAL-001B and BAL-001C. A two hour point count will occur at BAL001A, while one hour point counts will be conducted at each of BAL-001B and BAL-001C, totaling 4 hours of behavioural observations. On each survey date, a biologist, using binoculars or a spotting scope, will document and map all activity of the eagle(s) for at least 4 hours on each visit. All bald eagle behaviour will be recorded during the survey, with the approximate location, age, and behaviour (e.g. courtship, nest building, incubation), including mapping all flight corridors and habitats used. All bald eagle movements within the 800m radius will be recorded. Surveys will be completed during calm, clear weather conditions, when possible. Weather conditions (wind speed and direction, cloud cover, temperature, and precipitation), start time and end time will be recorded during each survey. The timing of the visits may vary throughout the survey period, although surveys during the fledging period should be conducted in the morning to the extent possible, as this is the most active time and is particularly important during the fledging period.				

Feature ID	Size (ha)	Composition	Distance to Project Location (m)	Evaluation Methods	Evaluation Results	Provincial Criteria	Significance	EIS Required (Y/N/Generalized)
				The GPS co-ordinates of the vantage points will be collected on the first visit to ensure all surveys are conducted from the same locations. Data collected will be analyzed to identify important life cycle (i.e. perching, foraging, etc.) habitats for the eagles, and will be used to refine the habitat zones around the nest accordingly.				

[1] *This project component is overlapping the Tertiary (least restrictive) Zone (200-400m, up to 800m depending on habitat use) as per the Bald Eagle Habitat Management Guidelines (MNR 1987)*
[2] *This project component is overlapping the Secondary Zone (100m-200m) as per the Bald Eagle Habitat Management Guidelines (MNR 1987)*

Legend
WT: Wind Turbine
AR: Access Road
OL: Overhead Line
UL: Underground Line
SI: Supporting Infrastructure

7.0 Amendments to the Environmental Impact Study

As part of this NHA Addendum Report, NRSI has considered all aspects of the previously approved Environmental Impact Study to determine if any changes or additions are required based on the presence of a bald eagle nest, which has been identified as overlapping the project area.

For the purposes of this addendum, NRSI has reviewed three separate aspects relating to the potential for change to the EIS, as follows:

- Changes to Mitigation Measures (i.e. project location now closer to natural features)
- New Mitigation Measures (i.e. project location within 120m of a new feature)
- Changes to Monitoring Requirements

7.1 Changes to Mitigation Measures

Four woodlands included in Table 9 of the Bornish Wind Energy Centre Environmental Impact Study (EIS) do not require any mitigation, monitoring or contingency plans as these woodlands were evaluated to be not significant woodlands in the Evaluation of Significance Report (NRSI 2012). These woodlands include: WOD-015, WOD-016, WOD-050 and WOD-053. Mapping associated with the EIS is correct and requires no additional changes.

As there have been no changes in project location, including the distances of the project location to natural features, NRSI biologists have determined that the mitigation measures presented in the Natural Heritage Environmental Impact Study (NRSI 2012) are still suitable for the protection of the significant natural features from permanent and adverse impacts that may result from the development of the Bornish Wind Energy Centre.

7.2 New Mitigation Measures

One wildlife habitat, bald eagle nesting, foraging, and perching habitat, has been treated as significant for the purposes of this NHA Addendum. As this type of habitat was not already included in the NHA submission, additional mitigation measures have been considered for the protection of this wildlife habitat, should it be determined to be significant through pre-construction surveys. In accordance with MNR guidance,

potential impacts, mitigation measures, monitoring programs, and contingency measures relating to the presence of this habitat have been detailed in Table 4 below.

Table 4. Potential Impacts, Mitigation Measures, and Survey Methods for Significant Bald Eagle Nesting, Foraging, and Perching Habitat

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
BAL-001 Bald Eagle Nesting, Foraging and Perching Habitat	Overlapping[1]	Overlapping[1]	• Noise disturbance and/or avoidance behaviour during construction	**Bald Eagle Activity Assessment** These surveys are designed to confirm the presence of an active bald eagle nest. These surveys will consist of surveys once every 15 days, beginning on February 15 and will continue until May 15 (or until the nest has been confirmed or denied to be active, as determined in consultation with the MNR) to document any eagle activity (courtship, nesting building or incubation) around the nest. Surveys will be completed during day light hours at a suitable vantage point, BAL-001A (see Figure 1), which is located further than 500m from the nest to avoid disturbance, and will occur for 60 minutes on each visit. If the Activity Assessment confirms the nest is active, these surveys will cease and the Behavioural Study will begin (if the proponent chooses to complete them). If the Activity Assessment confirms the nest to be active and the Behavioural Study is not	• Project layout will be constructed so that all construction activities will occur at least 200m from the nest location, and outside of both the primary and secondary habitat zones, • Project layout will be designed so that all infrastructure, except for the transmission line, will be set back from the nest a minimum of 400m • Overhead lines (and poles) that are located greater than 400m but within 800m of the nest will be less than 30m in height, • Construction within the tertiary zone (as determined by site-specific surveys) will not occur from March 1st to May 15th , • During construction, monitoring of the eagle nest will follow the methods for the Behavioural Study (see pre-construction	**Performance Objective:** To protect any potentially nesting bald eagles from disturbance, displacement, or mortality as a result of the development of the Bornish Wind Energy Centre. **Monitoring:** During construction, monitoring of the eagle nest will follow the methods for the Behavioural Study (see pre-construction surveys) and occur for the duration that construction activities occur within the tertiary zone of the nest within the period of February 15th to August 15th, exclusive of March 1st to May 15th when no construction will be permitted within the tertiary zone of the active nest. Post-construction eagle surveys will follow pre-construction methods,

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
				conducted (refer to protocol below), the Activity Assessment surveys will be conducted from February 15-August 15 (or whenever the chicks leave the nest) and the candidate bald eagle habitat feature BAL-001 and an 800m radius around the nest (see Figure 1) will be considered Significant Wildlife Habitat. If the Activity Assessment denies the presence of an active bald eagle nest, the Behavioural Study will not be required to be completed and no buffer, or associated mitigation measures, will be applied to the habitat. **<u>Bald Eagle Behavioural Study</u>** If no indication of breeding or nesting activity is documented by the end of the Activity Assessment (see above) on May 15th (or earlier, as decided in consultation with the MNR), the site will be confirmed inactive and Behavioural Surveys will not be conducted. The proponent may choose to complete the Behavioural Study, on the condition that the Activity Assessment confirms the	surveys) and occur for the duration that construction activities occur within the tertiary zone of the nest within the period of February 15th to August 15th, exclusive of March 1st to May 15th when no construction will be permitted within the tertiary zone of the active nest.. • No turbines will be constructed within the tertiary zone (as determined by site-specific surveys) • Deterrents to prevent perching and roosting on the transmission line, as well as bird collisions with the transmission line (including power lines, static lines, guy wires, etc.) will be installed on all transmission line infrastructure within 800m of the nest, if active. **<u>Turbines 2 and 3</u>** The final project layout	either the Activity Assessment or Behavioural Study methods, whichever is conducted, but will continue until the chicks have left the nest and occur for 3 years after the project becomes operational. If the Behavioural Survey methods are to be used during post-construction surveys, they will begin after the Activity Assessment surveys confirm the nest is active and will follow the same general methods as the pre-construction surveys. The specific survey frequency may be adjusted from year to year, depending on the results of the surveys, if determined appropriate through consultation with the MNR. Any turbines within 120m of the tertiary zone will be selectively chosen for post-construction mortality monitoring.
			• Noise disturbance and/or avoidance behaviour during operation			

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
				presence of an active bald eagle nest. The Behavioural Study will focus on the flight patterns, sight lines, perching habitat, and foraging habitat of the nesting eagles in order to refine the habitat zones around the nest. These surveys will comply with the Behavioural Studies outlined in the *Birds and Bird Habitats: Guidelines for Wind Power Projects* (OMNR 2011). If conducted, these surveys will occur twice a week from the date when the Activity Assessment confirms the nest is active. The surveys could start as early as mid-February and last until the chicks have left the nest (approximately August 15) (up to 53 visits), from vantage points, BAL-001A, BAL-001B and BAL-001C. A two hour point count will occur at BAL001A, while one hour point counts will be conducted at each of BAL-001B and BAL-001C, totaling 4 hours of behavioural observations. On each survey date, a biologist, using binoculars or a spotting scope, will document and map all activity of the eagle(s) for at least	and development of Turbines 2 and 3 will be determined upon completion of pre-construction surveys for feature BAL-001. The following scenarios and development decisions will result: Scenario 1: If the Activity Assessment confirms the nest to be active and the Behavioural Study is not conducted, the candidate Bald Eagle habitat feature BAL-001 and an 800m radius around the nest (see Figure 1) will be considered Significant Wildlife Habitat. As such, Turbines 2 and 3 will not be built and the alternate project layout presented in Appendix I will apply. Scenario 2: If the Activity Assessment confirms the nest to be active and the Behavioural Study is conducted, the candidate Bald Eagle habitat feature BAL-001 and the refined habitat zone	Raptor mortality surveys will be conducted once a month at all turbines within the project from May 1st to November 30th and once a week at all sampled turbines from November 1st to November 30th (OMNR 2011). **Contingency Measure:** If a permanent disturbance has been noted within this wildlife habitat, the MNR will be contacted to determine whether additional mitigation measures will be needed.

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
				4 hours on each visit. All bald eagle behaviour will be recorded during the survey, with the approximate location, age, and behaviour (e.g. courtship, nest building, incubation), including mapping all flight corridors and habitats used. All bald eagle movements within the 800m radius will be recorded. Surveys will be completed during calm, clear weather conditions, when possible. Weather conditions (wind speed and direction, cloud cover, temperature, and precipitation), start time and end time will be recorded during each survey. The timing of the visits may vary throughout the survey period, although surveys during the fledging period should be conducted in the morning to the extent possible, as this is the most active time and is particularly important during the fledging period. The GPS co-ordinates of the vantage points will be collected on the first visit to ensure all surveys are conducted from the same locations.	based on information collected during the Behavioural Study will be considered Significant Wildlife Habitat. If Turbines 2 and 3 are not proposed within this refined habitat, then they can be constructed and appropriate construction and operational mitigation outlined in this Table of the EIS (Table 4) will be applied. Scenario 3: If BAL-001 is deemed not to be significant based on the results of the Activity Assessment, then Turbines 2 and 3 will be constructed and no mitigation or post-construction monitoring (avoidance/disturbance) is required. Results of pre-construction surveys and final habitat boundary delineations will be provided to MNR prior to any of the three scenarios being acted upon.	

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
				Data collected will be analyzed to identify important life cycle (i.e. perching, foraging, etc.) habitats for the eagles, and will be used to refine the habitat zones around the nest accordingly.	Post-construction eagle surveys will follow pre-construction methods, either the Activity Assessment or Behavioural Study methods, whichever is conducted, but will continue until the chicks have left the nest and occur for 3 years after the project becomes operational. If the Behavioural Survey methods are to be used during post-construction surveys, they will begin after the Activity Assessment surveys confirm the nest is active and will follow the same general methods as the pre-construction surveys. The specific survey frequency may be adjusted from year to year, depending on the results of the surveys, if determined appropriate through consultation with the MNR.	
			• Mortality during operation		• No turbines will be constructed within the tertiary zone (as	

Feature ID	Distance to Project Component with an Operational Effect	Distance to Project Location (Nearest Component)	Potential Negative Effects	Pre-construction Surveys	Mitigation Measures (if significant)	Performance Objectives, Monitoring, and Contingency Plans
					determined by site-specific surveys), • Any turbines within 120m of the boundary of the tertiary habitat will be selected for post-construction mortality monitoring.	

[1] *Distance to project components is based on the standard model of habitat zones as presented in the Bald Eagle Habitat Management Guidelines (MNR 1987)*

7.3 Changes to Monitoring Requirements

Based on the addition of the treated as significant bald eagle nesting, foraging and perching habitat, NRSI has determined that additional monitoring requirements are necessary for monitoring of potential environmental effects of the proposed Bornish Wind Energy Centre.

Table 5. Additional Monitoring Requirements for the Bornish Wind Energy Centre

Survey Type	Location(s)	Generalized Methods	Purpose
Bald Eagle Surveys (Pre-construction)	BAL-001	**Bald Eagle Activity Assessment** These surveys are designed to confirm the presence of an active bald eagle nest. These surveys will consist of surveys once every 15 days, beginning on February 15 and will continue until August 15 (or until the nest has been confirmed or denied to be active, as determined in consultation with the MNR) to document any eagle activity (courtship, nesting building or incubation) around the nest. Surveys will be completed during day light hours at a suitable vantage point, BAL-001A (see Figure 1), which is located further than 500m from the nest to avoid disturbance, and will occur for 60 minutes on each visit. **Bald Eagle Behavioural Study** The Behavioural Study will focus on the flight patterns, sight lines, perching habitat, and foraging habitat of the nesting eagles in order to refine the habitat zones around the nest. These surveys will comply with the Behavioural Studies outlined in the *Birds and Bird Habitats: Guidelines for Wind Power Projects* (OMNR 2011). If conducted, these surveys will occur twice a week from the date when the Activity Assessment confirms the nest is active. The surveys could start as early as mid-February and last until the chicks have left the nest (approximately August 15) (up to 53 visits), from vantage points, BAL-001A, BAL-001B and BAL-001C. A two hour point count will occur at BAL001A, while one hour point counts will be conducted at each of BAL-001B and BAL-001C, totaling 4 hours of behavioural observations.	To determine the significance of this wildlife habitat, and identify the habitat zones as per the Bald Eagle Habitat Management Guidelines (OMNR 1987)

Survey Type	Location(s)	Generalized Methods	Purpose
		On each survey date, a biologist, using binoculars or a spotting scope, will document and map all activity of the eagle(s) for at least 4 hours on each visit. All bald eagle behaviour will be recorded during the survey, with the approximate location, age, and behaviour (e.g. courtship, nest building, incubation), including mapping all flight corridors and habitats used. All bald eagle movements within the 800m radius will be recorded.	
Eagle Surveys (During Construction)	BAL-001*	Twice weekly bald eagle surveys following the protocol for Behavioural Study surveys (see above) will occur throughout the duration of any construction activities within the tertiary zone of the eagle nest during the time period of February 15th to August 15th.	To assess the potential for disturbance to nesting eagles during the construction phase.
Eagle Surveys (Post-construction)	BAL-001*	Post-construction eagle surveys will follow pre-construction methods, either the Activity Assessment or Behavioural Study methods, whichever is conducted, but will continue until the chicks have left the nest and occur for 3 years after the project becomes operational. If the Behavioural Survey methods are to be used during post-construction surveys, they will begin after the Activity Assessment surveys confirm the nest is active and will follow the same general methods as the pre-construction surveys. The specific survey frequency may be adjusted from year to year, depending on the results of the surveys, if determined appropriate through consultation with the MNR.	To assess any potential disturbance or displacement impacts as a result of the development of this facility.
Mortality Monitoring	Entire Project*	If any turbines will be developed within 120m of the tertiary habitat boundary, they will be selectively chosen for post-construction mortality monitoring. All other details pertaining to mortality monitoring, as presented in the NH EIS, will remain unchanged.	To assess the potential for direct mortality of bald eagles as a result of this project.

** This monitoring condition is only required if this habitat is determined to be significant according to the pre-construction surveys discussed in this Addendum Report (see Table 3)*

8.0 Summary of Natural Heritage Amendments

In accordance with the REA Regulation, NRSI biologists have completed a comprehensive records review, site investigation, evaluation of significance, and EIS of the Bornish Wind Energy Centre project area. Following the review of additional natural heritage information that was not included in the original NHA submission, NRSI has re-considered all aspects of the Natural Heritage Assessment within this Addendum Report to determine what, if any, new mitigation measures, contingency plans, or monitoring requirements should be implemented as part of the Bonrish Wind Energy Centre NHA. The summary of the result of this review of changes to the project location are summarized in Table 6 below.

Table 6. Summary of Natural Heritage Addendum for the Bornish Wind Energy Centre

Addendum Changes	Addendum Result
Significant Features	NRSI has identified one additional wildlife habitat, bald eagle nesting, perching, and foraging habitat, which has been treated as significant wildlife habitat for the purpose of this report. Pre-construction surveys will be required to confirm the significance of this habitat and delineate the appropriate habitat zones.
Changes in Distances to Project Location	Although no changes in distance to project location have occurred, new distances have been added as a result of the presence of an additional candidate significant wildlife habitat.
Mitigation Measures	Based on the addition of a new wildlife habitat, which has been treated as significant for this report, several new potential impacts and mitigation measures have been applied to the Bornish Wind Energy Centre, pending confirmation of the significance of this habitat. Four woodlands have been confirmed to not be significant and require no mitigation, monitoring or contingency plans. All other mitigation measures, as seen in the Natural Heritage Environmental Impact Study (NRSI 2012) will provide the appropriate protection to ensure any permanent and adverse impacts are mitigated.
Monitoring Commitments	Pending the completion of pre-construction surveys, additional monitoring may be required during the construction and operational phases of this project to monitor the success of the nest.

With this addendum, it is maintained that with the implementation of the planned mitigation measures, monitoring programs, and contingency plans as presented in the Bornish Wind Energy Centre: Natural Heritage Environmental Impact Study (NRSI 2012), along with any additional mitigation measures and monitoring commitments provided above, the potential for significant impacts to the natural heritage within the project area has been mitigated appropriately.

9.0 References

Publications

Natural Resource Solutions Inc. (NRSI). 2012. Bornish Wind Energy Centre Natural Heritage Assessment. April 2012.

Ontario Ministry of Natural Resources (OMNR). 2012. Significant Wildlife Habitat Ecoregion 7E Criterion Schedule. Addendum to Significant Wildlife Habitat Technical Guide. February 2012.

Ontario Ministry of Natural Resources (OMNR). 2011. Birds and Bird Habitats: Guidelines for Wind Power Projects. OMNR December 2011.

Ontario Ministry of Natural Resources (OMNR). 2000. Significant Wildlife Habitat: Technical Guide. OMNR, October 2000.

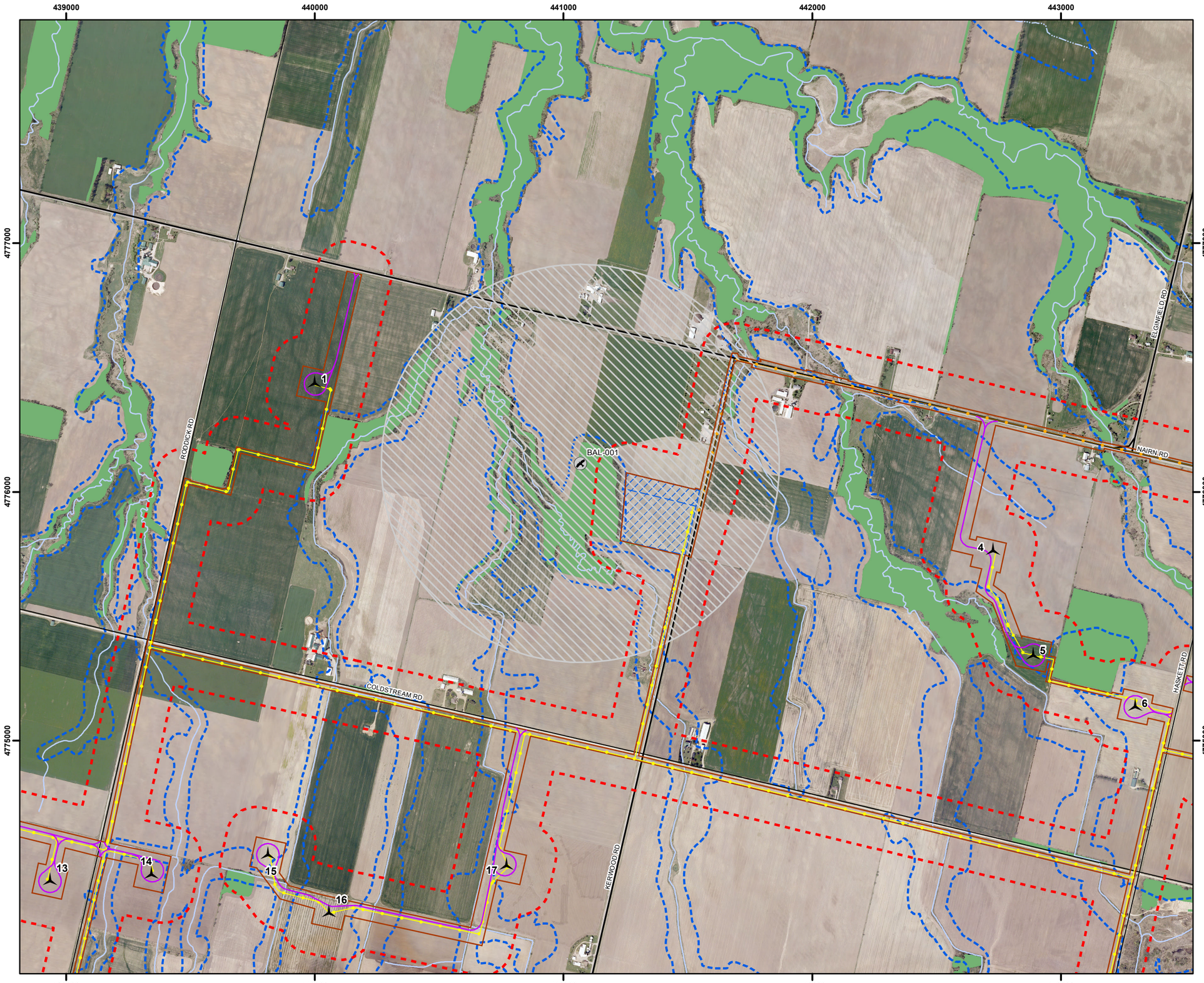
Ontario Ministry of Natural Resources (OMNR). 1987. Bald Eagle Habitat Management Guidelines. OMNR, June 1987.

Appendix I
Alternate Project Layout

Appendix I

Bornish Wind Energy Centre

Alternate Project Layout



Legend

- Project Area (120m Buffer)
- Bald Eagle Nest
- Bald Eagle Significant Wildlife Habitat (800m)
- Turbine
- Access Road
- Collector System
- Interconnection Line
- Project Location
- Substation
- Existing Transmission Line
- Railroad
- Primary Road
- Secondary Road
- Intermittent Watercourse
- Permanent Watercourse
- Provincially Significant Wetland (PSW)
- Other Wetland
- Wooded
- Regulation Limit (ABCA)

Path: X:\1231_BornishWindFarm\NRSI_1231_Fig1_BornishWF_NaturalFeatures_50K_2012_04_12_KEB

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1231
February 2, 2012

NAD83 - UTM Zone 17
Scale: 1:15,000 (11x17")

N

0 250 500 750 1,000 Meters