Adelaide Wind Energy Centre
Natural Heritage Evaluation of Significance Report

Prepared for:
NextEra Energy Canada
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Project No. 1230

Date: April 2012

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

ADELAIDE WIND ENERGY CENTRE
Natural Heritage Evaluation of Significance Report

Project Team:

Staff	Role
Andrew G. Ryckman	Project Manager/Biologist
Kaitlin N. Powers	Terrestrial and Wetland Biologist
Andrew Dean	Terrestrial and Wetland Biologist
Charlotte Moore	Terrestrial and Wetland Biologist
Erin Pettit	Terrestrial and Wetland Biologist
Graham Wright	Terrestrial and Wetland Biologist
Heather Wright	Terrestrial and Wetland Biologist
Jessica Walker	Terrestrial and Wetland Biologist
Julia Lawler	Terrestrial and Wetland Biologist
Justin Becker	Terrestrial and Wetland Biologist
Katherine Clapham	Terrestrial and Wetland Biologist
Katherine St. James	Terrestrial and Wetland Biologist
Kim Watson	Terrestrial and Wetland Biologist
Megan Pope	Terrestrial and Wetland Biologist
Mike Woloksiencky	Terrestrial and Wetland Biologist
Mitch Ellah	Terrestrial and Wetland Biologist
Nathan Miller	Terrestrial and Wetland Biologist
Patrick Deacon	Terrestrial and Wetland Biologist
Sophie Gibbs	Terrestrial and Wetland Biologist
Stephane Menu	Terrestrial and Wetland Biologist
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Report submitted on April 10, 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 Hassan on behalf of Kerwood Wind, Inc, a wholly-owned subsidiary of NextEra Energy Canada ULC, to conduct a natural environment resource assessment in accordance with the Renewable Energy Approval (REA) Regulation. This assessment includes a records review, site investigation, and evaluation of significance and impact assessment of any potentially significant natural features at a proposed 60MW solar energy facility in Middlesex County and Township of Adelaide Metcalfe, 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.

The Adelaide Wind Energy Centre ('Adelaide'), proposed by Kerwood Wind Inc,, is located in the geographic Township of Adelaide Metcalfe, approximately 13km northwest of the Town of Strathroy. The general project area is roughly bordered by Centre Road, Townsend Line, Sexton Road, and Napperton Drive. In addition, a transmission line is proposed to run north along Kerwood Road from Cuddy Drive north to Nairn Road. This transmission line is then proposed to continue eastward along Nairn Road to an existing 500kV line and substation located west of Petty Street. The Adelaide wind energy generating facility is proposed to consist of up to thirty-eight GE 1.6-100 (1.62 MW) turbines for a total installed capacity of up to 61.56 MW. The proposed GE 1.6-100 turbine is a 3-bladed, upwind, horizontal-axis turbine. The total rotor diameter of the turbine is 100m, resulting in a swept area of 7,854m^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 which is manufactured in sections from steel plate. Each turbine is mounted on a steel reinforced concrete foundation and equipped with a transformer, 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'. In accordance with Section 25 of the Renewable Energy Approval (REA) Regulation (O. Reg. 359/09 of the Environmental Protection Act), NRSI has conducted a thorough records review of available background resources to identify any potentially significant natural features within 120m of the project location.

This includes areas within 120m of turbine blade tip as well as any areas that may be used as temporary lay-down areas, crane pads, access roads, connectors, distribution and transmission lines. For the purposes of this report, NRSI will refer to the areas within 120m of the project location as the 'project area'.

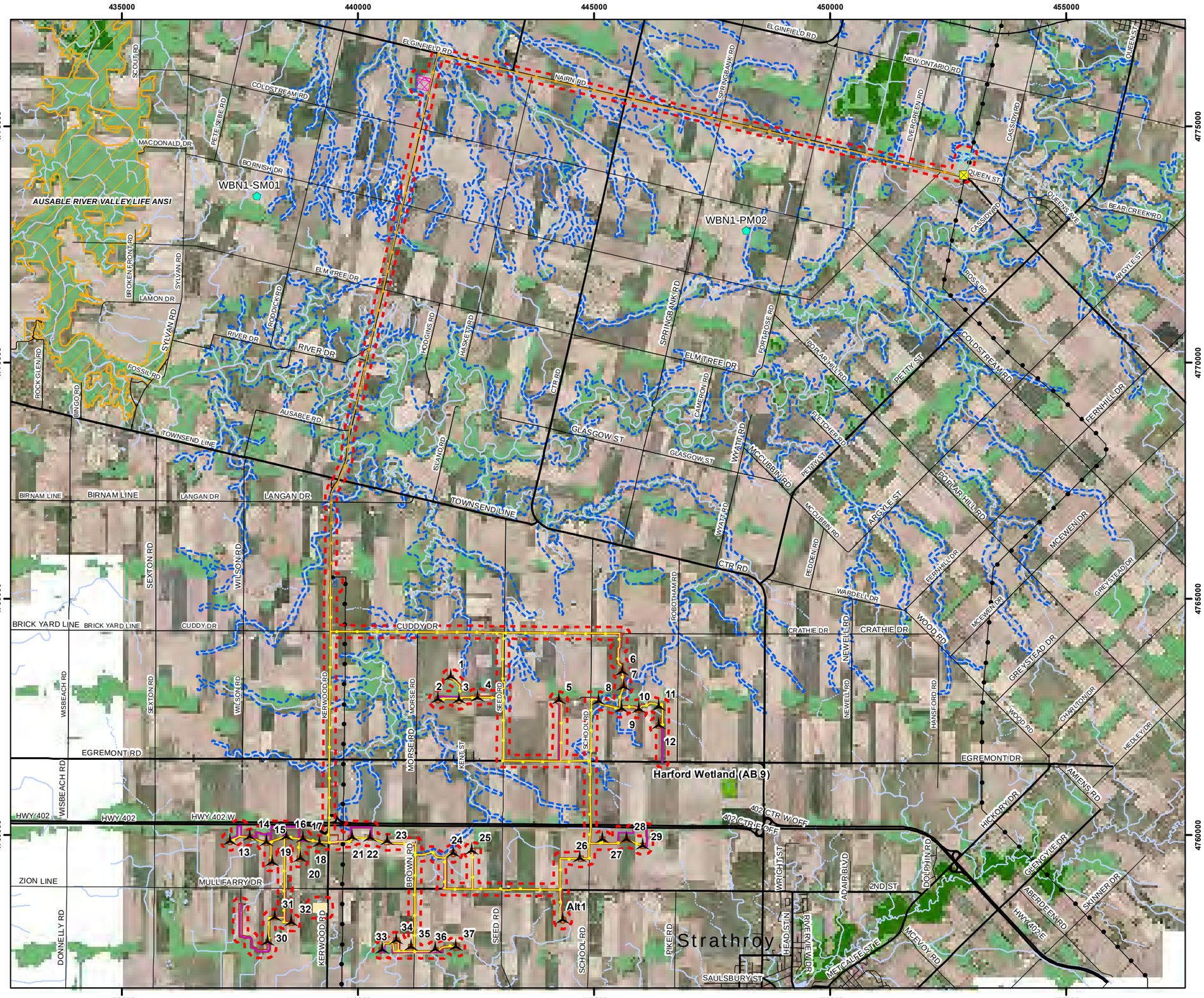
The project area is dominated by rotational agricultural crops of wheat, corn and soybeans. Other land uses, including hayfields and agricultural pasture, are also expected to be present within the project area. Natural features are generally small and isolated from other features; however, several large contiguous woodlands are present within the Adelaide project area. Habitats within the project area include woodlands, meadows, thickets, drainage ditches, ponds, creeks and hedgerows. See Figures 1 and 2 for maps 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

Adelaide Wind Energy Centre

Project Area and Natural Features



Legend

- Project Area (120m Buffer)
- Turbine
- Point of Common Coupling (PCC)
- MET Station
- Access Road
- Interconnection Line
- Collector System
- Project Location
- Staging Area
- Interconnection Facilities
- Substation
- Switching Yard
- Existing Transmission Line
- Railroad
- Primary Road
- Secondary Road
- Waterbody
- Intermittent Watercourse
- Permanent Watercourse
- Provincially Significant Wetland (PSW)
- Other Wetland
- Wooded
- ANSI, Life Science
- ANSI, Earth Science
- Regulation Limit (ABCA)

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Project: 1230 Date: April 10, 2012	NAD83 - UTM Zone 17 Scale: 1:80,000 (11x17")

0 1,000 2,000 3,000 4,000 5,000 Metres

N

Path: X:\1230_AdelaideWindFarm\NRSI_1230_Fig1_AdelaideWF_NaturalFeatures_80K_2012_04_10_KEB.mxd

Figure 2

Adelaide Wind Energy Centre

Project Area and Natural Features

438000 440000 442000 444000 446000

4764000 4762000 4760000 4758000

CUDDY DR
WILSON RD
KERWOOD RD
MORSE RD
KENTST
FEASEYST
SCHOOL RD
ROBOTHAM RD
HWY 402
MULLIFARRY DR
SULLIVAN RD
SEED RD
BROWN RD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 Alt1

Legend

- Project Area (120m Buffer)
- Turbine
- Point of Common Coupling (PCC)
- MET Station
- Access Road
- Collector System
- Interconnection Line
- Project Location
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Highway
- Primary Road
- Secondary Road
- Intermittent Watercourse
- Permanent Watercourse
- Waterbody
- Provincially Significant Wetland (PSW)
- Other Wetland
- Wooded
- ANSI, Life Science
- ANSI, Earth Science
- Regulation Limit (ABCA)

NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

Project: 1230
Date: April 10, 2012

NAD83 - UTM Zone 17
Scale: 1:35,000 (11x17")

0 500 1,000 1,500 2,000 Metres

N

Path: X:\1230_AdelaideWindFarm\NRSI_1230_Fig2_AdelaideWF_NaturalFeatures_35K_2012_04_10_KEB.mxd

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 Adelaide 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 Adelaide Wind Energy Centre have been outlined in the following sections.

Andrew G. 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 (ELC) (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.

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 wetland information collection within the project area.

Kaitlin N. 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 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) and has been involved in completing ELC surveys, wildlife habitat assessments, bat monitoring, migratory bird and reptile surveys, as well as assisting in wetland evaluations.

Kaitlin conducted ELC surveys, wetland evaluations, acoustic and visual bat monitoring and also completed the reports for this project.

Andrew Dean, B.E.S
Andrew is a Terrestrial and Wetland Biologist with 2 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 and the North American Native Plant Society. Andrew has participated in field investigations inventorying flora and fauna, their respective habitats and sensitive natural heritage features. Andrew is certified in the ELC for Southern Ontario (2010).

Andrew's role in the Project was to collect ELC information, and to assist with mapping the wetland boundaries within the Project area.

Charlotte S. 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 ELC, bat habitat assessments, breeding bird surveys and reptile studies.

Charlotte assisted in completing ELC surveys, wildlife habitat assessments and acoustic bat monitoring.

W. Graham. Wright, B.E.S.
Graham is a Terrestrial and Wetland Biologist and a recent graduate of the University of Waterloo with a Bachelor of Environmental Studies. He has a combined year of experience working both as a field technician and as an Information Officer working with protected areas and species at risk in Ontario. He has also participated in various terrestrial and aquatic environmental monitoring projects.

Graham helped complete ELC surveys, wildlife habitat assessments and visual bat monitoring.

Heather L. Wright
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 ELC surveys.

Jessica R. Walker, B.E.S
Jessica is a Terrestrial and Wetland Biologist with over 2 years of working the in the environmental field. Jessica has completed her Bachelor of Environmental Studies and is a candidate for a Masters of Environmental Studies (2012) at the

University of Waterloo. Her Masters research involves mapping suitable habitat for the yellow-breasted chat (*Icteria virens virens*) in the Anders Field Complex in Point Pelee National Park. Jessica has routinely conducted ecological assessments and collected field information on vegetation, birds, amphibians, and other wildlife species through Ontario.

Jessica completed ELC surveys and wildlife habitat assessments.

Katherine St. James
Katherine is a Terrestrial and Wetland Biologist with more than 3 years of experience working in the environmental field. She specializes in environmental sciences, ecology, and bio-geographical studies, and completed her master's research on potential barrier effects on salamander populations. During her master's research and consulting experience, Katherine has routinely conducted ecological assessments and collected field information on vegetation, birds, amphibians, and other wildlife species throughout Ontario.

Katherine completed breeding bird surveys and wildlife habitat assessments.

Kenneth G. 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. He is also certified in ELC for northeastern Ontario (2011).

Kenneth assisted with the preparation of this report.

Mike Woloksiencky
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
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 surveys on several natural features within the project location and conducting breeding bird surveys.

Patrick Deacon, B.E.S.
Patrick is a Terrestrial 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's role in this project included completing wetland evaluations 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 for natural heritage features, including Areas of Natural and Scientific Interest (ANSI), wetlands, woodlands, valleylands, and wildlife habitat. Numerous agencies were contacted to compile a comprehensive records review, including the Ministry of Natural Resources' (MNR) Renewable Energy Operation Team (REOT), the Ausable Bayfield Conservation Authority, and the St. Clair Region 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. The comprehensive results of the records review have been summarized in Table 1 and Table 2. Summary of Records Review of the Adelaide 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. Changes to the Records Review Report have been summarized in Tables 18 and 19, following the main content of this report.

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

Criteria	Result
1. Within 120m of a Provincial Park or Conservation Reserve	The Adelaide Wind Energy Centre project location is not 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 Adelaide Wind Energy Centre overlap with 19 natural areas. These natural areas are woodlands that 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 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 Earth Science (ES) ANSI features are located within 50m of the project location.
4. Within 120m of a Natural Feature	
ANSI-LS	No Life Science (LS) ANSI features are located within 120m of the project location.
Coastal Wetland	No coastal wetlands are present within 120m of the project location.

Northern Wetland	No northern wetlands are present within 120m of the project location.
Southern Wetland	No southern wetlands have been identified within 120m of the project location. Wetlands may be located within woodland boundaries.
Valleyland	No valleylands have been identified within 120m of the project location.
Wildlife Habitat	Sixty-five woodlands have been identified within 120m of the Adelaide Wind Energy Centre project location. These woodlands have the potential to provide several types of candidate Suitable Wildlife Habitat (SWH). Several linear features, including treed fencerows and naturalized drains, have been identified within 120 m of the project location. These features have the potential to act as SWH, specifically providing animal movement corridors and/or habitat for species of conservation concern. 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.
Woodland	Several woodlands have been identified during the records review process, including sixty-five woodlands within 120 m of the project location. Basemapping indicates that these woodlands range in size from 0.2ha to 137.2ha. 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.

The results of the records review of wildlife habitat is provided in Table 2. This table summarizes the presence of the full range of potential wildlife habitats within the project area. The purpose of this table is to guide the site investigation to further refine what types of wildlife habitats are within the project area. Any wildlife habitats that have already been confirmed to be either not applicable to the project area or known to not occur within the project area will not be discussed in subsequent Natural Heritage Assessment reports for the Adelaide Wind Energy Centre.

Table 2. Summary of Wildlife Habitat Records Review

Wildlife Habitat	Present Within 120m of Project Location	Present Within Project Location	Carried Forward to Site Investigation (Y/N)
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**

Wildlife Habitat	Present Within 120m of Project Location	Present Within Project Location	Carried Forward to Site Investigation (Y/N)
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	**Yes**
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**
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	**Yes**
Cliffs	No	No	**No**

Wildlife Habitat	Present Within 120m of Project Location	Present Within Project Location	Carried Forward to Site Investigation (Y/N)
Seeps and Springs	Unknown	Unknown	**Yes**
Amphibian Movement Corridors	Unknown	Unknown	**Yes**
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**
Special Concern Species	Unknown	Unknown	**Yes**
S1-S3, and SH 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 Adelaide Wind Energy Centre project area. The site investigation included, but was not limited to, conducting Ecological Land Classification (ELC) and wildlife habitat surveys. The results of the investigation have been summarized in Table 3 below. This summary includes: woodlands, wetlands, valleylands, and significant wildlife habitat. Each feature that was carried forward to the evaluation of significance phase of this project will be addressed in this report. Remaining features that were assessed as not requiring evaluation of significance will not be further discussed.

Table 3. Summary of Natural Features and Wildlife Habitat Site Investigation for the Adelaide Wind Energy Centre

Feature ID	Feature Type	Distance to Closest Turbine (from blade tip) (m)	Distance to Other Project Infrastructure (m)	Evaluation of Significance Required (Y/N)
WOD-001	Woodland	16	4	Yes
WOD-002	Woodland	>120	Overlapping (directional drilling under woodland)	Yes
WOD-003	Woodland	21	4	Yes
WOD-004	Woodland	100	4	Yes
WOD-005	Woodland	19	4	Yes
WOD-006	Woodland	>120	4	Yes
WOD-007	Woodland	19	4	Yes
WOD-008	Woodland	21	10	Yes
WOD-009	Woodland	63	4	Yes
WOD-010	Woodland	51	4	Yes
WOD-011	Woodland	>120	4	Yes
WOD-012	Woodland	65	100	Yes
WOD-013	Woodland	23	78	Yes
WOD-014	Woodland	22	4	Yes
WOD-015	Woodland	16	4	Yes
WOD-016	Woodland	21	54	Yes
WOD-017	Woodland	77	115	Yes
WOD-018	Woodland	105	4	Yes
WOD-019	Woodland	>120	105	Yes
WOD-020	Woodland	>120	4	Yes
WOD-021	Woodland	>120	7	Yes
WOD-022	Woodland	>120	4	Yes
WOD-023	Woodland	>120	32	Yes

Feature ID	Feature Type	Distance to Closest Turbine (from blade tip) (m)	Distance to Other Project Infrastructure (m)	Evaluation of Significance Required (Y/N)
WOD-024	Woodland	>120	Overlapping (vegetation removal for installation of overhead cable within existing road right of way)	Yes
WOD-025	Woodland	74	4	Yes
WOD-026	Woodland	97	4	Yes
WOD-027	Woodland	18	4	Yes
WOD-033	Woodland	>120	2	Yes
WOD-034	Woodland	>120	97	Yes
WOD-035	Woodland	>120	22	Yes
WOD-036	Woodland	>120	104	Yes
WOD-037	Woodland	>120	4	Yes
WOD-038	Woodland	>120	92	Yes
WOD-039	Woodland	>120	31	Yes
WOD-040	Woodland	>120	14	Yes
WOD-041	Woodland	>120	21	Yes
WOD-042	Woodland	>120	15	Yes
WOD-043	Woodland	>120	83	Yes
WOD-044	Woodland	>120	29	Yes
WOD-045	Woodland	>120	18	Yes
WOD-046	Woodland	>120	21	Yes
WOD-047	Woodland	>120	20	Yes
WOD-048	Woodland	>120	46	Yes
WOD-049	Woodland	>120	20	Yes
WOD-050	Woodland	>120	12	Yes
WOD-051	Woodland	>120	7	Yes
WOD-052	Woodland	>120	17	Yes
WOD-053	Woodland	>120	11.5	Yes
WOD-054	Woodland	>120	Overlapping (vegetation removal for installation of overhead cable within existing road right of way)	Yes
WOD-055	Woodland	>120	16	Yes
WOD-056	Woodland	>120	116	Yes
WOD-057	Woodland	78	4	Yes
WET-001a	Wetland	40	65	Yes
WET-034	Wetland	>120	97	Yes
WET-037	Wetland	>120	4	Yes
WET-042	Wetland	>120	15	Yes
WET-049	Wetland	>120	20	Yes

Feature ID	Feature Type	Distance to Closest Turbine (from blade tip) (m)	Distance to Other Project Infrastructure (m)	Evaluation of Significance Required (Y/N)
VAL-020	Valleyland	>120	4	Yes
VAL-048	Valleyland	>120	46	Yes
RWA-002	Raptor Wintering Area	>120	5	Yes
RWA-003	Raptor Wintering Area	>120	5	Yes
RWA-004	Raptor Wintering Area	>120	5	Yes
SNH-001	Snake Hibernaculum	>120	63	Yes
SNH-002	Snake Hibernaculum	>120	18	Yes
SNH-003	Snake Hibernaculum	>120	103	No
SNH-004	Snake Hibernaculum	>120	7	No
BMA-001	Bat Maternity Colony	100	4	Yes
BMA-002	Bat Maternity Colony	105	4	Yes
BMA-003	Bat Maternity Colony	77	115	Yes
BMA-004	Bat Maternity Colony	51	4	Yes
BMA-005	Bat Maternity Colony	63	4	Yes
BMA-006	Bat Maternity Colony	16	4	Yes
BMA-011	Bat Maternity Colony	19	4	Yes
BMA-012	Bat Maternity Colony	19	4	Yes
BMA-014	Bat Maternity Colony	21	4	Yes
BMA-016	Bat Maternity Colony	16	4	Yes
BMA-017	Bat Maternity Colony	23	78	Yes
BMA-019	Bat Maternity Colony	22	4	Yes
BMA-020	Bat Maternity Colony	21	54	Yes
BMA-022	Bat Maternity Colony	21	10	No
AWO-001	Amphibian Breeding Habitat (Woodland)	40	65	Yes
AWO-002	Amphibian Breeding Habitat (Woodland)	77	115	Yes
AWO-004	Amphibian Breeding Habitat (Woodland)	63	4	Yes
AWO-005	Amphibian Breeding Habitat (Woodland)	51	4	Yes
CAS-001	Carey's Sedge	16	4	Yes

Feature ID	Feature Type	Distance to Closest Turbine (from blade tip) (m)	Distance to Other Project Infrastructure (m)	Evaluation of Significance Required (Y/N)
CAS-002	Carey's Sedge	51	4	Yes
CAS-003	Carey's Sedge	77	115	Yes
CAS-004	Carey's Sedge	105	4	Yes
CAS-005	Carey's Sedge	>120	2	Yes
CAS-006	Carey's Sedge	>120	97	Yes
CAS-007	Carey's Sedge	>120	4	Yes
YSG-001	Yellow Stargrass	16.9	>0.1	Yes
YSG-002	Yellow Stargrass	>120	56.5	Yes
Generalized Candidate Significant Wildlife Habitats				
Bat Maternity Colony		Not within 120m of infrastructure identified in Appendix D of the Natural Heritage Assessment guide that will have an operational impact on the habitats. Therefore these habitats will be carried forward to the Evaluation of Significance Report where they will be treated as significant.		Generalized
Rare Forest Type				Generalized
Amphibian Breeding Habitat (Woodland)				Generalized
Terrestrial Crayfish				Generalized
Woodland Raptor Nesting				Generalized
Red-headed Woodpecker				Generalized
Blue-ringed Dancer				Generalized
Double-striped Bluet				Generalized
Pronghorn Clubtail Bluet				Generalized
Woodland Bulrush				Generalized

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 Adelaide 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, and detailed field forms have been appended to 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 (%)
Megan Pope, Charlotte Moore, Julia Lawler, Andrew Ryckman	Acoustic Bat Monitoring	June 7	1627	2 nights	26	1	30
Charlotte Moore, Megan Pope, Andrew Ryckman	Visual Bat Monitoring	June 7	2150	1.8	31	0	10
Megan Pope, Charlotte Moore, Julia Lawler	Acoustic Bat Monitoring	June 8	1200	2 nights	22	1	35
Megan Pope, Charlotte Moore	Visual Bat Monitoring	June 8	2034	3.5	30	0	20
Megan Pope, Charlotte Moore	Visual Bat Monitoring	June 9	2037	4	12	4	90
Julia Lawler Charlotte Moore	Acoustic Bat Monitoring	June 10	1410	4 nights	31	0	0
Megan Pope, Charlotte Moore	Visual Bat Monitoring	June 10	2030	3.5	19	1	70
Katherine Clapham, Kaitlin Powers, Mike Woloksiencky	Acoustic Bat Monitoring	June 13	1838	5 nights	17	1	45
Katherine Clapham, Kaitlin Powers	Visual Bat Monitoring	June 13	2047	0.33	18	0	90
Katherine Clapham, Kaitlin Powers	Acoustic Bat Monitoring	June 14	1417	4 nights	24	1	5
Katherine Clapham, Kaitlin Powers	Visual Bat Monitoring	June 14	2146	3.75	16	0	10
Mike Woloksiencky, Katherine Clapham	Visual Bat Monitoring	June 15	2050	4.75	22	2	60

Staff Name(s)	Purpose	Date (2011)	Start Time (hrs)	Duration (hrs)	Weather Conditions		
					Temp. (°C)	Beaufort Wind	Cloud Cover (%)
Katherine Clapham, Kaitlin Powers	Visual Bat Monitoring	June 16	2100	3.25	18	0	30
Kaitlin Powers, Mike Woloksiencky, Patrick Deacon	Acoustic Bat Monitoring	June 17	1435	6 nights	19	2	15
Mike Woloksiencky, Kaitlin Powers	Visual Bat Monitoring	June 17	2045	3.5	N/A	3	10
Katherine Clapham Mike Woloksiencky	Visual Bat Monitoring	June 18	2115	3.25	21	0	70
Kaitlin Powers Mike Woloksiencky	Acoustic Bat Monitoring	June 18	1307	3 nights	27	2	0
Andrew Dean, Kaitlin Powers	Visual Bat Monitoring	July 8	2100	2.75	23	0	0
William Wright, Katherine Clapham	Visual Bat Monitoring	July 10	2155	1.25	28	2	80
Patrick Deacon, Kaitlin Powers	Wetland Assessment	September 29	1120	3	17	2	90
Kaitlin Powers, Andrew Dean	Wetland Assessment	October 20	1145	0.5	9	3	100

6.2 Woodlands

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 120m of proposed development activities of the Adelaide Wind Energy Centre.

For each candidate significant woodland, 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). 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, below. 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 less than 5-15% (Middlesex;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. Minimum area threshold for significance is 1ha.
Linkages	- Woodlands that provide linkage functions between other significant features within a specified distance (e.g., 120m) may be considered significant.. Minimum area threshold for significance is 1ha.
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. Minimum area threshold for significance is 0.5ha.

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. Minimum area threshold for significance is 1ha.
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. -Minimum area threshold for significance is 1ha.

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 soil assessments 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.

Any potential wetlands that are located within 120m of the Adelaide project location (but not overlapping) have been assumed to be provincially significant, following Appendix C of the Natural Heritage Assessment Guide (OMNR 2011b).

Appendix C of the Natural Heritage Assessment Guide provides a set of evaluation criteria focused on wetland characteristics and ecological functions relevant to the preparation of an Evaluation of Significance Report and completion of an Environmental Impact Study. The assessment ensures the relevant wetland attributes remain fully assessed, and that sufficient information regarding the wetland is generated for applicants to meet EIS requirements. This assessment can be completed mainly through desktop work. The assessment is not used to officially define the status of wetlands (either as provincially significant or not significant). Using this Appendix, NRSI biologists assessed the functions of these potential wetlands. The following wetland characteristics and ecological functions to be assessed include:

Biological Component

Wetland Size*:* This figure will be based on the overall size of the contiguous wetland, including areas that are within but extend outside of 120m zone. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.3)

Wetland Type*:* The dominant wetland type in the contiguous unit will be listed. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.1.2)

Site Type*:* The wetland site type will be stated. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.1.3)

Vegetation Communities*:* Each vegetation community in the contiguous unit will be listed, based on the requirements of OWES. Data will be based on field surveys where possible. (OWES Section 1.2.2)

Proximity to Other Wetlands*:* The approximate distance to the next closest wetland unit will be provided. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.2.4)

Interspersion*:* An estimate of the total number of interspersion points will be provided, with consideration given to the scale of the map and complexity of the wetland type delineations. The interspersion number will be provided in the Table. Data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.2.5)

Open Water Types*:* The open water type number (page 52 of the OWES manual) will be listed in the Table; data will be based on field surveys and/or aerial photo interpretation. (OWES Section 1.2.6)

Hydrological Component

Flood Attenuation*:* The general proximity of the wetland within the local watershed will be stated, indicating if it is headwater, mid-reach, or river-mouth. An estimate of the catchment area will also be provided, either based on Digital Elevation Mapping, or topographic map interpretation.

Water Quality Improvement (Short Term):

- *Watershed Improvement Factor* (WIF) – this is based on presence/absence of specific site types (i.e. riverine, lacustrine wetlands at lake inflow or outflow; or palustrine wetlands with inflow isolated wetlands, or palustrine wetlands with no inflow or lacustrine wetlands on lake shoreline. The data will be derived from field surveys where possible [OWES Section 3.2.1.1]):

- *Adjacent and Watershed Land Use* (LUF) – estimated percent of land use and land use type (i.e. agricultural, urban or forested) was included for the catchment (data derived from field surveys where possible [OWES Section 3.2.1.2]):

- *Pollutant Uptake Factor* (PUT) – this is based on the single *most* dominant vegetation form observed within the wetland community (data derived from field surveys where possible [OWES Section 3.2.1.3]), described as:
    - high proportion of emergent, submergent, and/or floating vegetation.
    - a high proportion of live trees, shrubs, herbs, or mosses.
    - a high proportion of wetland with little or no vegetation.

Water Quality Improvement (Long Term Nutrient Trap): Wetlands with a retentive capacity for nutrients (e.g., those with organic soils) provide protection for recharging groundwater. A characterization of wetland type and soil conditions is provided. Data was based on field surveys where possible, or soil series mapping (OWES Section 3.2.2):

- *Water Quality Improvement (Groundwater Discharge):* OWES establishes eight wetland features that provide evidence of discharge, where the evaluator must make observations on as many of the features as possible (OWES Section 3.2.3). Where available, data indicative of groundwater discharge was provided.
- *Shoreline Erosion Control:* Shoreline wetlands provide a measure of protection from shoreline erosion caused by flowing water or waves. A description of the dominant shoreline vegetation was provided based on field surveys and/or aerial photo interpretation (OWES Section 3.4):
- *Groundwater Recharge (Site Type):* Site type was included based on field surveys where possible (OWES Section 3.5.1):
- *Groundwater Recharge (Soils):* Soil type was indicated for each wetland unit, based on county soil mapping. (OWES Section 3.5.2)

Special Features

Species Rarity: All rare species observed during field surveys or species known to be present were documented and listed in the WCEFA results table (Table 2.3). Data was based on field surveys, review of background materials (including existing wetland evaluations), and correspondence with agencies where possible (OWES Section 4.1.2).

Significant Features and Habitats: All significant features and habitats present in the wetland were documented and listed in the Table 10. Features/Habitat of interest include Colonial Waterbird Habitat, Winter Wildlife Cover, Waterfowl Staging and/or Moulting Areas, Waterfowl Breeding, and Migratory Passerine, Shorebird, or Raptor Stopover Areas. Data will be based on field surveys, background data, and correspondence with agencies where possible (OWES Section 4.2). The extensive field and background data gathered for the Project, with respect to avian wildlife, was reviewed as part of the assessment of significant features and habitats. Information on significant deeryards, obtained from LIO mapping, was also reviewed.

Fish Habitat: OWES (guided by the Canada Fisheries Act) states that the presence of individual species of fish is not scored. Instead, fish habitat values are based on presence spawning and nursery habitat, and presence of staging and migration habitat. An indication of presence/absence was provided, as well as its hydro-period (i.e., permanent or intermittent). (OWES Section 4.2.6)

6.4 Valleylands

Site-specific field investigations, in conjunction with records review and agency consultation, have been used to identify potential candidate significant valleylands within the project area. For the identified valleylands, site-specific characteristics were assessed 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 6 below.

Table 6. 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 2012). 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) 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 Adelaide Wind Energy Centre. 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 general evaluation criteria for the wildlife habitats that have been carried forward from the Site Investigation Report are outlined in Table 7.

Table 7. Seasonal Concentration Area Evaluation of Significance Criteria

Concentration Area	Evaluation Methods	Standards of Significance
Raptor Winter Feeding and Roosting Areas	No specific surveys for this habitat type have been completed to date. Pre-construction surveys will be conducted. Thirty minute visual raptor surveys focused on identifying raptors along woodland and field edge habitat. The number of point counts required depends on the size and habitat diversity at each site. Surveys will be conducted on 3 visits in January 2012, with another 3 visits occurring in February 2012 (depending on January results). Detailed methodology can be found in Appendix II.	The use of candidate 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 for a minimum of 20 days by the above number of birds[1].
Reptile Hibernacula	Four (4) area searches were conducted at each potential habitat during September on warm days with sunny weather conditions. The effort spent at each habitat was dependant on the habitat extent and complexity, but lasted at least 10 minutes in length on each visit. Field data sheets are provided in Appendix I.	- Presence of at least five (5) individuals or two (2) or more snake species in, or near, a potential hibernacula in spring or fall. - Confirmation of a Special Concern species **Snake Species:** Eastern Gartersnake Northern Watersnake Northern Brownsnake Smooth Green Snake Northern Ring-necked Snake Milksnake (special concern) Eastern Ribbonsnake (Special Concern)
Bat Maternity Colony	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 broadband ultrasound microphone that recorded for at least 5hrs after dusk for 10 nights at the candidate maternity colony. Recorders were placed within 10m of the base of a candidate tree. 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. For candidate habitats that have not yet been seasonally surveyed, NRSI will conduct pre-construction monitoring following the July 2011 *Bats and Bat Habitat* provincial guidelines, which was released after the 2011 bat monitoring was completed.	- Maternity colonies include at least twenty (20) tricolored bats (*Perimyotis subflavus*) or northern long-eared bats (*Myotis septentrionalis*), ten (10) big brown bats (*Eptesicus fuscus*), twenty (20) little brown bats (*Myotis lucifugus*), or five (5) adult, female, silver-haired bats (*Lasionycteris noctivagans*). - Due to the difficulty of identifying maternity colonies, NRSI also used results of nearby bat surveys in similar habitat types, where deemed appropriate, to identify potentially significant habitats.

	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 carried forward to the EIS. Detailed methodology can be found in Appendix III.	

[1]: OMNR Significant Wildlife Habitat Technical Guide (2000)
[2]: OMNR Significant Wildlife Habitat Ecoregion Criteria Schedules: Addendum to SWHTG (Working Draft) 2009
[3]: Golder (2009)

6.5.2 Specialized Wildlife Habitat

Specialized wildlife habitat are identified using modified ELC for southern Ontario (Lee et al. 1998), and then compared with the evaluation criteria identified in the Significant Wildlife Habitat Technical Guide (OMNR 2000,) and its addendum, Draft Significant Wildlife Habitat Ecoregion 7E Criteria Schedules (OMNR 2012). This includes a variety of habitats that are required for the long-term survival of certain species, or species groups. General evaluation criteria used in the evaluation of significance of the wildlife habitat types carried forward from the site investigation are outlined in Table 8 below. Additionally, rare forest types were identified in the site investigation; however, since the candidate rare forest type was >120m from a proposed access road, it has been carried forward to the evaluation of significance as generalized habitat.

Table 8. Specialized Wildlife Habitat Evaluation of Significance Criteria

Habitat Type	Evaluation Methods	Standards of Significance
Amphibian Breeding Habitat (woodland)	No specific surveys for this habitat type have been completed to date. Pre-construction surveys will be conducted. Three 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.)	Studies conducted during spring confirm the 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 salamander species or ≥2 frog species: • Eastern Newt • Blue-spotted Salamander • Spotted Salamander • Gray Treefrog • Spring Peeper • Western Chorus Frog • Wood Frog.[2]

	Salamander egg mass searches will occur during daylight hours in early spring (March-April). 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 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. Detailed methodology can be found in Appendix VI.	Amphibian corridors should consist of native vegetation, roadless area, no gaps such as fields, waterways or bodies, and undeveloped areas are most significant[1].

1: OMNR Significant Wildlife Habitat Technical Guide (2000)
2: OMNR Significant Wildlife Habitat 7E Ecoregion Criteria Schedules: Addendum to SWHTG (Working Draft) 2011

6.5.3 Habitats of Species of Conservation Concern

Species of conservation concern include any species that has been designated a provincial species of Special Concern or any species assigned a provincial S-Rank of S1, S2, or S3 (Critically Imperiled, Imperiled, and Vulnerable, respectively). Habitats of species of conservation concern do not include habitats of provincially Endangered or Threatened species, which are addressed in a separate *Approval and Permitting Requirements Document* to satisfy the requirements of the *Endangered Species Act* (2007).

Habitats for species of conservation concern can include specific habitat associations, such as marsh breeding bird habitat or open country breeding bird habitat, but also include preferred habitats for any species (or community) of conservation concern within the project area.

Site investigation revealed that terrestrial crayfish habitat require evaluation of significance; however, Appendix D of the Significant Wildlife Habitat Technical Guide (OMNR 2000) indicates that this candidate significant wildlife habitat should be treated as generalized candidate significant habitat, and will be addressed in the Environmental Impact Study as such. Habitat for two Species of Conservation Concern exists within

the Adelaide project area, including habitat for Carey's sedge and Yellow Stargrass. Evaluation methods for these species will include one site visit during the appropriate bloom period to complete standardized area searches of these habitats, which will follow repeatable protocol in case a second site visit is deemed necessary.

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). 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 8 above.

7.0 Woodlands

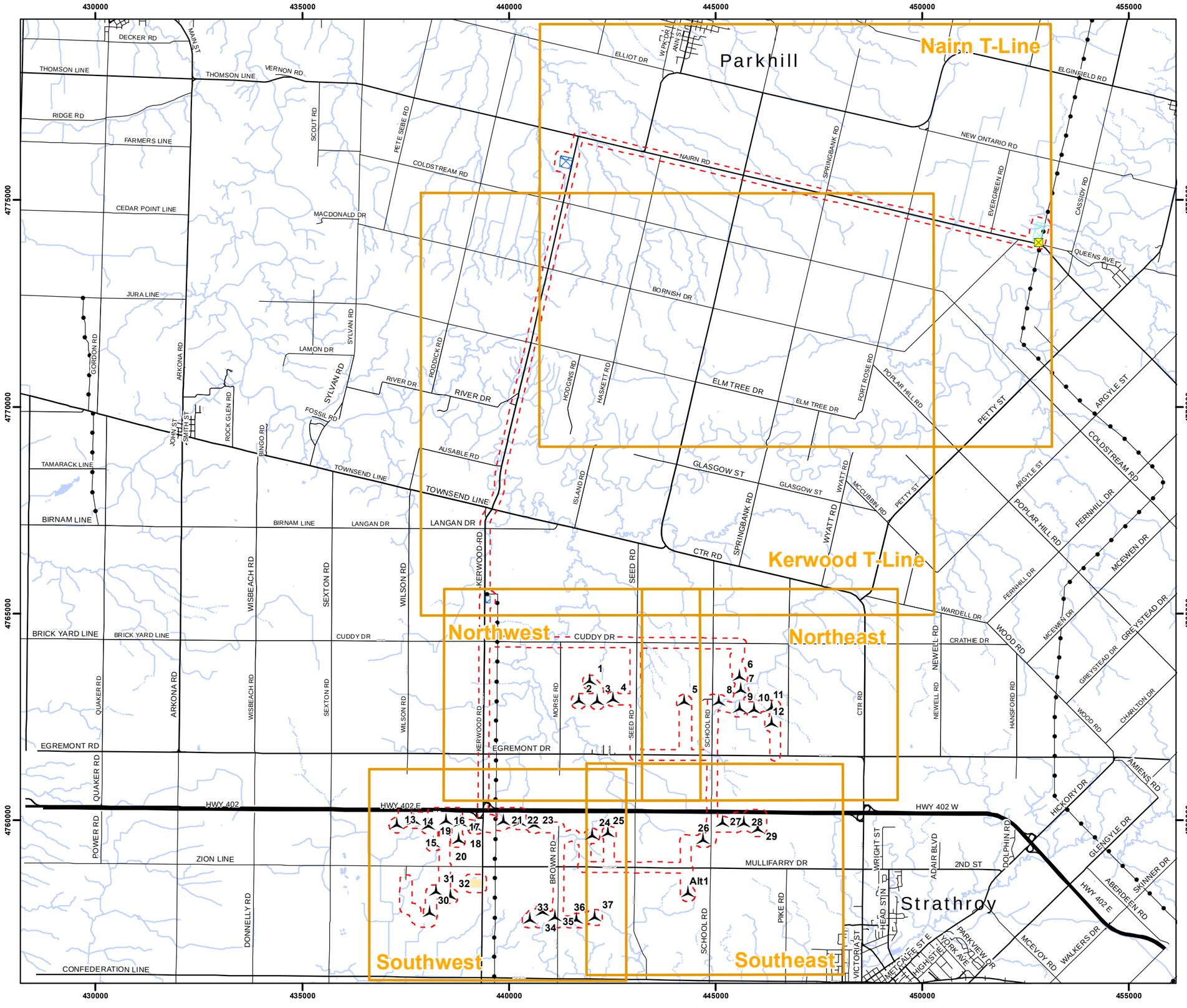
Site-specific field investigations and basemapping have revealed 52 potentially significant woodlands within 120m of the Adelaide Wind Energy Centre project location. Each of these natural features require evaluation of significance in order to determine whether they need to be carried forward to the Environmental Impact Statement (EIS). A summary of the evaluation of significance of these woodlands are provided in Table 9, which also details the specific location of these natural features in relation to project components.

Of the fifty-two woodlands reviewed, 42 were considered significant. These significant woodlands range in size from 0.8ha to 137.2ha. The locations of these woodlands have been mapped in Figures 4-9.

Figure 3

Adelaide Wind Energy Centre

Key Map



Legend

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

Natural Resource Solutions Inc.
Aquatic, Terrestrial and Wetland Biologists

Project: 1230
Date: April 2, 2012

NAD83 - UTM Zone 17
Scale: 1:90,000 (11x17")

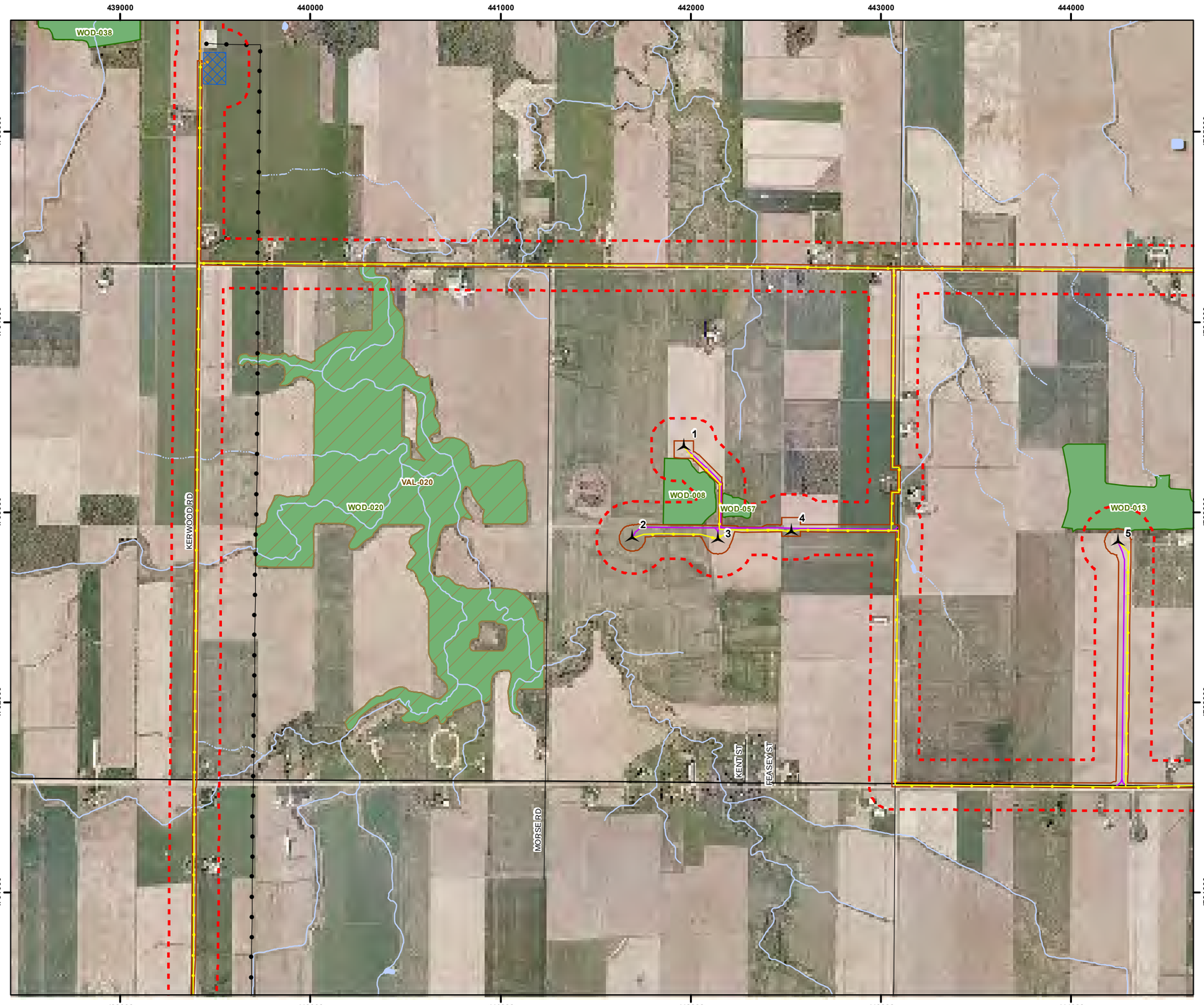
0 1 2 3 4 5 Kilometers

N

Figure 4

Adelaide Wind Energy Centre

Significant Features - Northwest



Legend

- Project Area (120m Buffer)
- Project Location
- Turbine
- Point of Common Coupling (PCC)
- Access Road
- Collector System
- Transmission Line
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Waterbody
- Woodlot (WOD)
- Wetland (WET)
- Valleyland (VAL)

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Aquatic, Terrestrial and Wetland Biologists

Project: 1230
Date: Arpil 2, 2012

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

N

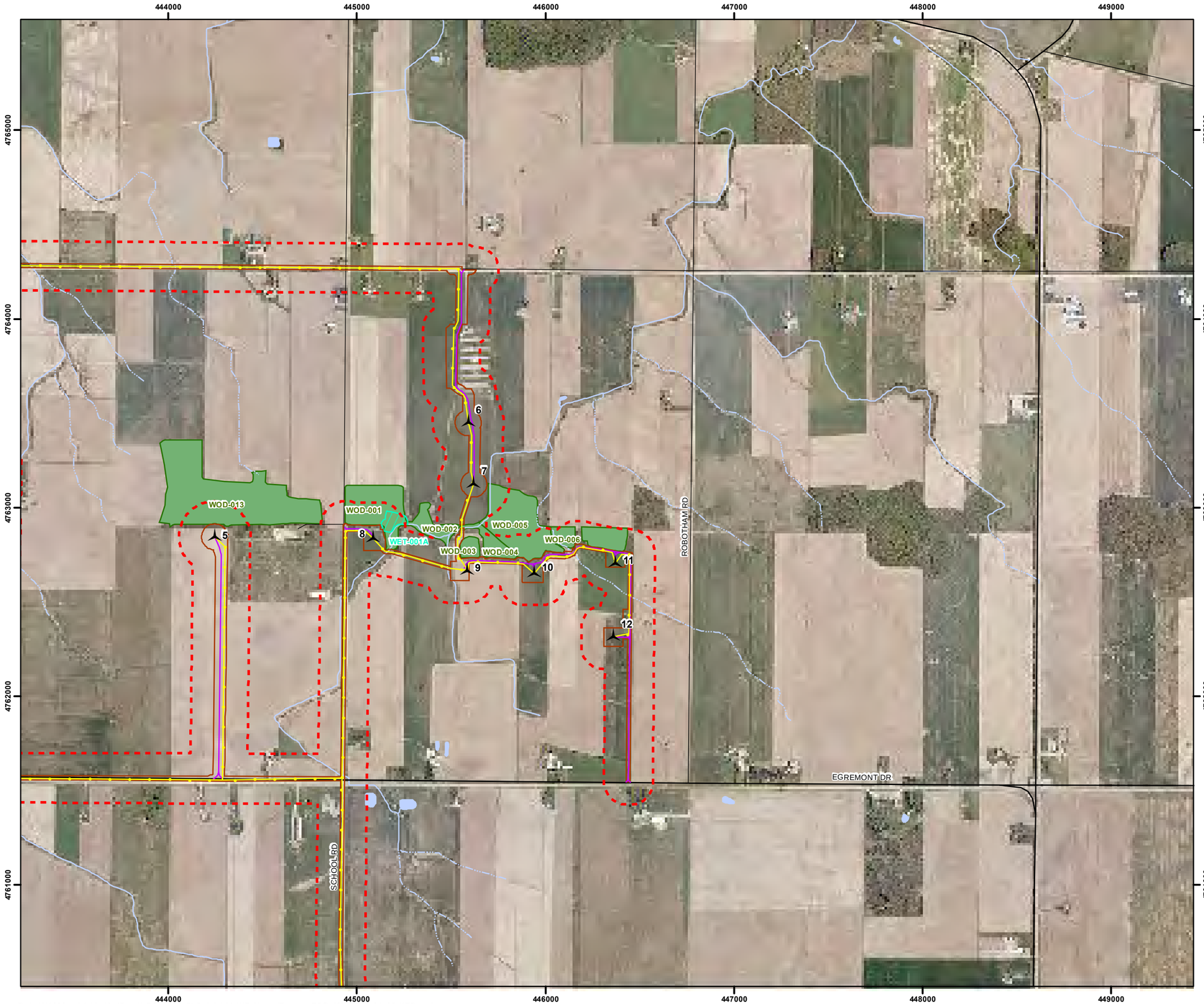
0 200 400 600 800 1,000 Metres

Path: X:\1230_AdelaideWindFarm\NRSI_1230_Fig4_AdelaideWF_NaturalFeaturesEOS_40K_2012_04_02_KEB.mxd

Figure 5

Adelaide Wind Energy Centre

Significant Features - Northeast



Legend

- Project Area (120m Buffer)
- Project Location
- Turbine
- Point of Common Coupling (PCC)
- Access Road
- Collector System
- Transmission Line
- Staging Area
- Interconnection Facilities
- Substation
- Existing Transmission Line
- Railroad
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Waterbody
- Woodlot (WOD)
- Wetland (WET)
- Valleyland (VAL)

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Aquatic, Terrestrial and Wetland Biologists

Project: 1230 Date: April 2, 2012	NAD83 - UTM Zone 17 Scale: 1:20,000 (11x17")

0 200 400 600 800 1,000 Metres

N

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