



## ***North Kent Wind 1 Project*** **Bird and Bat Environmental Effects Monitoring Plan**

Prepared for:

AECOM

105 Commerce Valley Drive West, 7<sup>th</sup> Floor

Markham, ON

L3T 7W3

Project No. 1612 | October 2015



**NATURAL RESOURCE SOLUTIONS INC.**

Aquatic, Terrestrial and Wetland Biologists

***North Kent Wind 1 Project***  
**Bird and Bat Environmental Effects Monitoring Plan**

**Project Team:**

Staff	Role
Andrew G. Ryckman	Project Advisor
Pamela Hammer	Project Manager/Biologist

Report submitted on October 30, 2015



---

Andrew Ryckman  
Senior Terrestrial & Wetland Biologist

## TABLE OF CONTENTS

<b>1.0</b>	<b>Purpose of the Environmental Effects Monitoring Plan .....</b>	<b>1</b>
<b>2.0</b>	<b>Project Overview .....</b>	<b>2</b>
<b>3.0</b>	<b>Post-Construction Monitoring for Significant Wildlife Habitats.....</b>	<b>4</b>
<b>4.0</b>	<b>Post-Construction Monitoring for Bat and Bird Mortality .....</b>	<b>10</b>
4.1	Mortality Thresholds .....	10
4.1.1	Bats .....	10
4.1.2	Birds .....	10
4.2	Post-Construction Monitoring Methods.....	11
4.2.1	Effort and Timing for Bird and Bat Mortality Monitoring .....	11
4.2.2	Carcass Searches.....	13
4.2.3	Carcass Removal Trials .....	14
4.2.4	Searcher Efficiency Trials.....	15
4.2.5	Proportion Area Searched.....	16
4.2.6	Calculations .....	17
4.2.7	Other Considerations .....	18
4.3	Post-Construction Mitigation .....	18
4.3.1	Bats .....	18
4.3.2	Birds .....	19
4.4	Contingency Plans .....	20
4.4.1	Bats .....	20
4.4.2	Birds .....	20
<b>5.0</b>	<b>Species at Risk.....</b>	<b>21</b>
<b>6.0</b>	<b>Reporting Requirements .....</b>	<b>22</b>
<b>7.0</b>	<b>References.....</b>	<b>24</b>

## **List of Tables**

Table 1. Summary of Wildlife Habitats Treated as Significant for the North Kent Wind 1 Project .....	4
Table 2. Summary of the Environmental Effects Monitoring Plan for Wildlife Habitats Treated as Significant for the North Kent Wind 1 Project .....	6
Table 3. Schedule for Post-construction Monitoring Reports Detailing Results of the Environmental Effects Monitoring Plan .....	22
Table 4. Timeline for Reporting Mortality to the Ministry of Natural Resources and Forestry .....	23

## **List of Maps**

Map 1.	Project Area and Natural Features
Map 2.	Key Map
Maps 3-1 to 3-9.	Significant Wildlife Habitats

## **List of Appendices**

Appendix I:	North Kent Wind 1 Project NHA Letter of Confirmation
Appendix II:	Post-Construction Mortality Monitoring Data Sheet Templates

## **1.0 Purpose of the Environmental Effects Monitoring Plan**

An environmental effects monitoring plan (EEMP) must be prepared to address negative environmental effects that may result from engaging in a renewable energy project. The EEMP must set out:

- Performance objectives in respect of the negative environmental effects,
- Mitigation measures to assist in achieving the performance objectives, and
- A program for monitoring negative environmental effects for the duration of the time that the project is engaged in, including a contingency plan to be implemented if any mitigation measures fail.

Furthermore, all Class 3 and 4 wind facilities must prepare an EEMP in respect of birds and bats in accordance with the following publications of the Ministry of Natural Resources and Forestry (MNRF):

- Bats and Bat Habitats: Guidelines for Wind Power Projects (OMNR 2011a)
- Birds and Bird Habitats: Guidelines for Wind Power Projects (OMNR 2011b)

This post-construction monitoring plan is one component of the EEMP submitted to the Ministry of the Environment and Climate Change (MOECC) as part of the Renewable Energy Approval (REA) Application for the Project. This document has been prepared in accordance with Ontario Regulation (O. Reg.) 359/09, MNRF's Bats and Bat Habitats: Guidelines for Wind Power Projects (July 2011) and MNRF's Birds and Bird Habitats: Guidelines for Wind Power Projects (December 2011).

## 2.0 Project Overview

Natural Resource Solutions Inc. (NRSI) was retained in March 2015 by AECOM, on behalf of North Kent Wind 1 LP, by its general partner, North Kent Wind 1 GP Inc. (North Kent Wind 1), to conduct a Natural Heritage Assessment (NHA) in accordance with the REA Regulation, O. Reg. 359/09. This assessment includes a records review, site investigation, evaluation of significance, and environmental impact study of any potentially significant natural features or wildlife habitats at the proposed North Kent Wind 1 Project.

The North Kent Wind 1 Project (Project) is being proposed by North Kent Wind 1. North Kent Wind 1 is a joint venture limited partnership owned by affiliates of Pattern Renewable Holdings Canada ULC (Pattern Development) and Samsung Renewable Energy Inc. (Samsung Renewable Energy). North Kent Wind 1 is proposing to develop the Project north of the City of Chatham in the Municipality of Chatham-Kent, Ontario. The Project Study Area is generally bounded by Oldfield Line to the north, Bear Line Road to the west, Pioneer Line and Pine Line / Darrell Line to the south, and Centre Sideroad and Caledonia Road to the east. The Project will be located primarily on privately owned land with some components (e.g., electrical collector lines) being placed along public right-of-ways, none of which are proposed on provincial Crown land. The installation of up to 50 permitted wind turbines is proposed for this wind energy generating facility, with a nameplate capacity of up to 100 megawatts (MW).

The North Kent Wind 1 Project will consist of the following permanent infrastructure:

- Wind turbines,
- Access roads,
- Collector lines (underground and overhead cabling are both being considered),
- Collector substation,
- Transmission line, as needed,
- Interconnection station, defined as the point of interconnection (POI),
- Operations and maintenance (O&M) building,
- Meteorological towers, and
- Microwave tower.

The North Kent Wind 1 Project will consist of the following temporary infrastructure:

- Laydown areas,
- Crane pads,
- Construction staging area, and

- Construction disturbance areas.

As identified in O. Reg. 359/09, the proposed layout of these project components 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'. See Map 1 for an illustration of the Project Area and natural features.

In accordance with the REA Regulation, NRSI has developed a monitoring program, which is outlined in this report, to assess the potential environmental impacts in respect of birds and bats that may result from engaging in the North Kent Wind 1 Project. This monitoring program has been developed as a follow-up to the North Kent Wind 1 Project NHA Environmental Impact Study (EIS; NRSI 2015).

### 3.0 Post-Construction Monitoring for Significant Wildlife Habitats

The North Kent Wind 1 Project NHA (NRSI 2015) received confirmation by the MNRF's Regional Operations Division on October 30, 2015 (refer to Appendix I). As part of this confirmation, many wildlife habitats have been treated as significant with a commitment for additional pre-construction surveys to be undertaken during the appropriate season prior to any construction activities. In addition to these significant wildlife habitats which require monitoring, the REA Regulation requires that bird and bat post-construction mortality monitoring be conducted at all Class 4 wind facilities. Table 1 provides a summary of potential negative impacts to bird and bat habitats as per the North Kent Wind 1 Project NHA (NRSI 2015), with the exception of post-construction mortality monitoring, which is detailed separately in Section 4.0 of this report.

**Table 1. Summary of Wildlife Habitats Treated as Significant for the North Kent Wind 1 Project**

Habitat Type	Feature ID	Potential Operational Impacts
Bat Maternity Colony	BMA-001 BMA-002	<ul style="list-style-type: none"><li>Habitat disturbance and/or avoidance behavior.</li><li>Direct mortalities through collisions with operational turbines.</li></ul>
Colonially-Nesting Breeding Bird Habitat (Trees/Shrubs)	CBT-001	<ul style="list-style-type: none"><li>Habitat disturbance and/or avoidance behavior.</li><li>Direct mortalities through collisions with operational turbines.</li></ul>
Waterfowl Nesting Area	WFN-001	<ul style="list-style-type: none"><li>Habitat disturbance and/or avoidance behavior.</li><li>Direct mortalities through collisions with operational turbines.</li></ul>
Marsh Bird Breeding Habitat	MBB-001	<ul style="list-style-type: none"><li>Habitat disturbance and/or avoidance behavior.</li><li>Direct mortalities through collisions with operational turbines.</li></ul>
Bird Species of Conservation Concern:  Eastern Wood-Pewee Habitat  Wood Thrush Habitat	EWP-001 (SCC-A) EWP-002 (SCC-M) EWP-003 (SCC-G)  WTH-001 (SCC-C)	<ul style="list-style-type: none"><li>Habitat disturbance and/or avoidance behavior.</li><li>Direct mortalities through collisions with operational turbines.</li></ul>

The location of wildlife habitat treated as significant is mapped on Maps 3-1 to 3-9. The potential negative environmental effects, performance objectives, mitigation strategy, environmental effects monitoring plan, and contingency measures are described in Table 2. The environmental effects monitoring plan for each wildlife habitat treated as significant includes the post-construction survey methods, monitoring locations,



frequency and duration of sample collection, technical and statistical value of the data, and reporting commitments.

Table 2. Summary of the Environmental Effects Monitoring Plan for Wildlife Habitats Treated as Significant for the North Kent Wind 1 Project

Feature ID	Project Component with Operational Impact (within 120m)	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Bird and Bat Environmental Effects Monitoring Plan					Contingency Measure
					Monitoring Methods	Monitoring Locations	Frequency and Duration of Sample Collection *	Technical and Statistical Value of Data	Reporting Requirements †	
BMA-001* BMA-002*  Bat Maternity Colony	Wind Turbine	Avoidance of habitat during operation phase.  Direct mortality through collisions with operational turbines.	Protection of bat maternity colony habitat.	Schedule regular (non-critical) maintenance activities to occur outside of the critical roosting period (June), unless specifically required in accordance with manufacturer specifications.  On site speed limits will be clearly posted, applied, and followed by Project staff throughout the operation phase.  Develop a Bird and Bat EEMP in accordance with MNRF's Bats and Bat Habitats (OMNR 2011a) guidance.**	<p>The presence of suitable cavity trees within BMA-001 could not be verified during the site investigation phase of the Project as site access was denied. As such, no further surveys will be conducted and the habitat will be treated as significant; however, in the event that site access is granted prior to June 2016, a site investigation will be conducted to verify the presence of ≥10 wildlife trees per hectare, measured at ≥25cm diameter at breast height (dbh). If candidate significant habitat is determined to be absent, the habitat will be confirmed not significant. If candidate significant habitat is determined to be present, proposed pre-construction survey methods are identified below.</p> <p>Monitoring sites will be selected within candidate bat maternity colony habitats identified through the site investigation using the criteria outlined in the Bats and Bat Habitats guidelines (OMNR 2011a). A total of 12 suitable cavity trees will be selected within BMA-001 since it is 11.91ha in size. A total of 10 suitable cavity trees will be selected within BMA-002 since it is less than 10ha in size.</p> <p>Following the Bats and Bat Habitat guidelines (OMNR 2011a), exit surveys will be conducted during the month of June. Observers will choose a viewing station with a clear aspect of cavity opening or crevice. Cavity opening or crevice will be monitored from 30 minutes before dusk until 60 minutes after dusk for evidence of bats exiting. An acoustic bat detector paired with a digital recorder will be used in conjunction with visual surveys to determine species. Each candidate tree will only be monitored once. Night-vision or infrared video equipment may be substituted for observers. Once an evening's monitoring is completed (60 minutes after sunset), the cameras will be collected by the staff members conducting visual surveys in the same candidate significant habitat and the visual recordings for each video recorder will be reviewed for evidence of significant bat roosting activity.</p>	The location of the candidate bat maternity colony habitat can be seen on Maps 3-1 to 3-9.  Monitoring locations within this habitat will be determined prior to pre-construction surveys and will be repeated at the same locations during post-construction surveys.	Pre-construction Survey (baseline):  1. Jun 2016  3 years of Post-construction Surveys:  1. Jun 2018 2. Jun 2019 3. Jun 2020	Determine the potential disturbance impact of operational turbines on nearby significant bat maternity roosts.	Annual reports or memos summarizing results will be submitted to the MNRF and MOECC following the anticipated schedule below:  Pre-construction Survey (baseline):  1. Sept 2016  Post-construction Survey:  1. Feb 2019 2. Feb 2020 3. Feb 2021	<p>An annual report, which documents the results of disturbance monitoring, will be prepared following each year that disturbance monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.</p> <p>An annual report, which documents the results of mortality monitoring, will be prepared following each year that mortality monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.</p>

Feature ID	Project Component with Operational Impact (within 120m)	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Bird and Bat Environmental Effects Monitoring Plan					Contingency Measure
					Monitoring Methods	Monitoring Locations	Frequency and Duration of Sample Collection *	Technical and Statistical Value of Data	Reporting Requirements *	
CBT-001*  Colonially-Nesting Breeding Bird Habitat (Trees/Shrubs)	Wind Turbine Access Road	Avoidance of habitat during operation phase.  Direct mortality through collisions with operational turbines.	Protection of colonially-nesting breeding bird habitat (tree/shrub).	Avoid scheduling regular (non-critical) maintenance activities during the breeding season (April-August), wherever possible.  If regular maintenance must occur during breeding season, a biologist will be present to confirm nesting birds will not be impacted by maintenance activities.  On site speed limits will be clearly posted, applied, and followed by Project staff throughout the operation phase.  Develop a Bird and Bat EEMP in accordance with MNRF guidelines (2011b).**	The presence of nest bowls within CBT-001 could not be identified during the site investigation phase of the Project as site access was denied. As such, no further surveys will be conducted and the habitat will be treated as significant; however, in the event that site access is granted prior to April 2016, a site investigation will be conducted to verify the presence of nest bowls within the candidate habitat. If candidate significant habitat is determined to be present, proposed evaluation methods are identified below. If candidate significant habitat is determined to be absent, the habitat will be confirmed not significant.  Surveys will consist of a 15 minute point count during the breeding season from a suitable vantage point located in close proximity to where nest bowls are located, and will occur once in each of April, June, and August. The objective of this survey is to determine if active heron nests are present within the candidate colonially-nesting bird breeding habitat.  All individuals will be recorded along with information on species, behaviour, movement and time observed.	The location of the candidate colonially-nesting breeding bird habitat can be seen on Maps 3-1 to 3-9.  Monitoring locations within this habitat will be determined prior to pre-construction surveys and will be repeated at the same locations during post-construction surveys.	Pre-construction Survey (baseline):  1. Apr-Aug 2016  3 years of Post-construction Surveys:  1. Apr-Aug 2018 2. Apr-Aug 2019 3. Apr-Aug 2020	Determine the potential disturbance impact of operational turbines on colonially-nesting breeding bird habitat (trees/shrubs).	Annual reports or memos summarizing results will be submitted to the MNRF and MOECC following the anticipated schedule below:  Pre-construction Survey (baseline):  1. Sept 2016  Post-construction Survey:  1. Feb 2019 2. Feb 2020 3. Feb 2021	An annual report, which documents the results of disturbance monitoring, will be prepared following each year that disturbance monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.  An annual report, which documents the results of mortality monitoring, will be prepared following each year that mortality monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.
WFN-001*  Waterfowl Nesting Area	Wind Turbine	Avoidance of habitat during operation phase.  Direct mortality through collisions with operational turbines.	Minimize disturbance to waterfowl species.  Minimize the mortality of waterfowl through collisions with operational turbines.	Avoid scheduling regular (non-critical) maintenance activities during the waterfowl nesting season (April-June), if possible.  If regular maintenance must occur during breeding season, a biologist will be present to confirm birds will not be impacted by maintenance activities.  On site speed limits will be clearly posted, applied, and followed by Project staff throughout the operation phase.	The presence of WFN-001 could not be verified during the site investigation phase of the Project as site access was denied. As such, no further surveys will be conducted, and the habitat will be treated as significant; however, in the event that site access changes prior to April 2016, a site investigation will be conducted to verify the presence of suitable permanent open water, in addition to shrubland/grassland or suitable cavity trees for nesting in upland areas >40cm dbh. If candidate significant habitat is determined to be absent, the habitat will be confirmed not significant. If candidate significant habitat is determined to be present, proposed evaluation methods are identified below.  Area searches will be conducted within the candidate waterfowl nesting area. This method will involve walking the perimeter of the wetland and counting all observable waterfowl using the wetlands.	The location of the candidate waterfowl nesting area habitat can be seen on Maps 3-1 to 3-9.  Monitoring locations within this habitat will be determined prior to pre-construction surveys and will be repeated at the	Pre-construction Survey (baseline):  1. Apr-Jun 2016  3 years of Post-construction Surveys:  1. Apr-Jun 2018 2. Apr-Jun 2019 3. Apr-Jun 2020	Determine the potential disturbance impact of operational turbines on waterfowl nesting habitat.	Annual reports or memos summarizing results will be submitted to the MNRF and MOECC following the anticipated schedule below:  Pre-construction Survey (baseline):  1. Sept 2016  Post-construction Survey:  1. Feb 2019 2. Feb 2020	An annual report, which documents the results of disturbance monitoring, will be prepared following each year that disturbance monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.

Feature ID	Project Component with Operational Impact (within 120m)	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Bird and Bat Environmental Effects Monitoring Plan					Contingency Measure
					Monitoring Methods	Monitoring Locations	Frequency and Duration of Sample Collection *	Technical and Statistical Value of Data	Reporting Requirements *	
				Develop a Bird and Bat EEMP in accordance with MNRF guidelines (OMNR 2011b).**	<p>Surveys will be conducted on 3 separate visits, once in each of April, May, and June, to capture both early and late nesting species.</p> <p>Surveys will be carried out during the early morning (sunrise to 4 hours after sunrise). All individuals will be recorded along with information on species, behaviour, movement and time observed. Optimal weather conditions for these surveys are clear, sunny days with little to no precipitation. Surveys will be postponed and re-scheduled if poor weather conditions are encountered, specifically if high winds or heavy precipitation is noted.</p>	same locations during post-construction surveys.			3. Feb 2021	An annual report, which documents the results of mortality monitoring, will be prepared following each year that mortality monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.
MBB-001*  Marsh Bird Breeding Habitat	Wind Turbine	<p>Avoidance of habitat during operation phase.</p> <p>Direct mortality through collisions with operational turbines.</p>	<p>Minimize disturbance to marsh breeding birds.</p> <p>Minimize marsh bird mortalities from collisions with operational turbines.</p>	<p>Schedule regular (non-critical) maintenance activities to occur outside of the marsh bird breeding season (mid-May to early July), wherever possible.</p> <p>If regular maintenance must occur during this breeding season (mid-May to early July), have a biologist confirm birds will not be impacted by maintenance activities.</p> <p>On site speed limits will be clearly posted, applied, and followed by Project staff throughout the operation phase.</p>	<p>Surveys will be conducted at the one candidate significant marsh bird breeding habitat within the Project Area. Surveys will consist of a 15 minute point count during the breeding season, occurring twice between mid-May and early July, occurring no less than 10 days apart, following the accepted Marsh Monitoring Program protocol (Bird Studies Canada 2009). Each survey will be conducted in the morning (beginning 30 minutes before sunrise and ending no later than 1000hrs) or evening (occurring no earlier than 4 hours before sunset and ending before dark), when marsh birds are actively nesting in wetland habitats.</p> <p>Each survey will be conducted under near optimal weather conditions, on clear, warm (at least 16°C) evenings, with no precipitation and little or no wind.</p> <p>Point counts will be conducted within the habitat where site access has been granted, or from the property adjacent to the habitat, where site access has not been granted. Each point count will last for 15 minutes, and will be sub-divided into three 5 minute components: a 5 minute passive (silent) observation period, a 5 minute call playback period, and a second 5 minute passive observation period.</p> <p>If candidate significant habitat (shallow water with emergent aquatic vegetation) is determined to be not present on the first site visit, no specific studies will be conducted and the habitat(s) will be confirmed not significant.</p>	<p>The location of the candidate marsh bird breeding habitat can be seen on Maps 3-1 to 3-9.</p> <p>Monitoring locations at this habitat will be determined prior to pre-construction surveys and will be repeated at the same locations during post-construction surveys.</p>	<p>Pre-construction Survey (baseline):</p> <p>1. May-Jul 2016</p> <p>3 years Post-construction Surveys:</p> <p>1. May-Jul 2018 2. May-Jul 2019 3. May-Jul 2020</p>	<p>Determine the potential disturbance impact of operational turbines on marsh bird breeding habitat.</p>	<p>Annual reports or memos summarizing results will be submitted to the MNRF and MOECC following the anticipated schedule below:</p> <p>Pre-construction Survey (baseline):</p> <p>1. Sept 2016</p> <p>Post-construction Survey:</p> <p>1. Feb 2019 2. Feb 2020 3. Feb 2021</p>	<p>An annual report, which documents the results of disturbance monitoring, will be prepared following each year that disturbance monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.</p> <p>An annual report, which documents the results of mortality monitoring, will be prepared following each year that mortality monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.</p>

Feature ID	Project Component with Operational Impact (within 120m)	Potential Negative Environmental Effects	Performance Objective	Mitigation Strategy	Bird and Bat Environmental Effects Monitoring Plan					Contingency Measure
					Monitoring Methods	Monitoring Locations	Frequency and Duration of Sample Collection ‡	Technical and Statistical Value of Data	Reporting Requirements ‡	
Bird Species of Conservation Concern: EWP-001 (SCC-A)* EWP-002 (SCC-M)* EWP-003 (SCC-G)* Eastern Wood-Pewee Habitat  WTH-001 (SCC-C)* Wood Thrush Habitat	Wind Turbine	Avoidance of habitat during operation phase.  Direct mortality through collisions with operational turbines.	Minimize noise disturbance/avoidance behavior of bird species of conservation concern.  Minimize the mortality of bird species of conservation concern from collisions with operational turbines.	Schedule regular (non-critical) maintenance activities located within 30m of significant bird species of conservation concern habitat to occur outside of the breeding bird season (May 1 <sup>st</sup> – July 31 <sup>st</sup> ), whenever possible.  If regular maintenance must occur during the breeding bird period (May 1 <sup>st</sup> – July 31 <sup>st</sup> ), have a biologist confirm birds will not be impacted by maintenance activities.  On site speed limits will be clearly posted, applied, and followed by Project staff throughout the operation phase.  Develop a Bird and Bat EEMP in accordance with the Birds and Bird Habitat Guidelines (OMNR 2011b).**	Ten-minute point count surveys will be conducted within each of the candidate habitats for bird species of conservation concern in June and early July. Each point count station will be surveyed 3 times during early, mid and late season (spring and early summer) no less than 10 days apart.  The number of point counts required within each habitat depends on the size and habitat diversity at each site. Following the Birds and Bird Habitat Guidelines for Wind Power Projects (OMNR 2011b), point counts will be spaced at least 250m apart, ideally with the centre point at least 100m from the habitat edge. If more than one point count will be conducted within the habitats, a standardized transect will also be conducted between point count sites.  Surveys will be conducted between dawn (one half hour before sunrise) and 3 hours after sunrise. These surveys will occur during a time period when males are expected to be actively singing and defending territories.  Days with high wind speeds and rain will be avoided. During each visit, the highest observed breeding evidence will be recorded for each species.	The location of each of the candidate habitats for bird species of conservation concern can be seen on Maps 3-1 to 3-9.  Monitoring locations within these habitats will be determined prior to pre-construction surveys and will be repeated at the same locations during post-construction surveys.	Pre-construction Survey (baseline):  1. Jun-Jul 2016  3 years Post-construction Surveys:  1. Jun-Jul 2018 2. Jun-Jul 2019 3. Jun-Jul 2020	Determine the potential disturbance impact of wind turbines on significant habitat for bird species of conservation concern.	Annual reports or memos summarizing results will be submitted to the MNRF and MOECC following the anticipated schedule below:  Pre-construction Survey (baseline):  1. Sept 2016  Post-construction Survey:  1. Feb 2019 2. Feb 2020 3. Feb 2021	An annual report, which documents the results of disturbance monitoring, will be prepared following each year that disturbance monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.  An annual report, which documents the results of mortality monitoring, will be prepared following each year that mortality monitoring occurs. The report will be submitted to MNRF and the results presented in these annual reports will be used to determine if any additional mitigation measures should be implemented during the operational phase of this Project to further protect this habitat.

‡ Actual post-construction monitoring (and reporting) timelines are subject to change if there are modifications to the construction schedule; however, post-construction surveys will occur during the correct seasonality and during the first year following the completion of construction activities.

\* Only if these habitats are determined to be significant through pre-construction surveys.

\*\* The detailed Post-construction Monitoring Plan for bird and bat mortality is provided in Section 4.0 of this report.

## **4.0 Post-Construction Monitoring for Bat and Bird Mortality**

Post-construction mortality surveys are required for all Class 3 and 4 wind power projects. This Post-Construction Monitoring Plan is one component of the EEMP of the REA application for the North Kent Wind 1 Project, and has been prepared in accordance with MNRF's Bats and Bat Habitats: Guidelines for Wind Power Projects (July 2011) and MNRF's Birds and Bird Habitats: Guidelines for Wind Power Projects (December 2011).

### **4.1 Mortality Thresholds**

A threshold approach, consistent with MNRF guidelines, will be used to identify and mitigate significant bat and bird mortality resulting from the operation of wind turbines.

#### **4.1.1 Bats**

Bat mortality is considered significant when a threshold of annual bat mortality (averaged across the site) exceeds:

- 10 bats/turbine/year.

This threshold has been determined based on bat mortality reported at wind power projects in Ontario and through a comparison with other jurisdictions across North America.

#### **4.1.2 Birds**

Bird mortality is considered significant when a threshold of annual bird mortality exceeds:

- 14 birds/year at individual turbines or turbine groups,
- 0.2 raptors/turbine/year (all raptors) across a wind power project, or
- 0.1 raptors/turbine/year (provincially tracked raptors) across a wind power project.

Provincially tracked raptors are defined as raptors of provincial conservation concern by MNRF's Natural Heritage Information Centre, and include those considered as a species of Special Concern in Ontario or with a provincial status of S1-S3, indicating sensitive populations within Ontario.

## 4.2 Post-Construction Monitoring Methods

Post-construction bat and bird mortality surveys estimate bird and bat mortality from wind turbines and may identify species and specific periods of high mortality. This knowledge can be used to evaluate the success of mitigation measures, establish protocols for operational mitigation, and inform adaptive management.

Bat and bird mortality surveys identify the number of bats or birds killed per turbine over a known period of time (expressed as bats/turbine/year or birds/turbine/year). This value represents an estimate of bat and bird mortality adjusted for carcass removal rates, searcher efficiency, and percent area searched. Standard methods for mortality surveys are identified below.

For bats and birds, a monitoring year is considered to be from May 1 – October 31, and continues until November 30 specifically for raptor monitoring. Bat and non-raptor bird mortality data collected during the weekly raptor survey period in November will not be included in detailed bat and bird mortality estimates.

Post-construction monitoring is required for 3 years at all Class 3 and 4 wind power projects. Post-construction monitoring will consist of:

- Regular bat/bird mortality surveys around specific wind turbines,
- Monitoring of bat/bird carcass removal rate by scavengers (or other means),
- Monitoring of bat/bird searcher efficiency (i.e. number of bat/bird fatalities present that are actually detected by surveyors),
- Avoidance-disturbance effects monitoring (where the Project is located within 120m of bird/bat significant wildlife habitat),
- For birds, 2 subsequent years of scoped mortality and cause and effects monitoring at individual turbines (and unmonitored turbines in near proximity) following any given year where an annual post-construction mortality report identifies significant bird or raptor mortality, and
- For bird/bats, an additional 3 years of effectiveness monitoring where mitigation is applied.

All searchers will have updated rabies pre-exposure vaccinations, or will follow an alternative safety protocol for minimizing risks associated with potential incidental contact with animals which may have been exposed to the rabies virus.

### 4.2.1 Effort and Timing for Bird and Bat Mortality Monitoring

Minimum requirements for post-construction monitoring of bats include:

- Post-construction monitoring (including mortality surveys, carcass removal and searcher efficiency trials) will be conducted during the core season when bats are active, and in coordination with bird mortality monitoring (May 1 - October 31) for the first 3 years of wind turbine operation.
- Mortality surveys will be conducted at each monitored turbine twice per week (3 and 4 day intervals) from May 1 – October 31; surveys for raptor mortality will be continued once per week from November 1 – November 30.
- Bat and bird mortality surveys will occur at a sub-sample of at least 30% of installed turbines. Turbines will be selected to cover representative areas throughout the Project Location.
- For birds, all turbines within the Project Location will be monitored once a month during the May 1 - October 31 survey period for evidence of raptor mortalities.
- Where significant annual bird mortality is identified, subsequent scoped mortality and cause effects monitoring will be conducted for 2 years at individual turbines (and unmonitored turbines in near proximity).
- Should significant bat or bird mortality be observed, and operational mitigation implemented, post-construction monitoring will be conducted for an additional 3 years from the implementation of operational mitigation to evaluate the effectiveness of the mitigation.
- The results of weekly November surveys and monthly surveys at turbines not part of the regularly searched sub-sample (if applicable) will not be included in any annual mortality estimates.

The total number of turbines required for monitoring will meet the minimum requirement of 30% of the installed turbines, and therefore the final number selected will be based on number of installed turbines. The turbines will be selected to cover representative areas throughout the Project Location, with a map of final selections provided to MNRF prior to the onset of the monitoring program. A total of 50 proposed turbine locations have been permitted for the North Kent Wind 1 Project, although approximately 40 wind turbines are proposed to be installed for the Project. The subset of turbines chosen for monitoring cannot be selected until the specific number and location of turbines are finalized, following the construction phase of the Project. In accordance with provincial guidelines, the turbine selection will be completed in a defensible manner and will consider factors such as geographic representation, proximity to natural features, significant wildlife habitats, etc. Post-construction monitoring will begin on May 1<sup>st</sup> after the Project is fully operational. The commercial operation date of the North Kent Wind 1 Project is expected to be in late 2017; therefore, it is anticipated that post-construction monitoring will begin May 1, 2018.

If full Project commissioning is delayed, post-construction monitoring of the partially completed Project will not be delayed for longer than 1 year. If the Project is constructed



in phases, monitoring for each phase will coincide with the commencement of operation of that phase. When available, post-construction monitoring data may be useful in considering potential effects on bats and bat habitat in adjacent phases.

#### 4.2.2 Carcass Searches

Carcass removal by scavengers is highly variable among sites (varying by vegetation cover, terrain and season) and must be considered when estimating total bat and bird mortality. Carcass searches will consider the following:

- The sub-sample of wind turbines that are monitored will include a representative sample of habitat types and significant wildlife habitat present at the site, and will cover the spatial distribution of the wind turbines. Wind turbines will be selected through a scientifically defensible system (e.g. stratification).
- The time required to search each turbine will vary depending on the surrounding habitat (e.g. open field vs. forest, etc.) and individual searchers, but searchers will search for a consistent search time for all surveyed turbines (e.g. 20 minutes per turbine).
- Each surveyed turbine will have a search area that has a 50m radius.
- Within this 50m radius, the search area will be examined using transects 5-6m apart, allowing for a visual search of approximately 3m on each side. The search area may be rectangular, square or circular depending on turbine locations and arrangements and surrounding terrain.
- The search area of each turbine will be mapped into visibility classes according to the following table. Where the majority of the search area would not be searchable due to vegetation cover or other impediments (e.g. Visibility Class 4), these turbines may be purposefully avoided during the selection of the sub-sample of monitored turbines.

<b>%Vegetation Cover</b>	<b>Vegetation Height</b>	<b>Visibility Class</b>
≥90% bare ground	≤15cm tall	Class 1 (Easy)
≥25% bare ground	≤15cm tall	Class 2 (Moderate)
≤25% bare ground	≤25% > 30cm tall	Class 3 (Difficult)
Little or no bare ground	≥25% > 30cm tall	Class 4 (Very Difficult)

- Where possible, ground cover around turbines will be maintained at a low level in order to facilitate more accurate bat and bird mortality surveys.
- Mortality surveys that incorporate the use of trained dogs (i.e., dog handler teams to locate mortalities) to improve searcher efficiency may be considered, particularly in difficult terrain.
- All carcasses found will be photographed and recorded/labeled with species (if possible), sex (if possible), date, time, location (UTM coordinates), carcass condition, searcher, any apparent/external injuries, ground cover, and distance and direction to nearest turbine.
- Weather conditions including wind speed and precipitation will be included as part of the data collection.
- The estimated number of days since death, and condition of each carcass collected will be recorded in one of the following categories:

- Fresh
- Early decomposition
- Moderate decomposition
- Advanced decomposition
- Complete decomposition
- Scavenged
- Bird carcasses found during mortality monitoring will be collected and stored in a freezer and used in carcass removal or searcher efficiency trials, assuming they are in reasonable condition.
- Carcasses of the following species found during bat mortality searches will be stored in a freezer and used in carcass removal or searcher efficiency trials, assuming they are in reasonable condition:
  - *Lasionycteris noctivagans* (silver-haired bat)
  - *Lasiurus cinereus* (hoary bat)
  - *Lasiurus borealis* (eastern red bat)
- Because of white-nose syndrome contamination risks, the following species will not be used in carcass removal or searcher efficiency trials (carcasses of these species may be sent to the Canadian Cooperative Wildlife Health Centre for analysis of white-nose syndrome):
  - *Myotis septentrionalis* (northern myotis)
  - *Myotis lucifugus* (little brown myotis)
  - *Myotis leibii* (eastern small-footed myotis)
  - *Perimyotis subflavus* (tricolored bat)
  - *Eptesicus fuscus* (big brown bat)

#### 4.2.3 Carcass Removal Trials

The level of carcass scavenging must be determined through carcass removal trials. In these trials, carcasses are placed around the wind turbines and monitored until they disappear. The average carcass removal time is a factor in determining the estimated bat or bird mortality. As carcass removal rates vary considerably from one site to another and seasonally, removal trials will be conducted at every wind power project for every year of monitoring.

Below are some important considerations for conducting carcass removal rate trials:

- Carcass removal trials will be conducted at least once a season, including spring (May/June), summer (July/August), and fall (September/October) during the same period as the mortality surveys. Trials will be conducted more frequently (i.e. once per month) if vegetation changes occur during the season (e.g. crops grow, harvest, etc.).
- A minimum of 10 carcasses will be used for each trial. A maximum of 5 trial carcasses will be placed at any one time to avoid flooding the area with carcasses.
- Carcasses will be monitored every 3-4 days in conjunction with regular carcass searches.

- Carcass removal trials will be conducted in a variety of weather conditions. Weather conditions will be recorded.
- Carcasses will be distributed across the range of different substrates/habitats and visibility classes of turbines being searched.
- To the extent possible, carcass removal trials will be conducted at turbines that are not part of the carcass search sub-sample.
- Carcasses will be placed before dusk using gloves and boots to avoid imparting human smell that might bias trial results (e.g. attract scavengers, etc).
- Trials will continue until all carcasses are removed or have completely decomposed, for a minimum of 2 weeks (14 days).
- To avoid confusion with turbine related fatalities, trial carcasses will be discretely marked (e.g., clipping of ear, wing, fur; hole punching ear; etc.) with a unique identification so they can be identified as trial carcasses.
- Carcasses used will be as fresh as possible, since frozen or decomposed carcasses are less attractive to scavengers. If frozen carcasses are used, they will be thawed prior to beginning carcass removal trials.
- To the extent possible, bat carcasses will be used for at least one third of the carcass removal trials, and bird carcasses will comprise another third of the trial carcasses. Trials using other small brown mammal or bird carcasses (e.g., mice, brown chicks) may also be used when bird and bat carcasses are not available.
- Scavenging rates may change over time as scavengers become aware of and develop search images for new sources of food beneath turbines.
- Scavenging will be determined on a project-specific basis and rates will not be assumed to be similar between sites or used in calculations for other projects.

#### 4.2.4 Searcher Efficiency Trials

Searcher efficiency is another important factor in creating an estimate of total bat and bird mortality. Searcher efficiency trials require a known number of discretely marked carcasses to be placed around a wind turbine. Searchers examine the wind turbine area, and the number of carcasses that they find is compared to the number of carcasses placed. Searcher efficiency will vary considerably for each searcher and from one site to another (varying by vegetation cover, terrain and season), and will be conducted as part of post-construction monitoring at every wind power project for every year of monitoring.

Below are some important considerations for conducting searcher efficiency trials:

- Searcher efficiency trials will be conducted at least once a season (following the same general seasonal periods as identified in Section 4.2.3) during the same period as the mortality surveys. Trials will be conducted once per month if vegetation changes occur during the season (e.g., crops grow, harvest, etc.).
- A 'tester' will control the trials and return to collect marked trial carcasses at the completion of the trials to determine the number of carcasses remaining and if any carcasses were scavenged or removed during the trial.

- Searcher efficiency trials are to be conducted for each individual searcher or team involved in searching for carcasses (including teams using dogs). The searcher will not be notified when they are participating in an efficiency trial to avoid potential search biases.
- A minimum of 10 carcasses per searcher per season (following the same general seasonal periods as identified in Section 4.2.3) in all applicable visibility classes (see table in Section 4.2.2) are to be used. The average per searcher across all visibility classes will be used for calculations.
- Trial carcasses will be spread out over the trial period (month or season) and conducted with the mortality surveys. A maximum of 5 trial carcasses will be placed at any one time (no more than 2 at any single turbine) to avoid bias and flooding the area with carcasses. *This approach deviates slightly from provincial guidelines which states a maximum of 3 carcasses will be placed at one time; however, for large projects where numerous turbines are being searched, the potential for carcass 'flooding' or searcher bias are of little concern.*
- Trial carcasses are placed for one search day only and then removed and recorded by the 'tester'.
- Trial carcasses will be randomly placed within the search area and location recorded so that they can be retrieved if they are not found during the trial.
- Trial carcasses will be discreetly marked (e.g., clipping of ear, wing, leg, fur; hole-punching ear; etc.) with a unique identification so that they can be identified as a trial carcass by the tester.
- To the extent possible, bat carcasses will be used for at least one third of the carcass removal trials, and bird carcasses will comprise another third of the trial carcasses. Trials using other small brown mammal or bird carcasses (e.g., mice, brown chicks) may also be used when bird and bat carcasses are not available.
- If frozen carcasses are used, they will be thawed prior to beginning searcher efficiency trials.
- All observers, even those with trained dogs, will overlook some carcasses. This percentage will vary depending on the observer, the habitat and the area being searched, etc.

#### 4.2.5 Proportion Area Searched

Based on current Ontario post-construction data, most bats and birds appear to fall within 50m of a wind turbine base. This area therefore represents the maximum recommended search area. Since it may not always be possible to search the entire 50m radius because of the presence of thick or tall vegetation, steep slopes, active cultivation, etc. the actual area searched during the mortality surveys will be calculated at each turbine, using a GPS. A map of the actual search area for each turbine searched, and a description of areas deemed to be unsearchable (e.g. vegetation height, type, slope, etc.), will be provided in the mortality report.

#### 4.2.6 Calculations

##### Scavenger Correction Factor

The following formula will be used to calculate the overall scavenger correction ( $S_c$ ) factors based on the proportion of carcasses remaining after each search interval are pooled:

$$S_c = \frac{n_{\text{visit1}} + n_{\text{visit2}} + n_{\text{visit3}}}{n_{\text{visit0}} + n_{\text{visit1}} + n_{\text{visit2}}}$$

Where,

$S_c$  is the proportion of carcasses not removed by scavengers over the search period,  
 $n_{\text{visit0}}$  is the total number of carcasses placed, and  
 $n_{\text{visit1}} - n_{\text{visit3}} \dots$  are the numbers of carcasses on visits 1 through 3.

##### Searcher Efficiency

Searcher efficiency ( $S_e$ ) will be calculated for each searcher as follows:

$$S_e = \frac{\text{number of test carcasses found}}{\text{Number of test carcasses placed} - \text{number of carcasses scavenged}}$$

The number of turbines that each individual searches will vary, so it will be necessary to calculate a weighted average that reflects the proportion of turbines each searcher searched. The weighted average or overall searcher efficiency will be calculated as follows:

$$S_{e0} = S_{e1}(n_1/T) + S_{e2}(n_2/T) + S_{e3}(n_3/T) \dots$$

Where,

$S_{e0}$  is the overall searcher efficiency,  
 $S_{e1}$  and  $S_{e2}$  and  $S_{e3} \dots$  are individual searcher efficiency ratings,  
 $n_1$  and  $n_2$  and  $n_3 \dots$  are number of turbines searched by each searcher, and  
 $T$  is the total number of turbines searched by all searchers.

##### Proportion Area Searched

Proportion area searched ( $P_s$ ) is calculated as follows:

$$P_s = \frac{\text{actual area searched}}{\pi r^2}$$

Where  $r = 50\text{m}$ .

## Corrected Mortality Estimates

The minimum estimated bat mortality (C) is calculated as follows:

$$C = c / (S_{e0} \times S_c \times P_s)$$

Where,

- C is the corrected number of bat fatalities,
- c is the number of carcasses found,
- $S_{e0}$  is the weighted proportion of carcasses expected to be found by searchers (overall searcher efficiency),
- $S_c$  is the proportion of carcasses not removed by scavengers over the search period, and
- $P_s$  is the proportion of the area searched.

### 4.2.7 Other Considerations

- The above calculations will be presented in corrected number of bats/turbine per year and birds/turbine per year. In this context, the year is from May 1 to October 31 for all bats and birds (non-raptors). The year continues until November 30 specifically for raptor monitoring, but any bat or non-raptor bird mortality data collected in November will be treated as incidental observations in the annual report and will not be included in bat and bird (non-raptor) estimated mortality calculations for the year.
- Should additional bird or bat mortality be reported through supplemental monitoring (e.g., associated with significant wildlife habitat) and using the same standard protocols, these mortalities should be included in the calculation of mortality rates. In this case, a monitoring year will be defined as all reporting periods in a calendar year.
- Bird carcasses may be discovered incidental to formal searches. These carcasses will be processed (i.e., collected and recorded, etc.) and fatality data will be included with the calculation of fatality rates. If the incidentally discovered carcass is found outside a formal search plot, the data will be reported separately.
- Tissue samples from bat and bird carcasses may be used in a number of DNA analyses to provide insight into population size and structure, as well as the geographic origin of migrants. The local MNRF office may be contacted prior to disposing of bat and bird carcasses to determine if this type of research is occurring in the area.

## 4.3 Post-Construction Mitigation

### 4.3.1 Bats

Operational mitigation is required if post-construction monitoring shows that a wind power project is causing significant bat mortality. Bat mortality is considered significant when mortality levels at a Project Location exceed 10 bats/turbine/year.

Operational mitigation refers to adjustments made to the operation of wind turbines to help mitigate potential negative environmental effects on bats (i.e., significant bat mortality). Operational mitigation for bat mortality consists of changing the wind turbine cut-in speed to 5.5 m/s (measured at hub height), or feathering of wind turbine blades when wind speeds are below 5.5 m/s.

The majority of bat mortalities from wind turbine operations occur during fall migration. Across North America, it is estimated that 90% of bat fatalities occur from mid-July through September. Where a post-construction monitoring annual report indicates that the annual bat mortality threshold of 10 bats/turbine/year has been exceeded, operational mitigation will be implemented across the wind power project (i.e., at all turbines) from sunset to sunrise, from July 15 to September 30. This mitigation will continue for the duration of the project. Should site-specific monitoring indicate a shifted peak mortality period, operational mitigation may be shifted to match the peak mortality, with mitigation maintained for a minimum 10 weeks. Any shift in the operational mitigation period to match peak mortality should be determined in coordination with and confirmed by MNRF.

Where post-construction mitigation is applied, an additional 3 years of mitigation effectiveness monitoring is required. Monitoring the effectiveness of any post-construction mitigation techniques will help to evaluate the success of this mitigation.

#### 4.3.2 Birds

Post-construction mitigation or additional scoped monitoring will be required at individual turbines or groups of turbines where post-construction monitoring identifies significant annual bird mortality, disturbance effects associated with bird significant wildlife habitat, or significant bird mortality events.

For turbines located outside 120m of bird significant wildlife habitat, 2 years of subsequent scoped mortality and cause and effects monitoring is required where a significant annual mortality threshold has been exceeded. Following scoped monitoring, post-construction monitoring (e.g., operational mitigation) and effectiveness monitoring may be required at individual turbines where a mortality effect has been identified or significant annual mortality persists.

For turbines located within 120m of bird significant wildlife habitat, immediate post-construction mitigation (including operational mitigation), as identified in the EIS, and 3 years of effectiveness monitoring will be required where monitoring identifies significant annual bird mortality or disturbance effects associated with bird significant wildlife habitat.

Operational mitigation techniques may include periodic shut-down of select turbines and/or blade feathering at specific times of the year when mortality risks to the affected bird species is particularly high (e.g., migration). Emerging and new technologies will be considered that may reduce bird fatalities.

#### 4.4 Contingency Plans

A contingency plan addresses immediate actions necessary in case of a significant bat or bird mortality event, or if mitigation actions fail. A contingency plan allows additional mitigation measures to be implemented in the event that unanticipated negative environmental effects are observed during a single mortality monitoring survey.

##### 4.4.1 Bats

Should cut-in speed mitigation be implemented and the bat mortality threshold continue to be exceeded, additional mitigation and scoped monitoring requirements will be determined in consultation with MNRF.

##### 4.4.2 Birds

A significant bird mortality event is defined to have occurred when bird mortality during a single mortality monitoring survey (as observed in the field on a single day) exceeds:

- 10 or more birds at any one turbine, or
- 33 or more birds (including raptors) at multiple turbines.

*NOTE: These numbers are actual carcasses found (not corrected numbers)*

The MNRF will be notified within 48 hours of observation, or no later than 2 business days, if one of the thresholds above is exceeded during a single mortality monitoring survey. MNRF will be consulted to determine appropriate contingency plans should a significant bird mortality event occur or if mitigation actions fail.



## **5.0 Species at Risk**

The Species at Risk in Ontario List (O. Reg. 230/08) will be consulted to determine species listed as Endangered and Threatened in Ontario. Mortality or injury of an Endangered or Threatened species will be reported to the MNRF within 24 hours (or next business day) of a confirmed identification of a Species at Risk. Due to the possibility of encountering decomposed or scavenged carcasses, a confirmed identification may sometimes take several days from the date of first observation/collection.

## 6.0 Reporting Requirements

Reporting requirements for significant wildlife habitats are summarized in Table 2. All mortality data collected during post-construction monitoring will be submitted in accordance with MNRF data standards and templates. Post-construction reports will be prepared and submitted as per Table 3.

**Table 3. Schedule for Post-construction Monitoring Reports Detailing Results of the Environmental Effects Monitoring Plan**

Monitoring Year	Report Submission Date
Year 1: May 1 – Nov 30, 2018	February 2019
Year 2: May 1 – Nov 30, 2019	February 2020
Year 3: May 1 – Nov 30, 2020	February 2021

If additional years of monitoring are required, the additional report submissions will follow a similar schedule as listed above.

All bat and bird monitoring data and associated reports will be submitted to the MOECC and MNRF, consistent with MNRF's procedures and protocols, and satisfy the data standards and requirements of the Wind Energy Bird and Bat Monitoring Database (see Appendix II for data template). Bat survey data submitted will be entered by the MNRF into the database, analyzed, reported and used to address knowledge gaps and create public data summaries. Standardized templates available online through the Wind Energy Bird and Bat Monitoring Database found at [http://www.bsc-eoc.org/birdmon/wind/wind\\_templates.jsp](http://www.bsc-eoc.org/birdmon/wind/wind_templates.jsp) will be used to record and report all field data. Other similar data sheets may be used, providing they allow for the collection and submission of the same data as the templates identified above. All data sheet templates are provided in Appendix II.

Reports will also include maps of areas searched for each surveyed turbine and raw data for all carcass searches, searcher efficiency trials and carcass removal trials will be submitted as part of the annual report.

A summary of when information about a particular mortality event or threshold is reported to MNRF is included in Table 4.

**Table 4. Timeline for Reporting Mortality to the Ministry of Natural Resources and Forestry**

<b>Mortality Threshold</b>	<b>How mortality is calculated</b>	<b>Reporting Timeline for Results</b>
10 bats/turbine/year	Based on calculation described in Section 4.2.6 and applying the following formula $C = c / (S_{e0} \times S_c \times P_s)$	Results to be submitted annually to MNRF (within 3 months of completion of mortality surveys) as outlined in Table 3.
14 birds/turbine/year	Based on annual calculation described in Section 4.2.6 and applying the following formula $C = c / (S_{e0} \times S_c \times P_s)$	Results to be submitted annually to MNRF (within 3 months of completion of mortality surveys) as outlined in Table 3.
10 birds/turbine	Single event as observed in the field during monitoring	Mortality event to be reported to MNRF within 48 hours (or next business day) of detection.
33 birds (including raptors) at any multiple turbines	Single event as observed in the field during monitoring	Mortality event to be reported to MNRF within 48 hours (or next business day) of detection.
0.2 raptors/turbine/year (all raptors) across a wind power project	Based on annual calculation described in Section 4.2.6 and applying the following formula $C = c / (S_{e0} \times S_c \times P_s)$	Results to be submitted annually to MNRF (within 3 months of completion of mortality surveys) as outlined in Table 3.
0.1 raptors/turbine/year (provincially tracked raptors) across a wind power project	Based on annual calculation described in Section 4.2.6 and applying the following formula $C = c / (S_{e0} \times S_c \times P_s)$	Results to be submitted annually to MNRF (within 3 months of completion of mortality surveys) as outlined in Table 3.
Endangered and Threatened Species	Single event as observed in the field during monitoring	Mortality event to be reported to MNRF within 24hrs (or next business day) of a confirmed identification.

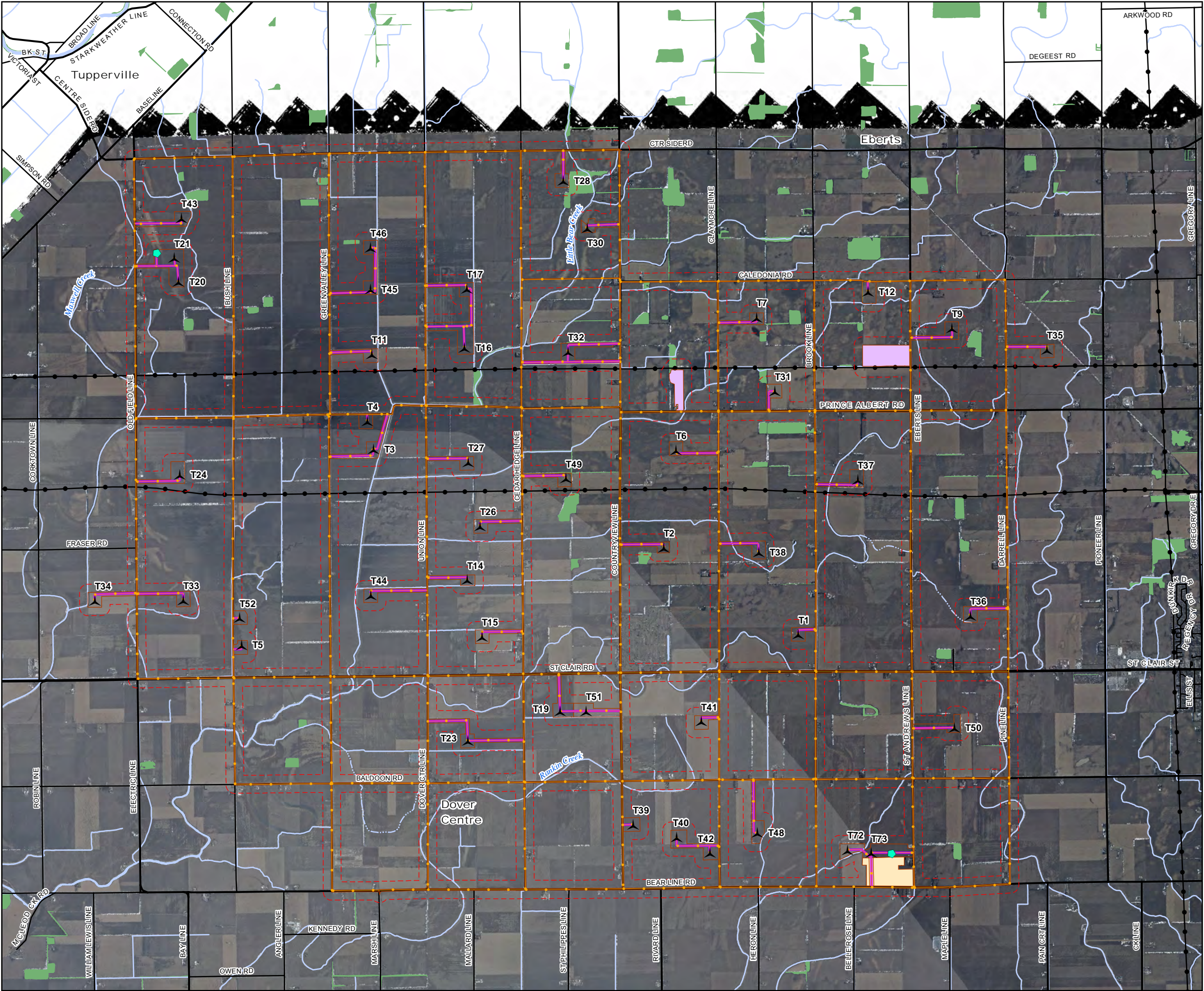
## 7.0 References

- Bird Studies Canada. 2009. Marsh Monitoring Program Participant's Handbook for Surveying Marsh Birds. 2009 Edition. 17 pages. Published by Bird Studies Canada in cooperation with Environment Canada and the U.S. Environmental Protection Agency. February 2009.
- Natural Resource Solutions Inc. (NRSI). 2015. North Kent Wind 1 Project: Natural Heritage Assessment. October 2015.
- Ontario Ministry of Natural Resources (OMNR). 2011a. Bats and Bat Habitats: Guidelines for Wind Power Projects. First Edition. Queen's Printer for Ontario, Canada. July 2011.
- Ontario Ministry of Natural Resources (OMNR). 2011b. Birds and Bird Habitats: Guidelines for Wind Power Projects. First Edition. Queen's Printer for Ontario, Canada. December 2011.

**Map 1**  
**Project Area and Natural Features**

---

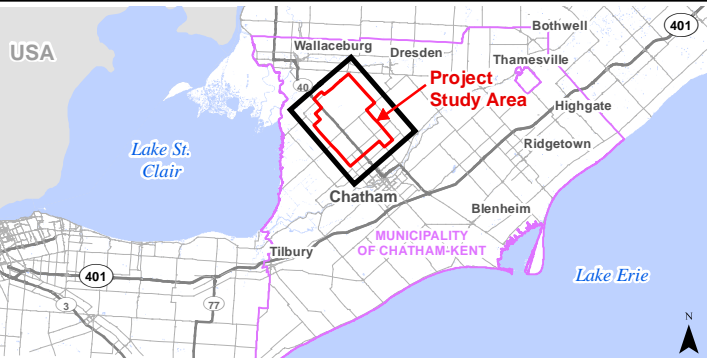




Map 1

# North Kent Wind 1 Project

## Project Area and Natural Features

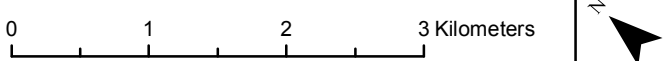


- Legend**
- Utility Line
  - Highway
  - Primary Road
  - Secondary Road
- Project Location**
- Project Area (120m Buffer)
  - Construction Disturbance Area
  - Proposed Turbine
  - Proposed Meteorological Tower
  - Proposed Collection Line
  - Proposed Access Road
  - Proposed POI/ Substation/ Laydown/ O&M Building
  - Proposed Laydown Area
- Natural Features**
- Permanent Watercourse
  - Intermittent Watercourse
  - Open Water
  - Woodland
  - Important Bird Area (IBA)



Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFO Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015)

Project: 1612 Date: July 21, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:55,000
--------------------------------------	---





**Map 2**  
**Key Map**

---





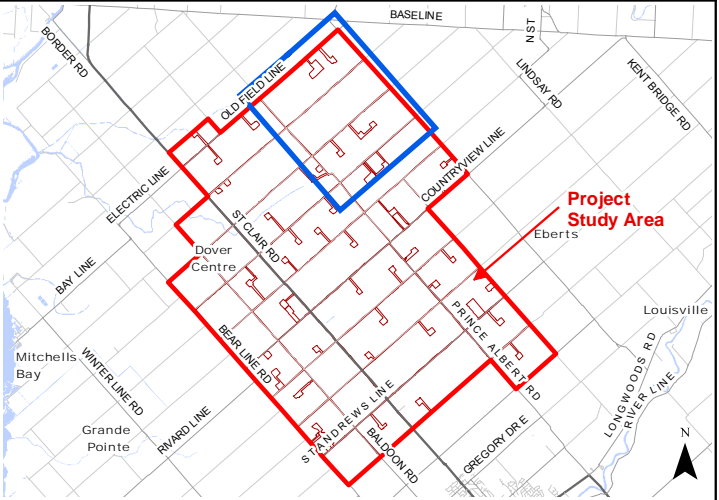
**Maps 3-1 to 3-9**  
Significant Wildlife Habitats

---



# North Kent Wind 1 Project

## Significant Wildlife Habitats



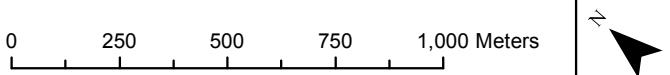
**Legend**

- Utility Line
- Primary Road
- Secondary Road
- Permanent Watercourse
- Open Water
- Project Location**
- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Meteorological Tower
- Proposed Collection Line
- Proposed Access Road



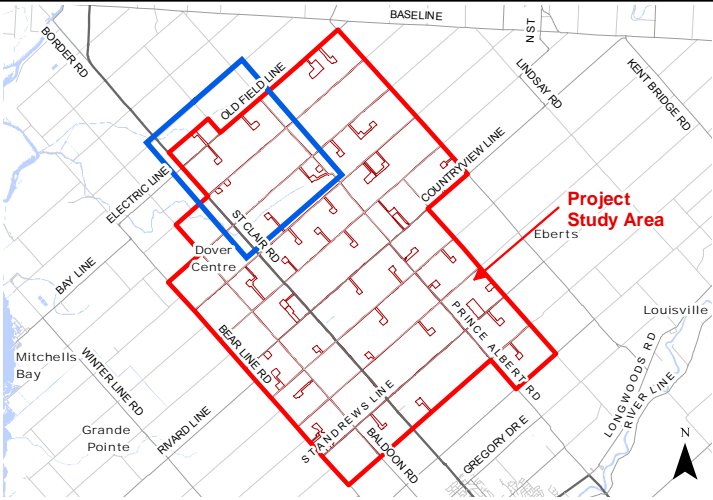
Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---





North Kent Wind 1 Project  
Significant Wildlife Habitats



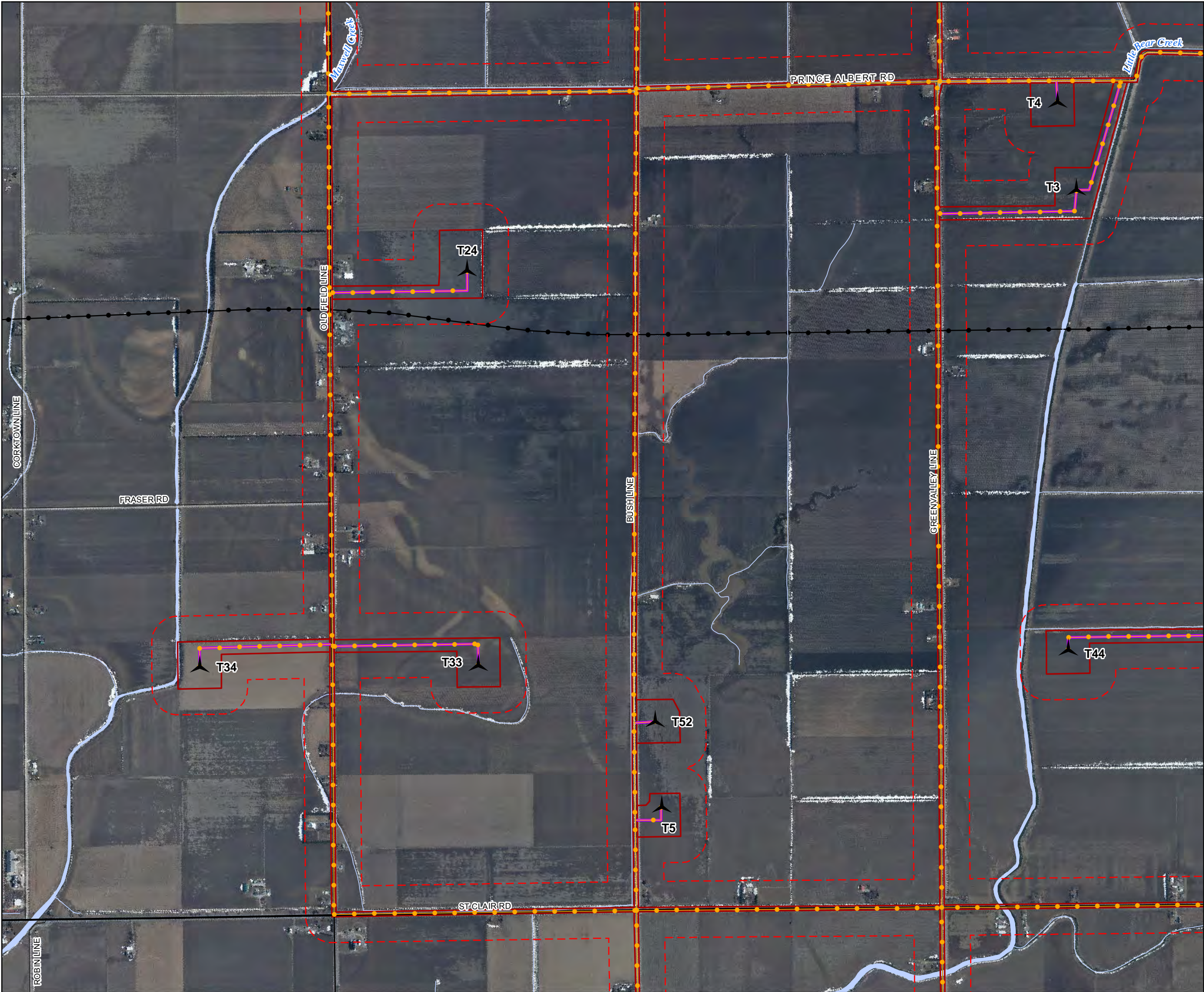
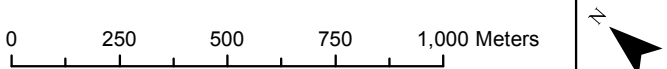
Legend

- Utility Line
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Open Water
- Project Location**
  - Project Area (120m Buffer)
  - Construction Disturbance Area
  - Proposed Turbine
  - Proposed Collection Line
  - Proposed Access Road

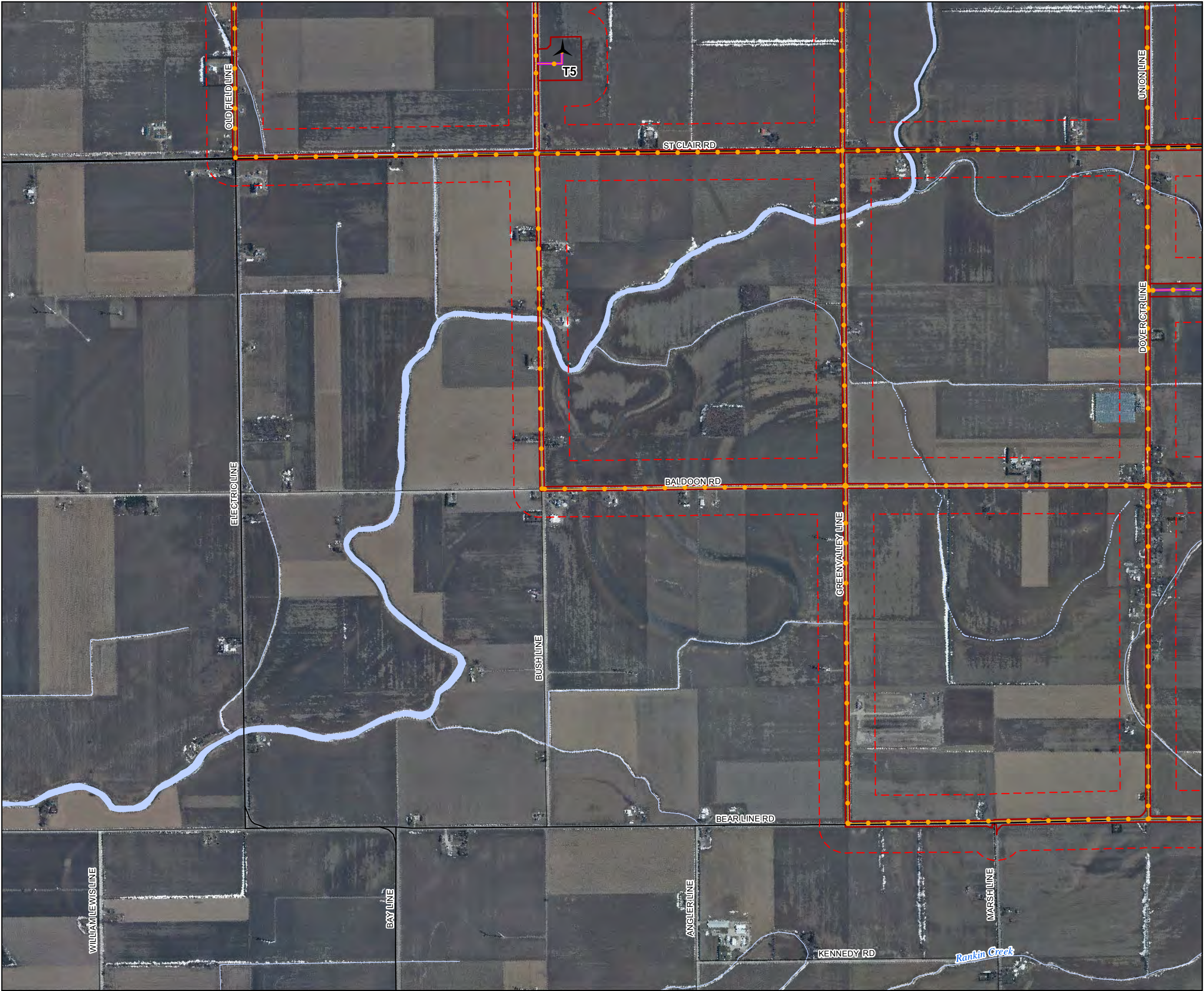


Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---



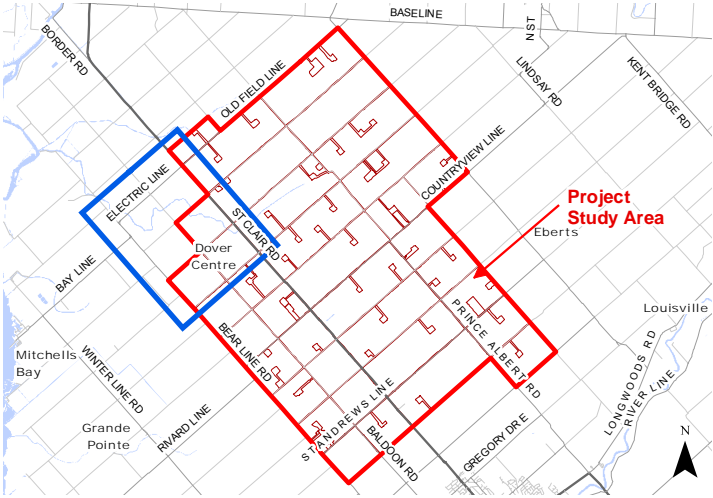




Map 3 - 3

# North Kent Wind 1 Project

## Significant Wildlife Habitats



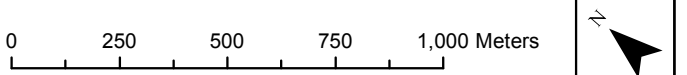
### Legend

- Highway
  - Primary Road
  - Secondary Road
  - Permanent Watercourse
  - Intermittent Watercourse
  - Open Water
- Project Location**
- Project Area (120m Buffer)
  - Construction Disturbance Area
  - Proposed Turbine
  - Proposed Collection Line
  - Proposed Access Road



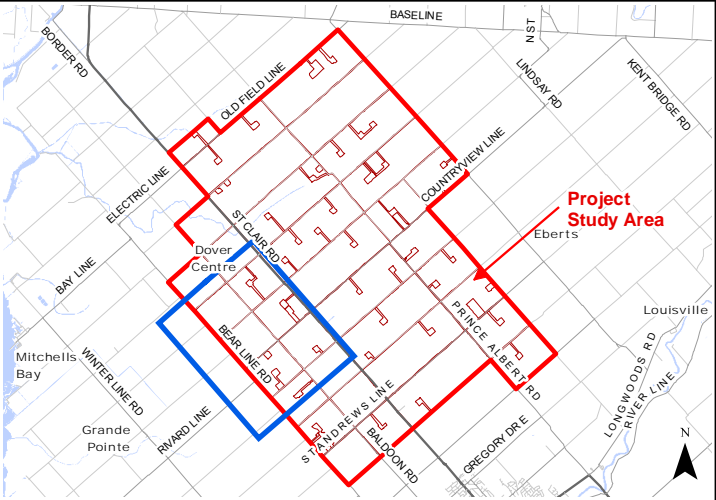
Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---





North Kent Wind 1 Project  
Significant Wildlife Habitats



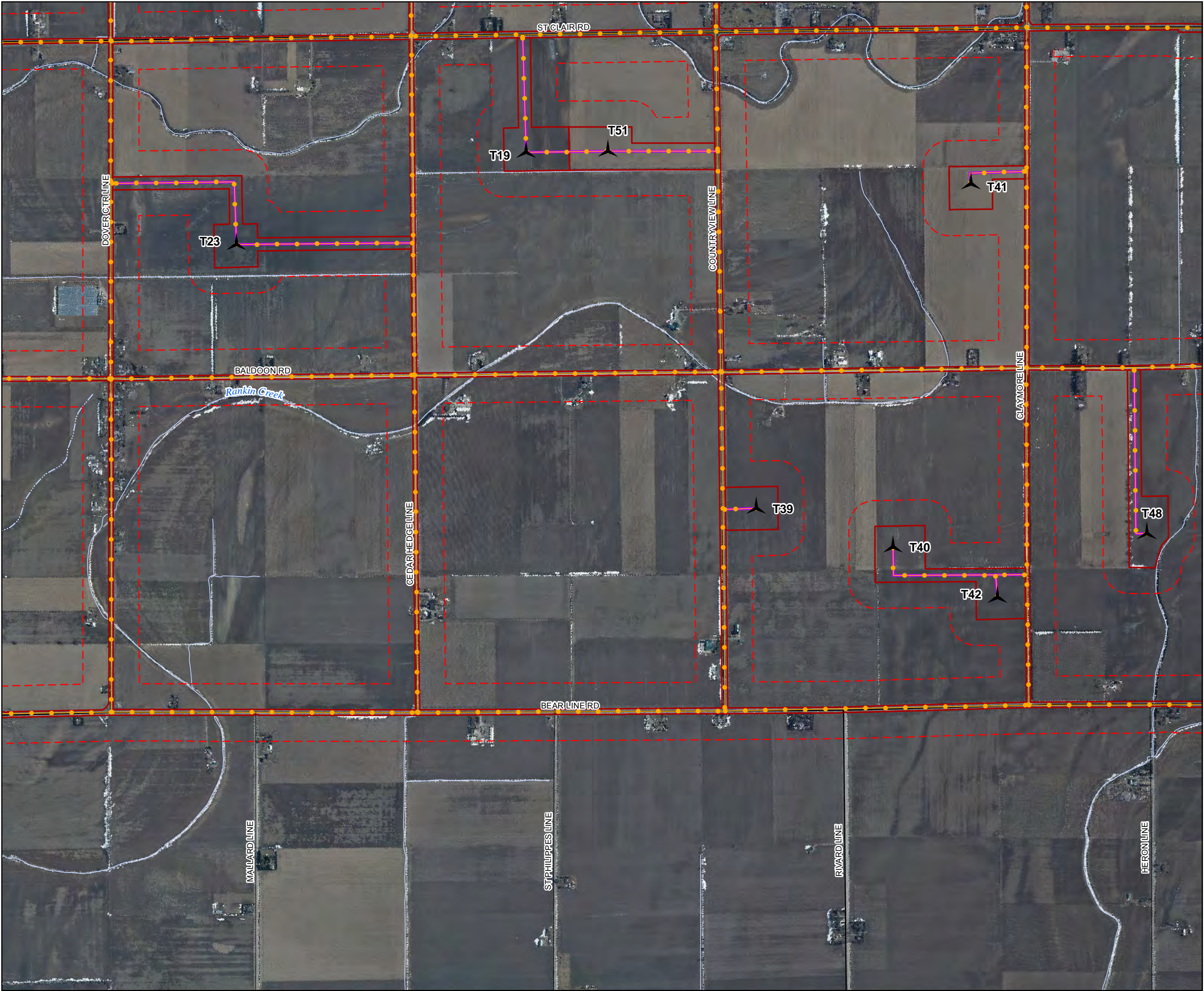
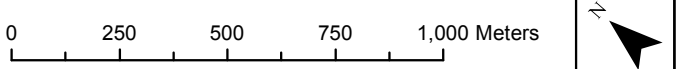
Legend

- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Intermittent Watercourse
- Project Location**
- Project Area (120m Buffer)
- Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road



Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

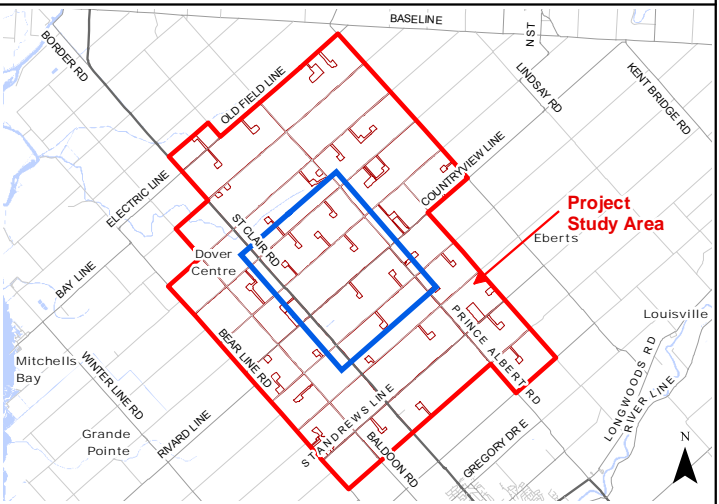
Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---





# North Kent Wind 1 Project

## Significant Wildlife Habitats

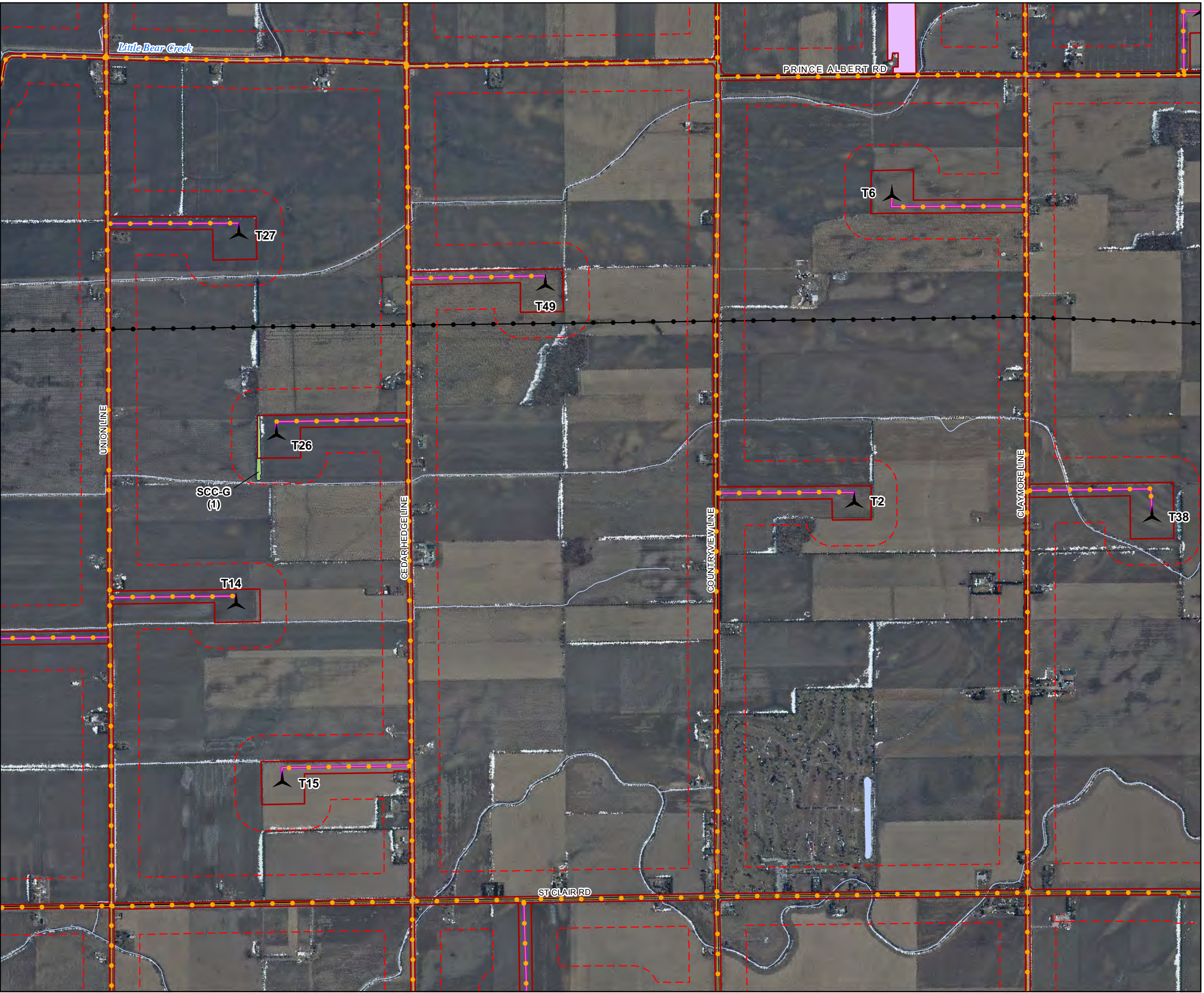


### Legend

- Utility Line
- Highway
- Primary Road
- Secondary Road
- Permanent Watercourse
- Open Water
- Project Location**
  - Project Area (120m Buffer)
  - Construction Disturbance Area
- Proposed Turbine
- Proposed Collection Line
- Proposed Access Road
- Proposed POI/Substation/Laydown/O&M Building

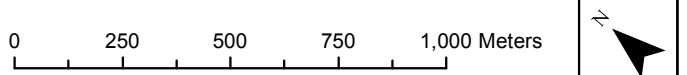
### Significant Wildlife Habitats

- Species of Conservation Concern Habitat (SCC)
- 1 - Eastern Wood-Pewee



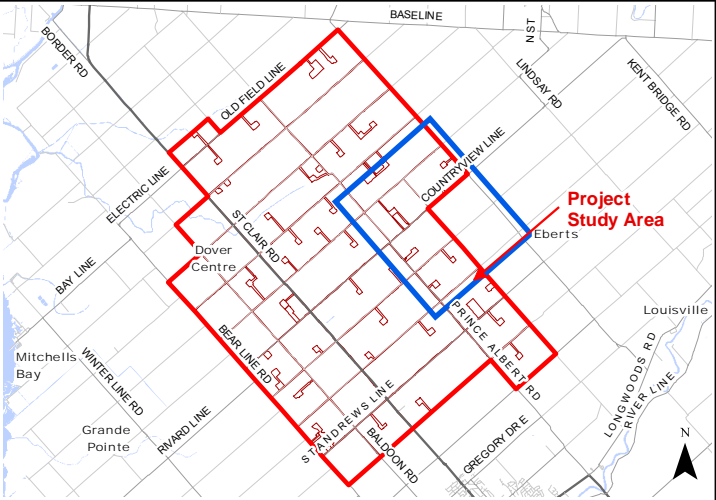
Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---





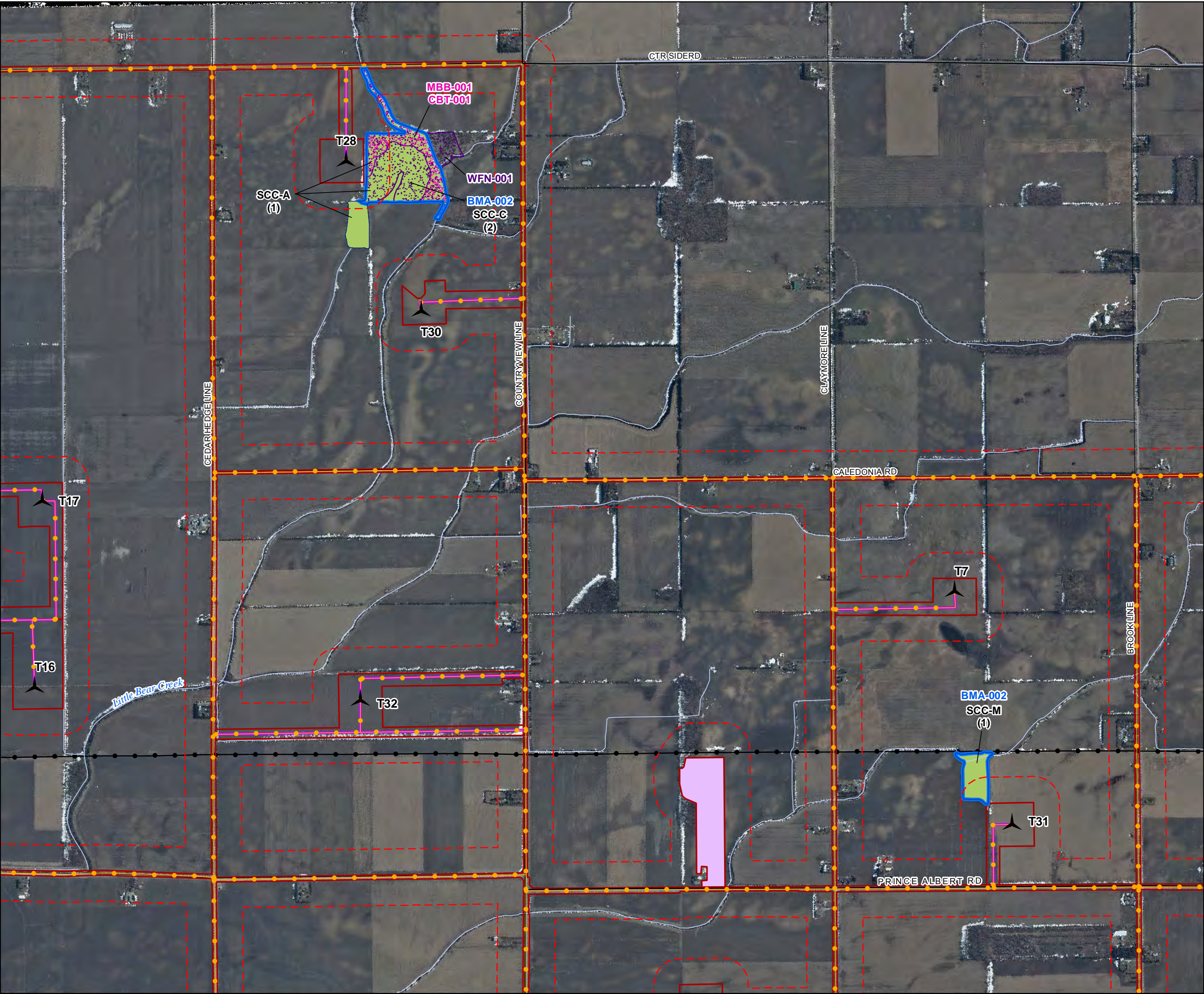
North Kent Wind 1 Project  
Significant Wildlife Habitats



- Legend**

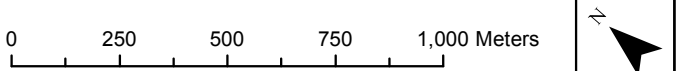
  - Utility Line
  - Primary Road
  - Secondary Road
  - Permanent Watercourse
  - Project Location**
  - Project Area (120m Buffer)
  - Construction Disturbance Area
  - Proposed Turbine
  - Proposed Collection Line
  - Proposed Access Road
  - Proposed POI/Substation/Laydown/O&M Building
- Significant Wildlife Habitats**

  - Bat Maternity Colony (BMA)
  - Marsh Bird Breeding Habitat (MBB) and Colonially – Nesting Bird Breeding Habitat (Tree/Shrubs) (CBT)
  - Waterfowl Nesting Area (WFN)
  - Species of Conservation Concern Habitat (SCC)
  - 1 - Eastern Wood-Pewee
  - 2 - Wood Thrush



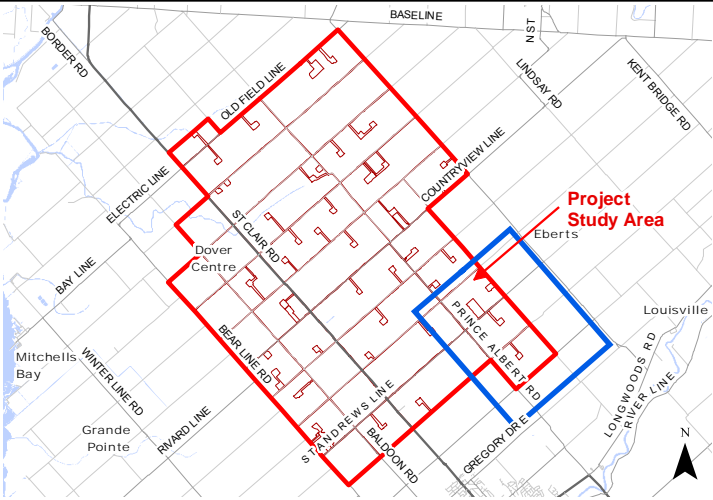
Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFO Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---





North Kent Wind 1 Project  
Significant Wildlife Habitats



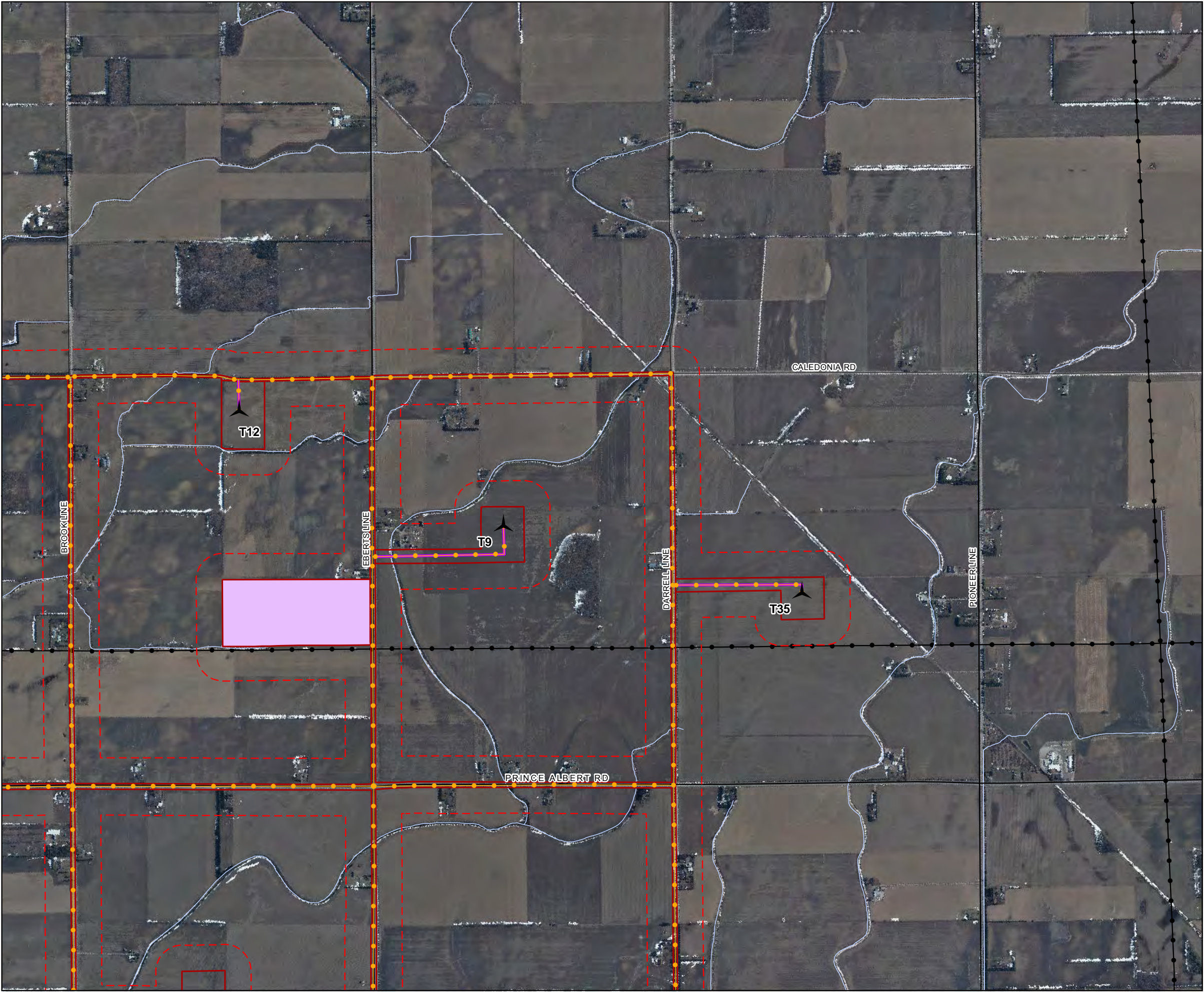
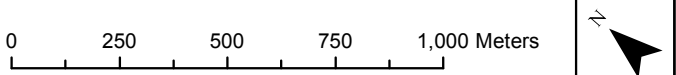
Legend

- Utility Line
  - Primary Road
  - Secondary Road
  - Permanent Watercourse
- Project Location**
- Project Area (120m Buffer)
  - Construction Disturbance Area
  - Proposed Turbine
  - Proposed Collection Line
  - Proposed Access Road
  - Proposed POI/Substation/Laydown/O&M Building

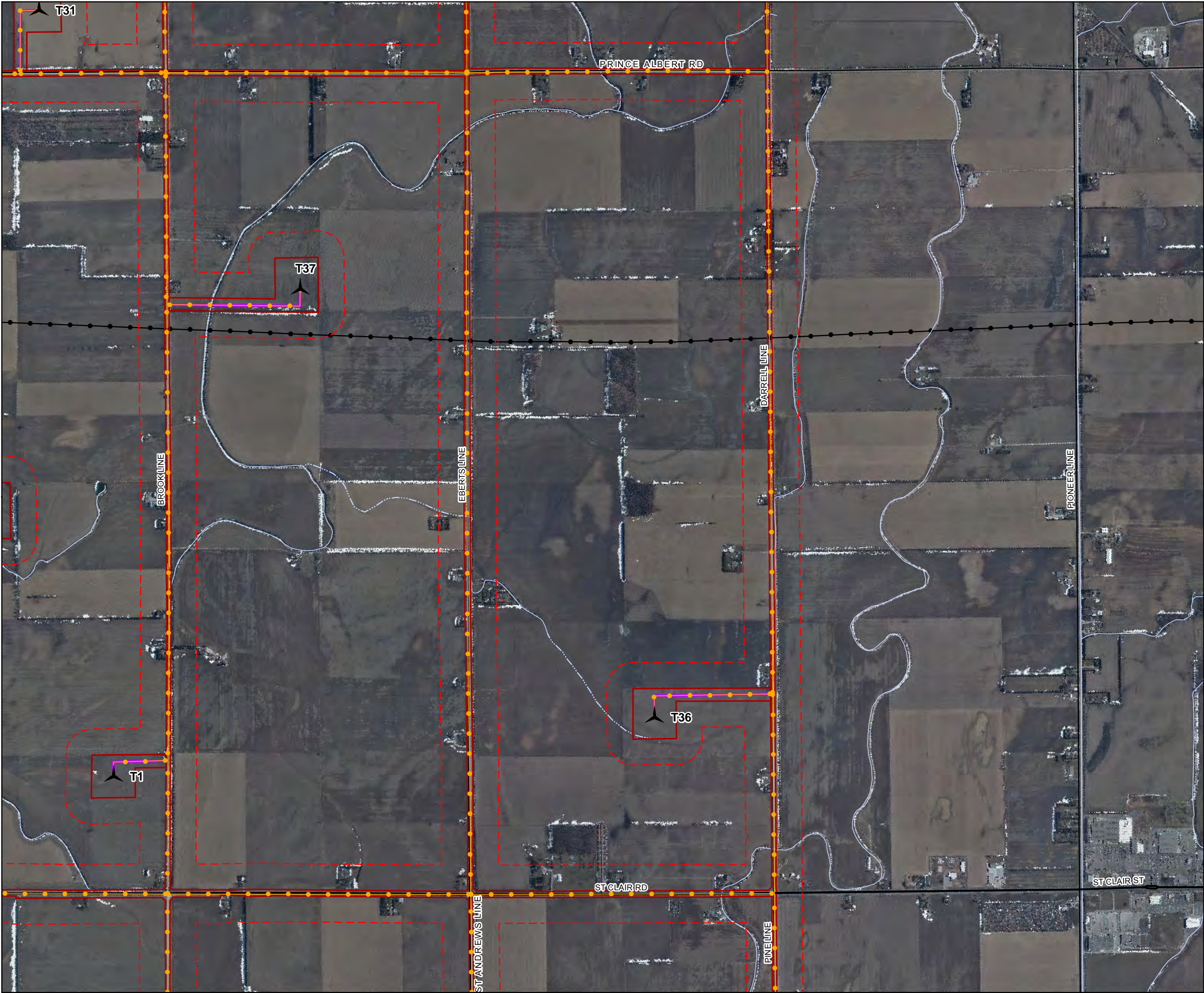


Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---

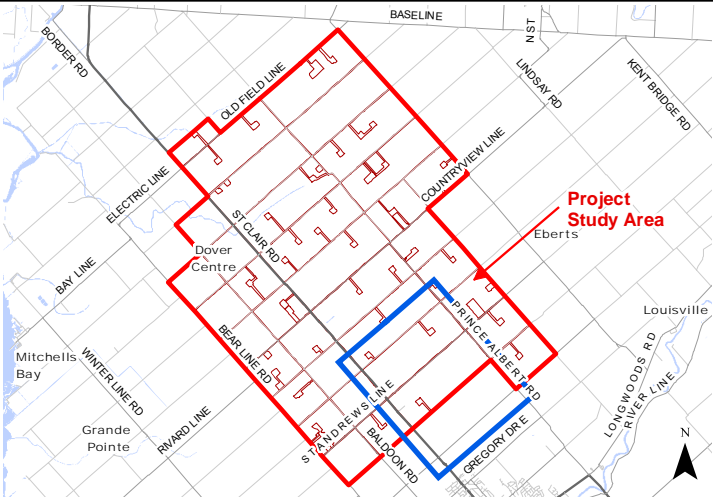






# North Kent Wind 1 Project

## Significant Wildlife Habitats



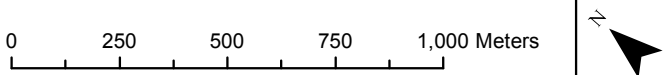
**Legend**

- Utility Line
  - Highway
  - Primary Road
  - Secondary Road
  - Permanent Watercourse
  - Intermittent Watercourse
- Project Location**
- Project Area (120m Buffer)
  - Construction Disturbance Area
  - Proposed Turbine
  - Proposed Collection Line
  - Proposed Access Road

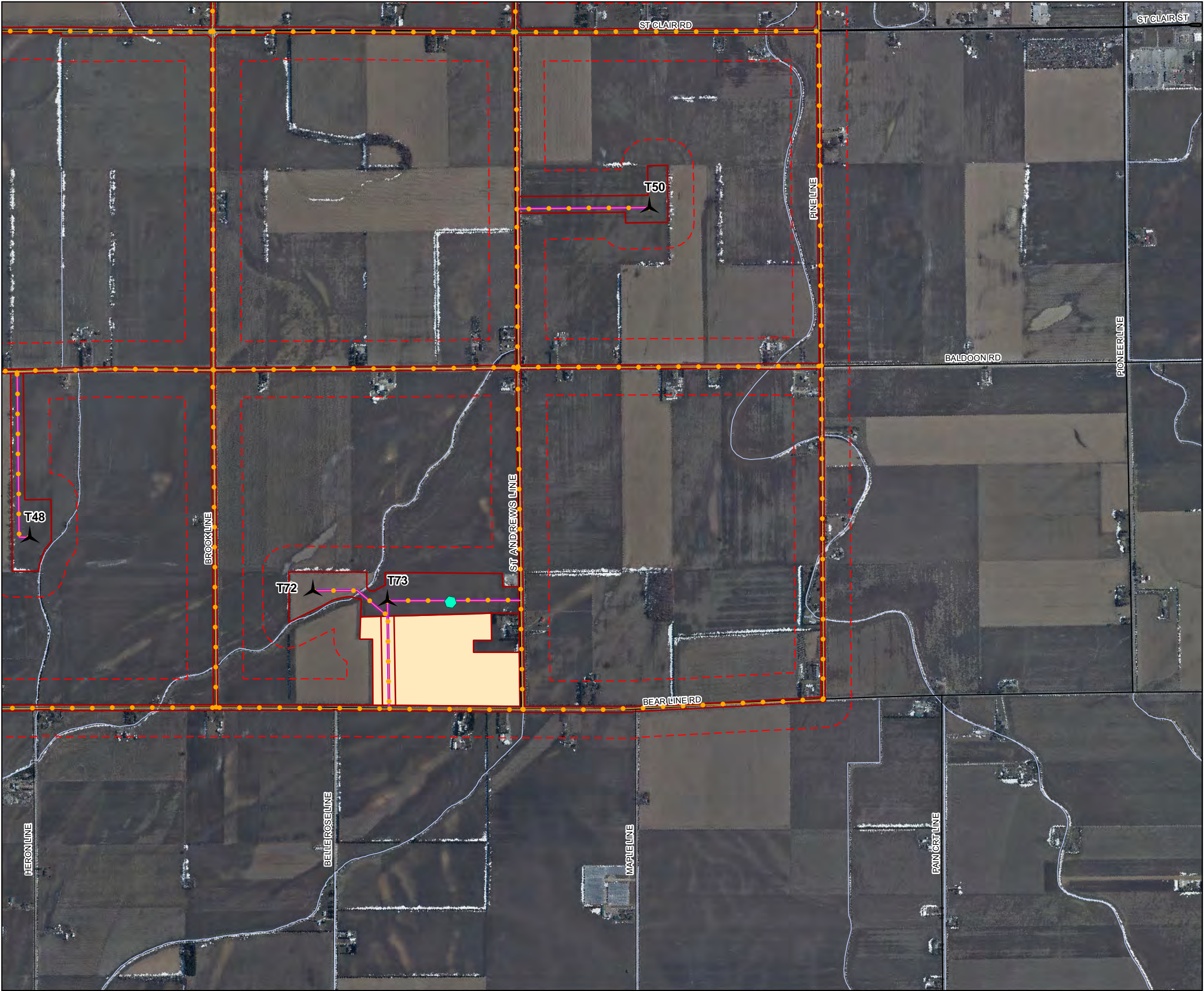


Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612 September 3, 2015	NAD83 - UTM Zone 17 Size: 11x17" 1:17,500
------------------------------------	---







Map 3 - 9

North Kent Wind 1 Project

Significant Wildlife Habitats

Legend

— Highway

— Primary Road

— Secondary Road

~ Permanent Watercourse

Project Location

Project Area (120m Buffer)

Construction Disturbance Area

Proposed Turbine

Proposed Meteorological Tower

Proposed Collection Line

Proposed Access Road

Proposed Laydown Area

NATURAL RESOURCE SOLUTIONS INC.  
Aquatic, Terrestrial and Wetland Biologists

Map Produced by Natural Resource Solutions Inc. This map is proprietary and confidential and must not be duplicated or distributed by any means without express written permission of NRSI. Data provided by MNRFC Copyright: Queen's Printer Ontario. Imagery: AECOM (March 2015).

Project: 1612  
September 3, 2015

NAD83 - UTM Zone 17  
Size: 11x17"  
1:17,500

02505007501,000 Meters



**Appendix I**

North Kent Wind 1 Project NHA Letter of Confirmation

---

October 30, 2015

Mr. Colin Edwards and Mr. Lee Jeong Tack  
North Kent Wind 1 LP, by its general partner  
North Kent Wind 1 GP Inc.  
2050 Derry Road West 2nd Floor  
Mississauga, ON L5N 0B9

**RE: NHA Confirmation for North Kent Wind 1 Project**

Dear: Mr. Colin Edwards and Mr. Lee Jeong Tack

In accordance with the Ministry of the Environment and Climate Change's (MOECC's) Renewable Energy Approvals (REA) Regulation (O.Reg.359/09), the Ministry of Natural Resources and Forestry (MNRF) has reviewed the North Kent Wind 1 Project Natural Heritage Assessment and Environmental Impact Study for the North Kent Wind 1 Project located north of the City of Chatham, Municipality of Chatham-Kent, Ontario, submitted by Mr. Colin Edwards and Mr. Lee Jeong Tack on October 26, 2015.

In accordance with Section 28(2) and 38(2)(b) of the REA regulation, MNRF provides the following confirmations following review of the natural heritage assessment:

1. The MNRF confirms that the determination of the existence of natural features and the boundaries of natural features was made using applicable evaluation criteria or procedures established or accepted by MNRF.
2. The MNRF confirms that the site investigation and records review were conducted using applicable evaluation criteria or procedures established or accepted by MNRF, if no natural features were identified.
3. The MNRF confirms that the evaluation of the significance or provincial significance of the natural features was conducted using applicable evaluation criteria or procedures established or accepted by MNRF.
4. The MNRF confirms that the project location is not in a provincial park or conservation reserve.

5. The MNRF confirms that the environmental impact study report has been prepared in accordance with procedures established by the MNRF.

In accordance with Section 28(3)(c) and 38(2)(c), MNRF also offers the following comments in respect of the project.

#### Pre-construction Monitoring

In accordance with Appendix D of MNRF's NHA Guide, a commitment has been made to complete pre-construction assessment(s) of habitat use for the candidate significant wildlife habitats listed in Table 1 (enclosed).

MNRF has reviewed and confirmed the assessment methods and the range of mitigative options. Pending completion of the assessments and determination of significance, the appropriate mitigation is expected to be implemented, as committed to in the environmental impact study.

#### Post-Construction Monitoring

In addition to the NHA, Environmental Effects Monitoring Plans (EEMP) that address post-construction mortality monitoring and mitigation for birds and bats must be prepared and implemented. Environmental Effects Monitoring Plans for birds and bats must be prepared in accordance with MNRF Guidelines and should be reviewed by MNRF in advance of submitting a REA application to MOECC in order to minimize potential delays in determining if the application is complete. Comments provided by the MNRF with respect to the EEMP must be submitted as part of the application for a REA.

A commitment has been made in the Environmental Impact Study and will be included in the Environmental Effects Monitoring Plan, part of the Design and Operations Report, to conduct post-construction monitoring should the pre-construction monitoring (as outlined above) deem the wildlife habitat to be significant. For the North Kent Wind 1 Project this includes surveys outlined in Table 2 (enclosed).

This confirmation letter is valid for the project as proposed in the natural heritage assessment and environmental impact study, including those sections describing the Environmental Effects Monitoring Plan and Construction Plan Report. Should any changes be made to the proposed project that would alter the NHA, MNRF may need to undertake additional review of the NHA.

Where specific commitments have been made by the applicant in the NHA/EIS with respect to project design, construction, rehabilitation, operation, mitigation, or monitoring, MNRF expects that these commitments will be considered in MOECC's Renewable Energy Approval decision and, if approved, be implemented by the applicant.

In accordance with S.12 (1) of the Renewable Energy Approvals Regulation, this letter must be included as part of your application submitted to the MOECC for a Renewable Energy Approval.

Please be aware that your project may be subject to additional legislative approvals as outlined in the Ministry of Natural Resources' *Approvals and Permitting Requirements*

If you wish to discuss any part of this confirmation or additional comments provided, please contact Jim Beal, Renewable Energy Coordinator at [jim.beal@ontario.ca](mailto:jim.beal@ontario.ca) or 705-755-1362.

Sincerely,



Kazia Milian  
Supervisor, Land Use Planning Unit  
Southern Region Resources Section  
Ministry of Natural Resources and Forestry

cc Jim Beal, Renewable Energy Coordinator, MNRF  
Mohsen, Keyvani, Environmental Approvals Branch, MOECC

**Table 1. Summary of Pre-Construction Monitoring Commitments for the North Kent Wind 1 Project**

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
Bat Maternity Colony	<p>Two candidate bat maternity colony habitats were identified through the site investigation. The presence of suitable cavity trees within one candidate bat maternity colony habitat (BMA-001) could not be verified during the site investigation phase of the Project as site access was denied. As such, no further surveys will be conducted at BMA-001, and the habitat will be treated as significant; however, in the event that site access is granted prior to June 2016, a site investigation will be conducted to verify the presence of <math>\geq 10</math> wildlife trees per hectare, measured at <math>\geq 25</math>cm dbh. If candidate significant habitat is determined to be absent, the habitat will be confirmed not significant. If candidate significant habitat is determined to be present, proposed evaluation methods are identified below.</p> <p>If candidate significant habitat is determined to be present within BMA-001, a total of 12 suitable cavity trees will be selected since it is 11.91ha in size. Up to 10 suitable cavity trees (less if 10 suitable trees aren't present) will be selected within BMA-002 since it is less than 10ha in size. Monitoring sites within the 2 candidate bat maternity colony habitats will be selected using the criteria outlined in the Bats and Bat Habitats guidelines (OMNR 2011a).</p> <p>Following the Bats and Bat Habitats guidelines (OMNR 2011a), exit surveys will be conducted during the month of June. Observers will choose a viewing station with a clear aspect of cavity opening or crevice, which will be monitored from 30 minutes before dusk until 60 minutes after dusk for evidence of bats exiting. An acoustic bat detector paired with a digital recorder will be used in conjunction with visual surveys to determine species. Each candidate tree will only be monitored once. Night-vision or infrared video equipment may be substituted for observers. Once an evening's monitoring is completed (60 minutes after sunset), the cameras will be collected by the staff members conducting visual surveys in the same candidate significant habitat and the visual recordings for each video recorder will be reviewed for evidence of significant bat roosting activity.</p> <p>The locations of the candidate significant habitat can be seen on Maps 4-1 to 4-9.</p>	BMA-001 BMA-002
Colonially-Nesting Breeding Bird Habitat (Trees/Shrubs)	<p>The presence of nest bowls within the candidate colonially-nesting bird breeding habitat could not be identified during the site investigation phase of the Project as site access was denied within a portion of WOD-002. As such, no further surveys will be conducted, and the habitat will be treated as significant; however in the event that site access is granted prior to April 2016, a site investigation will be conducted to verify the presence of nest bowls within the candidate habitat. If candidate significant habitat is determined to be present, proposed evaluation methods are identified below. If candidate significant habitat is determined to be absent, the habitat will be confirmed not significant.</p> <p>Surveys will consist of a 15 minute point count during the breeding season from a suitable vantage point located in close</p>	CBT-001



Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
	<p>proximity to where nest bowls are located, and will occur once in each of April, June, and August.</p> <p>The objective of this survey is to determine if active heron nests are present within the candidate colonially-nesting bird breeding habitat.</p> <p>All individuals will be recorded along with information on species, behaviour, movement and time observed.</p> <p>The locations of monitoring sites within the candidate significant habitat will be determined based on conditions of the site. .</p> <p>The location of the candidate significant habitat can be seen on Maps 4-1 to 4-9.</p>	
Old Growth Forest	<p>The presence of an old growth forest within one woodland could not be confirmed during the site investigation phase of the Project, as site access was denied. As such, no further surveys will be conducted and the habitat will be treated as significant; however, in the event that site access status changes prior to July 2016, a site investigation will be conducted to confirm the age estimate of tree species being &gt;140 year old within the forest ecosite. If candidate significant habitat is determined to be present (i.e. dominant tree species estimated to be greater than 140 years old), the habitat will be confirmed significant. If candidate significant habitat is determined to be absent, the habitat will be confirmed not significant.</p> <p>The location of the candidate significant habitat can be seen on Maps 5-1 to 5-9.</p>	OGF-001
Waterfowl Nesting Area	<p>The presence of a waterfowl nesting area within one woodland could not be verified during the site investigation phase of the Project as site access was denied. As such, no further surveys will be conducted and the habitat will be treated as significant; however, in the event that site access changes prior to April 2016, a site investigation will be conducted to verify the presence of suitable permanent open water, in addition to shrubland/grassland or suitable cavity trees for nesting in upland areas &gt;40cm dbh. If candidate significant habitat is deemed to be absent, the habitat will be confirmed not significant. If candidate significant habitat is determined to be present, area searches will be conducted within the candidate waterfowl nesting area. This method will involve walking the perimeter of the wetland and counting all observable waterfowl using the wetlands.</p> <p>Surveys will be conducted on 3 separate visits, once in each of April, May, and June 2016, to capture both early and late nesting species.</p> <p>Surveys will be carried out during the early morning (sunrise to 4 hours after sunrise). All individuals will be recorded along with information on species, behaviour, movement and time observed. Optimal weather conditions for these surveys are clear, sunny days with little to no precipitation. Surveys will be postponed and re-scheduled if poor weather conditions are encountered, specifically if high winds or heavy precipitation is noted.</p>	WFN-001

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
Amphibian Breeding Habitat (Woodland)	<p>The location of the candidate significant habitat can be seen on Maps 5-1 to 5-9.</p> <p>Three evening amphibian call surveys will be conducted at the one candidate habitat, once in each of April, May and June 2016. Each survey will last 3 minutes, following the accepted Marsh Monitoring Program protocol, and will begin no earlier than one half hour after sunset and end before midnight. Semi-circular point counts will be conducted at each habitat to monitor calling amphibians. Several point counts may be required at a single habitat in order to adequately survey the area. Point counts will be located at least 500m apart to prevent counting duplicate amphibian calls. These surveys will be conducted within habitats where site access has been granted. Where site access has not been granted, point counts may be conducted along the roadside or adjacent property.</p> <p>During each survey, biologists will record species and calling abundance codes, along with other appropriate information (date, time, weather, etc.). A UTM will be taken for each call location to ensure consistency between survey visits.</p> <p>Where site access has been granted, 2 amphibian egg mass searches will also be conducted within each habitat during daylight hours. The exact timing of the surveys will be dependent on 2016 spring conditions and when amphibians are expected to be breeding within the general vicinity of the Project Area, but are expected to occur once in April and again in either May or June. A minimum search effort of 30 minutes will be used on each visit, in each habitat. These area searches will include walking within the wetland or vernal pool along the perimeter, looking for egg masses. Due to the composition and attributes of the candidate amphibian breeding habitats, special equipment will not be required to identify egg masses; however, visual surveys conducted in breeding ponds with high water levels will require the use of chest waders. This approach is expected to effectively identify egg masses, while minimizing any disturbance effects caused by sampling.</p> <p>If candidate significant habitat (vernal pools) is determined to be not present during the first site visit, no specific studies will be conducted and the habitat will be confirmed not significant.</p> <p>The locations of the candidate significant habitat can be seen on Maps 5-1 to 5-9.</p>	AWO-001
Marsh Bird Breeding Habitat	<p>Surveys will consist of 15 minute point counts within the candidate significant habitat during the breeding season, occurring twice between mid-May and early July 2016, no less than 10 days apart, following the accepted Marsh Monitoring Program protocol (Bird Studies Canada 2009). Each survey will be conducted in the morning (beginning 30 minutes before sunrise and ending no later than 1000hrs) or evening (occurring no earlier than 4 hours before sunset and ending before dark), when marsh birds are actively nesting in wetland habitats.</p> <p>Each survey will be conducted under near optimal weather conditions, on clear, warm (at least 16°C) evenings, with no precipitation and little or no wind.</p> <p>Point counts will be conducted within the habitat where site</p>	MBB-001

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
	<p>access has been granted, or from the property adjacent to the habitat, where site access has not been granted. Each point count will last for 15 minutes, and will be sub-divided into three 5 minute components: a 5 minute passive (silent) observation period, a 5 minute call playback period, and a second 5 minute passive observation period.</p> <p>If candidate significant habitat (shallow water with emergent aquatic vegetation) is determined to be not present on the first site visit, no specific studies will be conducted and the habitat will be confirmed not significant.</p> <p>The locations of monitoring sites within the candidate significant habitat will be determined based on conditions of the site.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	
<p>Eastern Wood-Pewee (<i>Contopus virens</i>)</p>	<p>Ten-minute point count surveys will be conducted within each of the 3 habitats for eastern wood-pewee in June and early July 2016. Each point count station will be surveyed 3 times during early, mid and late season (spring and early summer) no less than 10 days apart.</p> <p>The number of point counts required depends on the size and habitat diversity at each site. Following the Birds and Bird Habitat Guidelines for Wind Power Projects (OMNR 2011b), point counts will be spaced at least 250m apart, ideally with the centre point at least 100m from the habitat edge. Where more than one point count will be conducted within each candidate habitat, a standardized transect will also be conducted between point count sites.</p> <p>Surveys will be conducted between dawn (one half hour before sunrise) and 3 hours after sunrise. These surveys will occur during a time period when males are expected to be actively singing and defending territories.</p> <p>Days with high wind speeds and rain will be avoided. During each visit, the highest observed breeding evidence will be recorded for each species.</p> <p>The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.</p>	<p>EWP-001 (SCC-A) EWP-002 (SCC-M) EWP-003 (SCC-G)</p>
<p>Wood Thrush (<i>Hylocichla mustelina</i>)</p>	<p>Ten-minute point count surveys will be conducted within the habitat for wood thrush in June and early July 2016. Each point count station will be surveyed 3 times during early, mid and late season (spring and early summer) no less than 10 days apart.</p> <p>The number of point counts required depends on the size and habitat diversity at the site. Following the Birds and Bird Habitat Guidelines for Wind Power Projects (OMNR 2011b), point counts will be spaced at least 250m apart, ideally with the centre point at least 100m from the habitat edge. Where more than one point count will be conducted within the candidate habitat, a standardized transect will also be conducted between point count sites.</p> <p>Surveys will be conducted between dawn (one half hour before sunrise) and 3 hours after sunrise. These surveys will occur</p>	<p>WTH-001 (SCC-C)</p>

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
	<p>during a time period when males are expected to be actively singing and defending territories.</p> <p>Days with high wind speeds and rain will be avoided. During each visit, the highest observed breeding evidence will be recorded for each species.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	
Prairie Milkweed ( <i>Asclepias sullivantii</i> )	<p>One standardized area search will be conducted within the candidate significant prairie milkweed habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of June to July.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	PMI-001 (SCC-P)
Pawpaw ( <i>Asimina triloba</i> )	<p>One standardized area search will be conducted within the one candidate significant pawpaw habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering or leaf-on period of April to September.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	PAW-001 (SCC-B)
Muskingum Sedge ( <i>Carex muskingumensis</i> )	<p>One standardized area search will be conducted within each of the 5 candidate significant Muskingum sedge habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably after the plant has flowered in June or July.</p> <p>The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.</p>	MSE-001 (SCC-A) MSE-005 (SCC-N) MSE-006 (SCC-L) MSE-007 (SCC-K) MSE-008 (SCC-G)
Rigid Sedge ( <i>Carex tetanica</i> )	<p>One standardized area search will be conducted within the candidate significant rigid sedge habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the fruiting period of June to July.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	RSE-001 (SCC-P)
Blue Ash ( <i>Fraxinus quadrangulata</i> )	<p>One standardized area search will be conducted within the one candidate significant blue ash habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys can be made year-round based on the presence of distinctively shaped branches and twigs.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	BAS-001 (SCC-B)
Swamp Rose-	One standardized area search will be conducted within each of	SRM-001 (SCC-E)

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
mallow ( <i>Hibiscus moscheutos</i> )	<p>the 2 candidate significant swamp rose-mallow habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys can be made year-round (in absence of heavy snow cover) based on the robust, distinctive, and persistent nature of the plant and dead stems.</p> <p>The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.</p>	SRM-002 (SCC-K)
Black Gum ( <i>Nyssa sylvatica</i> )	<p>One standardized area search will be conducted within each of the 2 candidate significant black gum habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the leaf-on period of April to September.</p> <p>The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.</p>	BGU-001 (SCC-A) BGU-003 (SCC-K)
Northern Fogfruit ( <i>Phyla lanceolata</i> )	<p>One standardized area search will be conducted within each of the 5 candidate significant northern fogfruit habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of July to August.</p> <p>The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.</p>	NFO-001 (SCC-A) NFO-005 (SCC-L) NFO-006 (SCC-N) NFO-007 (SCC-P) NFO-008 (SCC-K)
Shumard Oak ( <i>Quercus shumardii</i> )	<p>One standardized area search will be conducted within the one candidate significant Shumard oak habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the period of October to December when leaves and fully-developed acorns are available. The absence of the species can also be confirmed year-round if no other similar oak species are present in a given habitat.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	SHU-002 (SCC-D)
Climbing Prairie Rose ( <i>Rosa setigera</i> )	<p>One standardized area search will be conducted within the candidate significant climbing prairie rose habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the leaf-on period of late June to September.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	CPR-001 (SCC-P)
Lizard's Tail ( <i>Saururus cernuus</i> )	<p>One standardized area search will be conducted within each of the 5 candidate significant lizard's tail habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of June to August.</p>	LTA-001 (SCC-A) LTA-005 (SCC-N) LTA-006 (SCC-L) LTA-007 (SCC-K) LTA-008 (SCC-G)

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
	The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.	
Wild Senna ( <i>Senna hebecarpa</i> )	One standardized area search will be conducted within each of the 6 candidate significant wild senna habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of July to August.  The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.	WSE-001 (SCC-G) WSE-003 (SCC-D) WSE-006 (SCC-K) WSE-007 (SCC-L) WSE-008 (SCC-N) WSE-009 (SCC-P)
Cup-plant ( <i>Silphium perfoliatum</i> )	One standardized area search will be conducted within each of the 4 candidate significant cup-plant habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of July to August.  The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.	CUP-001 (SCC-D) CUP-002 (SCC-K) CUP-003 (SCC-N) CUP-004 (SCC-P)
Riddell's Goldenrod ( <i>Solidago riddellii</i> )	One standardized area search will be conducted within the candidate significant Riddell's goldenrod habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of August to September.  The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.	RGL-001 (SCC-P)
Southern Slender Ladies' Tresses ( <i>Spiranthes lacera</i> var. <i>gracilis</i> )	One standardized area search will be conducted within the candidate significant southern slender ladies' tresses habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of August to September.  The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.	SLT-001 (SCC-P)
Wing-stem ( <i>Verbesina alternifolia</i> )	One standardized area search will be conducted within each of the 5 candidate significant wing-stem habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of August to September.  The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.	WIS-001 (SCC-A) WIS-005 (SCC-K) WIS-006 (SCC-L) WIS-007 (SCC-N) WIS-008 (SCC-G)
Giant Ironweed ( <i>Vernonia gigantea</i> )	One standardized area search will be conducted within each of the 5 candidate significant giant ironweed habitats within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits	GIW-003 (SCC-N) GIW-004 (SCC-A) GIW-005 (SCC-L) GIW-006 (SCC-K) GIW-008 (SCC-P)

Wildlife Habitat Type	Generalized Methods*	Location/ Feature(s)
	<p>characteristics that allow for confident identification, preferably during the flowering period of July to October.</p> <p>The locations of each of the candidate significant habitats can be seen on Maps 6-1 to 6-9.</p>	
Virginia Culver's-root ( <i>Veronicastrum virginicum</i> )	<p>One standardized area search will be conducted within the 1 candidate significant Virginia culver's-root habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of June to September.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	VCR-001 (SCC-P)
Cream Violet ( <i>Viola striata</i> )	<p>One standardized area search will be conducted within the 1 candidate significant cream violet habitat within the Project Area. The UTM location of any individuals or clusters will be recorded and a stem count will be conducted. Surveys will be conducted during a time period when this species exhibits characteristics that allow for confident identification, preferably during the flowering period of April to May.</p> <p>The location of the candidate significant habitat can be seen on Maps 6-1 to 6-9.</p>	CVI-001 (SCC-B)

**Table 2. Summary of Post-Construction Monitoring Commitments for the North Kent Wind 1 Project**

Survey Type	Location(s)	Generalized Methods*	Purpose
Mortality Monitoring	Entire Project	<p>Post-construction mortality monitoring will be conducted following both the <i>Birds and Bird Habitats</i> (OMNR 2011b) and <i>Bats and Bat Habitats</i> (OMNR 2011a) provincial guidelines for 3 years after the Project has become operational.</p> <p>A subset of 30% of the turbines will be selected in accordance with the <i>Birds and Bird Habitats</i> (OMNR 2011b) and <i>Bats and Bat Habitats</i> (OMNR 2011a) provincial guidelines, and will be searched approximately every 3-4 days (twice weekly) for bird and bat mortalities from May 1<sup>st</sup> to October 31<sup>st</sup>, and approximately every 7 days (weekly) throughout November for raptors.</p> <p>If bat maternity colony habitats BMA-001 or 002 are confirmed significant, the turbine(s) closest to the habitat(s) will be included with the subsample of turbines to be monitored.</p> <p>In addition to the above monitoring, if waterfowl nesting area habitat WFN-001 is determined to be significant, the one wind turbine located within 120m of this habitat (T28) will be searched at a minimum frequency of once monthly in April, May, and June. All</p>	<p>To assess the direct impact of this facility on bird and bat populations.</p> <p>If mortality rates surpass provincially determined thresholds, mitigation measures will be discussed with the MNRF.</p>



Survey Type	Location(s)	Generalized Methods*	Purpose
		<p>turbines not part of the chosen sub-set will be searched once during each month from May to November, specifically targeting raptors.</p> <p>Searcher efficiency and carcass removal trials will be conducted in accordance with provincial guidelines.</p> <p>Bird and Bat mortality methods will be addressed in detail in the Bird and Bat EEMP, which will be prepared under separate cover and submitted to MNRF for approval.</p>	
Bat Maternity Colony Surveys	BMA-001* BMA-002*	Post-construction exit surveys will be repeated at any of these significant habitats within 120m of wind turbines for 3 years following the same methods utilized during pre-construction surveys.	To assess the potential disturbance impact of operational turbines on nearby significant bat maternity roosts.
Colonially-Nesting Breeding Bird Habitat (Trees/Shrubs) Surveys	CBT-001*	Post-construction colonially-nesting breeding bird monitoring will be repeated at the significant habitat located within 120m of a wind turbine for 3 years following the same methods utilized during pre-construction surveys	To assess the potential disturbance impact of operational turbines on colonially-nesting breeding bird habitat.
Amphibian Breeding Habitat (Woodland) Surveys	AWO-001*	Post-construction amphibian call surveys will be repeated at this habitat that is overlapping the Project Location (through directional drilling) for 1 year following the same methods utilized during pre-construction surveys. After presenting results to the MNRF, the need for additional surveys will be addressed.	To assess the potential disturbance impact of access roads on significant amphibian breeding habitats (woodland).
Marsh Bird Breeding Habitat Surveys	MBB-001*	Post-construction marsh bird breeding monitoring will be repeated at the significant habitat located within 120m of a wind turbine for 3 years following the same methods utilized during pre-construction surveys.	To assess the potential disturbance impact of operational turbines on marsh bird breeding habitat.
Waterfowl Nesting Area Surveys	WFN-001*	Post-construction waterfowl nesting area surveys will be repeated at the significant habitat located within 120m of a wind turbine for 3 years following the same methods utilized during pre-construction surveys.	To assess the potential disturbance impact of operational turbines on waterfowl nesting habitat.
Bird Species of Conservation Concern Surveys: <ul style="list-style-type: none"> <li>• Eastern Wood-Pewee Habitat</li> <li>• Wood Thrush Habitat</li> </ul>	EWP-001* EWP-002* EWP-003* WTH-001*	Post-construction breeding bird monitoring for bird species of conservation concern will be repeated at all significant habitats within 120m of wind turbines for 3 years following the same methods utilized during pre-construction surveys.	To assess the potential disturbance impact of wind turbines on significant habitat for bird species of conservation concern.
Plant Species of Conservation Concern Surveys: <ul style="list-style-type: none"> <li>• Prairie milkweed Habitat</li> <li>• Pawpaw</li> </ul>	PMI-001* PAW-001* MSE-001* MSE-005* MSE-006* MSE-007* MSE-008* RSE-001* BAS-001* SRM-001*	Post-construction monitoring for plant species of conservation concern will be repeated at all of the significant habitats in years 1, 3, and 5 of operation at a time of year when the species can be identified (refer to Table 1 for specific survey timing). Following pre-construction survey methods, one standardized area search will be conducted throughout each significant habitat. The UTM location of any individuals or clusters will be recorded and a stem count will	To assess the potential disturbance impact of access roads on significant habitat for plant species of conservation concern.

Survey Type	Location(s)	Generalized Methods*	Purpose
<ul style="list-style-type: none"> <li>Habitat</li> <li>• Muskingum Sedge Habitat</li> <li>• Rigid Sedge Habitat</li> <li>• Round-Fruited Panic Grass Habitat</li> <li>• Blue Ash Habitat</li> <li>• Swamp Rose-mallow Habitat</li> <li>• Black Gum Habitat</li> <li>• Northern Fogfruit Habitat</li> <li>• Shumard Oak Habitat</li> <li>• Climbing Prairie Rose Habitat</li> <li>• Lizard's Tail Habitat</li> <li>• Wild Senna Habitat</li> <li>• Cup-plant Habitat</li> <li>• Riddell's Goldenrod Habitat</li> <li>• Southern Slender Ladies' Tresses Habitat</li> <li>• Wing-stem Habitat</li> <li>• Giant Ironweed Habitat</li> <li>• Virginia Culver's-root Habitat</li> <li>• Cream Violet Habitat</li> </ul>	<ul style="list-style-type: none"> <li>SRM-002*</li> <li>BGU-001*</li> <li>BGU-003*</li> <li>NFO-001*</li> <li>NFO-005*</li> <li>NFO-006*</li> <li>NFO-007*</li> <li>NFO-008*</li> <li>SHU-002*</li> <li>CPR-001*</li> <li>LTA-001*</li> <li>LTA-005*</li> <li>LTA-006*</li> <li>LTA-007*</li> <li>LTA-008*</li> <li>WSE-001*</li> <li>WSE-003*</li> <li>WSE-006*</li> <li>WSE-007*</li> <li>WSE-008*</li> <li>WSE-009*</li> <li>CUP-001*</li> <li>CUP-002*</li> <li>CUP-003*</li> <li>CUP-004*</li> <li>RGL-001*</li> <li>SLT-001*</li> <li>WIS-001*</li> <li>WIS-005*</li> <li>WIS-006*</li> <li>WIS-007*</li> <li>WIS-008*</li> <li>GIW-003*</li> <li>GIW-004*</li> <li>GIW-005*</li> <li>GIW-006*</li> <li>GIW-008*</li> <li>VCR-001*</li> <li>CVI-001*</li> </ul>	<p>be conducted. Specific locations of plant species of conservation identified during pre-construction surveys will also be monitored post-construction.</p>	

**Appendix II**

Post-Construction Mortality Monitoring Data Sheet Templates

---

# Overview of templates for Natural Heritage Assessment Reports and Post-construction Mortality Monitoring Reports

Report the data from these forms onto the provided Excel templates. Each form correspond to at least one Excel sheet. Refer to the instructions in the Excel templates and at the top of each form.

## **Post-construction Field Forms**

1. Site Description Form (Carcass searches)
2. Site Description and Carcass  
Distribution Form (Carcass searches)
3. Bird/Bat Carcass Searches Form
4. Searcher Efficiency Trials Form
5. Searcher Efficiency Trials Summary Form
6. Carcass Removal Trials Form
7. Carcass Removal Trials Summary Form

# Wind Energy Bird and Bat Monitoring Database (post-construction)

## 1. Site Description Form (Carcass Searches)

Complete one Site Description Form for each turbine search (i.e. Each turbine sampled, once per season). Every turbine should have a unique turbine number, also referenced in other field sheets. Report each Site Description Form as a record in the data template (site\_descr\_carcass).

**Project name :** \_\_\_\_\_

**Province :** \_\_\_\_\_ **Turbine number :** \_\_\_\_\_

**Date completed (dd/mm/yyyy) :** \_\_\_\_/\_\_\_\_/20\_\_\_\_

**UTM coordinates of the turbine :**

**Zone:** \_\_\_\_\_ **Easting:** \_\_\_\_\_ **Northing :** \_\_\_\_\_

**Slope :** \_\_\_\_\_° **Orientation of slope :** \_\_\_\_\_ (e.g., SSW)

**Required survey area :** \_\_\_\_\_ m<sup>2</sup> (e.g. 7,854 m<sup>2</sup> for 50 m radius)

**Transect separation :** \_\_\_\_\_ m

**Habitat description :**

**Distance from the turbine to the following features:**

Distance to nearest wood : \_\_\_\_\_ m

Distance to nearest shoreline : \_\_\_\_\_ m

Distance to nearest wetland : \_\_\_\_\_ m

Distance to nearest Significant Wildlife Habitat : \_\_\_\_\_ m

Type of Significant Wildlife Habitat (eg. hibernacula): \_\_\_\_\_

**Turbine details :**

Power : \_\_\_\_\_ Megawatts

Turbine height (from ground to top of nacelle) : \_\_\_\_\_ m

Turbine blade diameter : \_\_\_\_\_ m

# Wind Energy Bird and Bat Monitoring Database (post-construction)

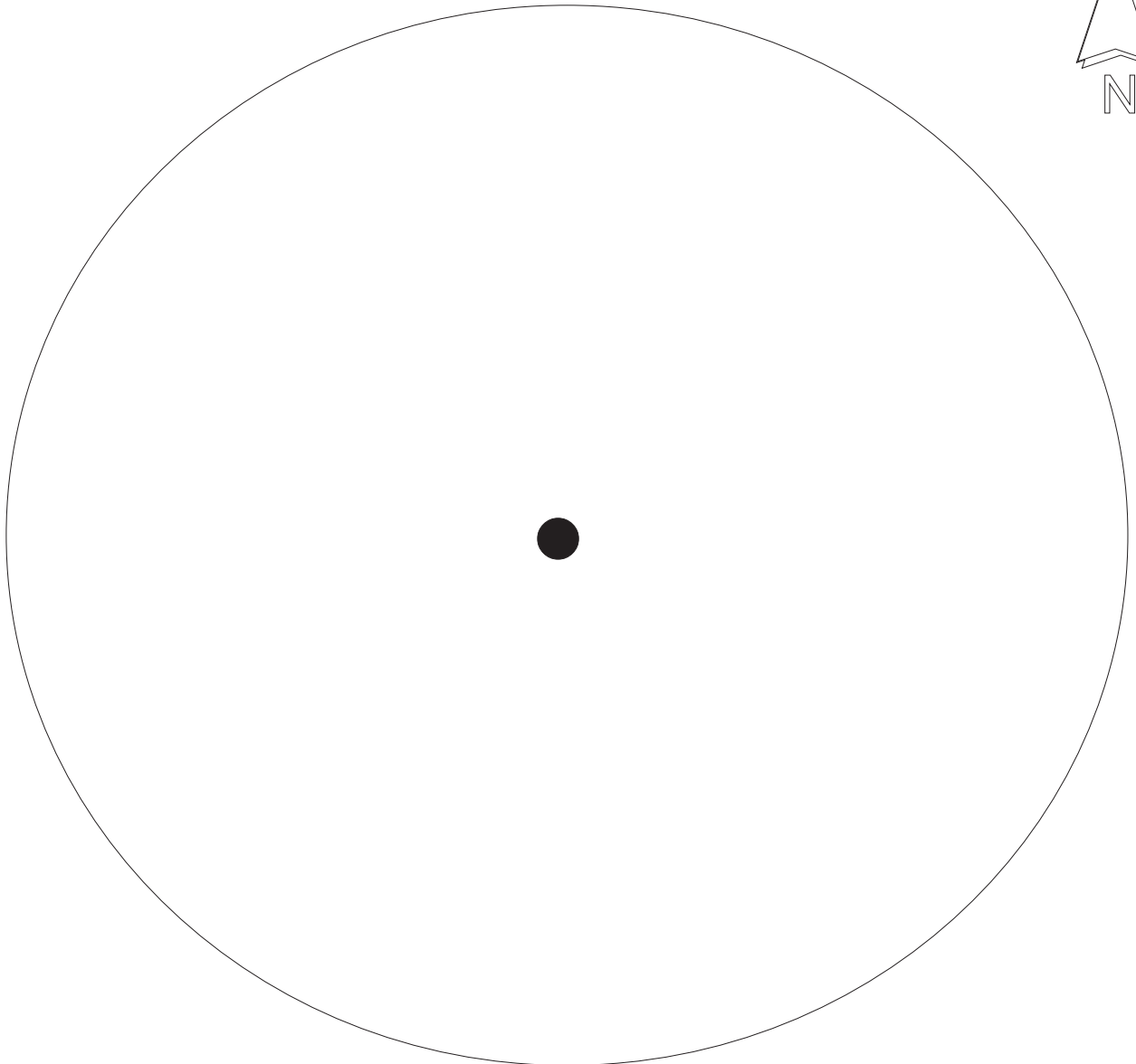
## 2. Site Description and Carcass Distribution Form (Carcass Searches)

Map the search plot, indicating visibility classes, substrate, carcass locations and area searched  
This form should be provided for information with the reports, and does not contain information that needs to be transferred to the Excel data templates.

Project name: \_\_\_\_\_

Site number : \_\_\_\_\_

Year : \_\_\_\_\_



**(post-construction)**

### 3. Bird/Bat Carcass Searches Form

Complete one Bird/Bat Carcass Search Form for every visit to a turbine (i.e. one per day of survey at each turbine). Note that once per season, a Site Description Form must also be completed for each turbine surveyed.

Report the following fields in BOTH the carcass\_search\_header and the carcass\_search\_data table templates (once per visit in header, and repeated for each carcass found in data):

**Project name :** \_\_\_\_\_ **Turbine number :** \_\_\_\_\_

**Date of search (dd/mm/yyyy):** \_\_\_\_/\_\_\_\_/ 20\_\_\_\_ **Start time :** \_\_\_\_:\_\_\_\_

Report the following fields ONLY in the carcass\_search\_header table (one record per visit).

**End time : \_\_\_\_:\_\_\_\_ OR Duration : \_\_\_\_\_ min Number of searchers : \_\_\_\_\_**

**Searcher(s) name :** \_\_\_\_\_

**Number of days since last search :** \_\_\_\_\_

**Actual area searched :** \_\_\_\_\_ m<sup>2</sup>      **Dog used (Y/N) :** \_\_\_\_\_

**Search method (square or circular) :** \_\_\_\_\_ **Transect separation :** \_\_\_\_\_ m

Temperature: \_\_\_\_\_ °C   Wind speed : \_\_\_\_\_ km/h   Wind dir. : \_\_\_\_\_   Precipitation : \_\_\_\_\_

Cloud cover : \_\_\_\_\_%    Significant weather (before the visit) : \_\_\_\_\_

### Comments :

[illegible]



## Wind Energy Bird and Bat Monitoring Database (post-construction)

## 4. Searcher Efficiency Trials Form

One Searcher Efficiency Trials Form should be filled for every searcher or searcher team (e.g. Searcher and dog), once a year. The results should also be summarized for each season using the Searcher Efficiency Trials Summary Form.

Project name: \_\_\_\_\_ Year: \_\_\_\_\_ Searcher(s) name: \_\_\_\_\_ Dog used (Y/N) \_\_\_\_\_

[illegible]

Wind Energy Bird and Bat Monitoring Database  
(post-construction)

5. Searcher Efficiency Trials Summary Form

Project name: \_\_\_\_\_ Year : \_\_\_\_\_

Spring (May-June)

Searcher	Number of carcasses placed	Number scavenged	Number found	Proportion found	Proportion turbines searched	Weighted searcher efficiency Se
Spring Total					100%	

Summer (July-August)

Searcher	Number of carcasses placed	Number scavenged	Number found	Proportion found	Proportion turbines searched	Weighted searcher efficiency Se
Summer Total					100%	

Fall (September-October)

Searcher	Number of carcasses placed	Number scavenged	Number found	Proportion found	Proportion turbines searched	Weighted searcher efficiency Se
Fall Total					100%	

## Wind Energy Bird and Bat Monitoring Database (post-construction)

## 6. Carcass Removal Trials Form

One Carcass Removal Trials Form should be filled per season and per project. The results should be summarized in the Carcass Removal Trials Summary Form.

Project name: \_\_\_\_\_  
 Year : \_\_\_\_\_  
 Turbine number: \_\_\_\_\_  
 Season : \_\_\_\_\_

[illegible]

# Wind Energy Bird and Bat Monitoring Database (post-construction)

## 7. Carcass Removal Trials Summary Form

Project name: \_\_\_\_\_ Year : \_\_\_\_\_

### Spring (May-June)

Turbine Number	Number of carcasses placed (N0)	Number of carcasses found per visit			Scavenger correction SC
		N1	N2	N3	

Spring Total

### Summer (July-August)

Turbine Number	Number of carcasses placed (N0)	Number of carcasses found per visit			Scavenger correction SC
		N1	N2	N3	

Summer Total

### Fall (September-October)

Turbine Number	Number of carcasses placed (N0)	Number of carcasses found per visit			Scavenger correction Sc
		N1	N2	N3	

Fall Total