DRAFT NATURAL HERITAGE ASSESSMENT & ENVIRONMENTAL IMPACT STUDY
DRAFT ANNOTATED REPORT

EXECUTIVE SUMMARY

Missing Information / Reports

- The Species at Risk report mentioned in the Natural Heritage Assessment and Environmental Impact Study is not provided.

  Within the context of O. Reg 359/09, endangered and threatened species are addressed as part of MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements. Information required as part of these requirements is being submitted to MNR as part of the Amherst Island APRD Report (separate cover). Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process

- Per the report "A summary of the methods and the criteria used to evaluate the significance of each component of candidate significant wildlife habitat are provided below. The approved workplan submitted to the MNR in 2011 is included in Appendix G. Full detailed methods are also provided in Appendix G." appendix G is not attached.

- Site Investigation Report, providing rationale for "Alternative Investigation" is not attached.

- A written Comment from the MRN required for inclusion into the REA application had not been received for addendum and was therefore not included in the documents released to general public. This written comment was received by Algonquin towards the end of Dec and could easily have been posted to the Project web-site.

- Although not legally mandated, there was no consideration of cumulative effects with the surrounding proposed wind turbine factories.

- Although not legally mandated, there was no consideration of bat migratory stopover areas.

Omissions / mistakes in field studies

- The maps in Appendix A clearly indicate that the area on either side of the roads proposed to be used by Algonquin were included in the "area of study". However, it does not appear that the fields 120 meters on either side of the roads to be used by Algonquin for the construction phase were included in the field studies.

- Inaccuracies and omissions in Table 3B / Potential Species of Conservation Concern Occurring within the Study Area are carried forward throughout the report as this is table where Stantec specifies what species natural habitat will be studied.

- A review of the OWES documents for wetland 6 reveals many issues of grave concern.

- We have presented an argument as to why deer winter congregation areas / deer yarding areas should be studied

    - Following from the above, Animal movement corridors must be studied

- According to table 4B the first ELC and preliminary botanical inventories of vegetation communities occurred on July 26 – 29 of 2011. However many of the Site Surveys occurred prior to this date. How then were the sites to be surveyed selected? Below is a list of the field studies that occurred prior to ELC studies.

    - Waterfowl Stopover and Staging Area (Terrestrial and Aquatic)
    - Waterfowl Nesting Area
    - Amphibian Breeding Wetland and Woodland

- Following from above, the amphibian movement corridors must be re-evaluated. The movement corridors have not been studied yet – but the potential movement corridors are much further afield than those suggested by Stantec.

- Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). are considered candidate Significant Wildlife Habitat for Turtle Wintering Areas - there is no indication that other SW, MA habitat within the project area (including filelds as the sides of roads to be used during constrution) were surveyed.

- Why are the Bobolink, Barn Swallow and Eastern Meadowlark not included in Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern as they are present in Project Location. Appendix K of the Natural Heritage Assessment and Environmental Impact Study contains numerous references to sightings of these species at risk.

<u>Insufficient Survey time:</u>

- Amphibian breeding surveys occurred in ABW01, ABW02, ABW03, ABWE1 and ABWE2 (provicialy designated swamp) The surveys occurred April 19 / 20 and 26, may 17, and June 18 and 19 for a **total of 14.5 hours**

- Spring migratory shorebird surveys (May 2011) **– 9.5 hours**

- Fall migratory butterfly surveys (September 2011) – **0 hours**
    - Table 4 B indicates two migratory butterfly surveys occurred ,August 16 and 26 of 2011. These occurred in conjunction with Staging Swallow Surveys a the wrong time of the year to survey migrating butterflies on Amherst Island.

- Spring waterfowl nesting surveys (May-July 2011);
    - Table 4B indicates 2 waterfowl nesting surveys , one on June 7, 2011 and the other on June 5, 2011. **<u>A total of 1 hour was spent on both surveys.</u>**

- Summer woodland raptor nesting surveys (May-July 2011);
    - There are no Site Investigations for summer woodland raptor nesting listed in table 4B

Following you will find the annotated report. Reviewer comments are prefaced with either Note or Comment. Sections of the report which did not require comment were redacted.

1.1 PROJECT OVERVIEW

The Proponent has elected to assess and seek approval for some alternative Project configurations. The Renewable Energy Approval (REA) application process will consider:

- two alternative mainland transmission line routes;
- two alternative switching station locations and corresponding point of common coupling with the HONI line;
- three alternative mainland temporary dock locations along the mainland;
- a submarine cable with three alternative submarine cable routes near the mainland;
- three alternative mainland submarine cable landing locations and corresponding cable vault locations;
- up to three alternative met tower locations; and,
- up to four potential locations for an operations and maintenance building.

Final selection of the sites to be used would be based on the results of consultation activities, detailed design / engineering work, and the conditions experienced during construction.

Note: The level of uncertainty detailed in the Project Overview makes it virtually impossible for a proper review of this Report.

1.2 REPORT REQUIREMENTS

This NHA utilizes the definition of Project Location as provided in Section 2.3 of the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a). As per the definition in the REA regulation, a renewable energy Project Location includes: "…*a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the Project and any airspace in which a person is engaging in or proposes to engage in the Project".*

A renewable energy Project includes all activities associated with the construction, installation, use, operation, maintenance, changing or retiring of the renewable energy generation facility. Therefore, for the purposes of measuring the distance from the Project Location to a natural feature, a Project Location boundary is considered to be the outer limit where site preparation and construction activities will occur and where infrastructure will be located (e.g. temporary structures, lay down areas, storage facilities, generation equipment, access roads, etc.).

In accordance with O. Reg. 359/09, the Project Location includes all land and buildings / structures associated with the Project and any air space in which the Project will occupy. This

includes structures such as turbines, access roads and power lines as well as any temporary work areas (the 'constructible area' for the Project) which are required to be utilized during the construction of the Project.

Comment: The above should include municipal roads and unopened road allowances that will be used by the proponent during the construction phase. Certainly Appendix A suggest that this has been the case as all of the municipal roads that will be used by the proponent have been included in a 120 meter "zone of investigation" on all of the maps in Appendix A.

The results of the NHA/EIS are consolidated into this report, which is being submitted to MNR for confirmation in advance of submission of the REA application to the MOE. Written confirmation from the MNR, as well as any written comments received from the MNR, must be submitted along with the NHA/EIS to the MOE as part of the REA application.

Comment: On a poster board at the Open House of March 5 the following information was provided:

> **A written Comment from the MRN required for inclusion into the REA application had not been received for addendum and was therefore not included.**
>
> **MNR has provided written comments (14 Dec 2012) which will be included in the REA application.**

The above mentioned documents (any written comments received from the MNR) should have been made available to Loyalist Township (90 days) and the general public (60) days prior to the final public meeting. Clearly Algonquin could have posted the missing comments to their web page. When will the missing documents be posted?

1.3 GUIDANCE DOCUMENTS

During the preparation of this report, several guidance documents were referenced to ensure compliance with current standards and agency requirements. These documents include:

- NHA Guide for Renewable Energy Projects (MNR 2011a)
- NHA Guide for Renewable Energy Projects (MNR 2012) was published in November of 2012. Why is Stantec not using the most recent Guideline? Does the Natural Heritage Assessment & Environmental Impact Study reflect the most recent MNR guidances?
- Bats and Bat Habitats Guidelines for Wind Power Projects (MNR 2011b)
- Birds and Bird Habitats Guidelines for Wind Power Projects (MNR 2011c)
- Significant Wildlife Habitat Technical Guide (SWHTG) and Appendices (MNR 2000)
- Ontario Wetland Evaluation System, Southern Manual (MNR 2002)
- Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012)

2.0 Records Review

2.1 METHODS

Documents reviewed and agencies contacted as part of the Records Review included but were not limited to:

- Ontario Ministry of Natural Resources (MNR). Natural heritage data request and proposed Site Investigation work program submitted May 12, 2011. MNR provided a written response on natural heritage features and Provincially Significant Wetlands (PSW) for the Project Study Area on May 30, 2011 (including Provincially Significant Wetland Evaluations for Wemps Bay Marsh, Nut Island Duck Club Marsh and Long Point Marsh) and during a teleconference on June 3, 2011. Stantec has been in correspondence with the Renewable Energy Planning Ecologist for this region on an ongoing basis;

Comment: The above documentation should have been included in the package provided for review. When will the documents be posted?

Conservation Authority

- Cataraqui Region Conservation Authority/Loyalist Township. Letter sent to Planner/Chief Building Official of Loyalist Township and copied to General Manager of CRCA on September 16, 2008. Response and screening maps received from Development Officer of CRCA September 26, 2008;
- Letter from Cataraqui Region Conservation Authority (CRCA) to Windlectric Inc. dated March 28, 2011;
- Background information request sent to the General Manager at CRCA on August 17, 2011;
- Windlectric and Stantec met with CRCA representatives on October 6, 2011;
- Cataraqui Region Conservation Authority mapping (2011);
- Cataraqui Region Conservation Authority. Natural Heritage Study Final Report. August 2006.
- Owl Woods Management Strategy (Ecological Services 2011)

Comment: The above documentation should have been included in the package provided for review. When will the documents be posted?

Local Municipal Government – Records Review / No Comment

Other data sources – Records Review / No Comment

A summary of agencies contacted, information requested and responses received is provided in **Table 1B, Appendix B**.

The information received from each source and the manner in which it was used to identify natural features, provincial parks or conservation reserves that exist in or within 120 m of the Project Location (50 m for Earth Science ANSIs) is presented in Section 2.2.5 to 2.2.7.

Comment: In fact section 2.2.5 is entitled Areas of Natural and Scientific Interest (ANSIs) and constitutes 2 paragraphs, 2.2.6 is entitled Natural Features in Specified Provincial Plan Areas and section 2.2.7 is entitled Provincial Parks and Conservation Reserves. Where is the information noted above available?

2.2 RESULTS

2.2.1 Wetlands

2.2.1.1 Provincially Significant and Coastal Wetlands – Records Review / No Comment

2.2.1.2 Locally-Significant Wetlands – Records Review / No Comment

2.2.1.3 Unevaluated Wetlands – Record Review / No Comment

2.2.1.4 Summary – Record Review / No Comment

2.2.2 Woodlands – Records Review / No Comment

2.2.3 Valleylands – Records Review / No Comment

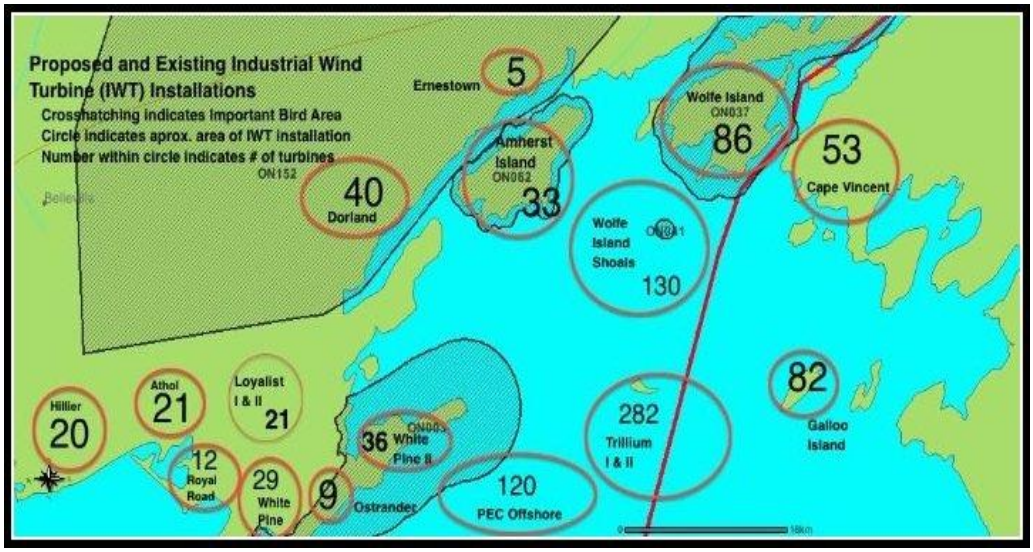
2.2.4 Wildlife Habitat

2 Paragraphs – No Comment

The Amherst Island Important Bird Area (IBA) encompasses the entire island and adjacent offshore areas. It has been designated as globally and continentally significant for congregating species, including spring and fall staging waterfowl. Although IBA designation is not recognized from a provincial or federal regulatory perspective, special attention has been given to the IBA in this assessment. Specifically, the IBA has been designated for the high numbers of Brant Geese recorded in off-shore waters surrounding the island during their fall migration (IBA Canada undated). Large numbers of shorebirds, specifically Dunlin, have also been recorded along the Amherst Island shorelines. The IBA report also makes mention of the large concentration of wintering raptors and owls on Amherst Island, including Short-eared Owls, a species of Special Concern (IBA Canada undated). Owl Woods is a well-known area for congregations of wintering owls on Amherst Island.

An additional known area of particularly high landbird concentration is located approximately 18 km southwest of the Study Area, at the Prince Edward Point Bird Observatory, located within the Prince Edward Point IBA. Wolfe Island is also an IBA, located approximately 6 km east of the Study Area, and it is known for high landbird and waterfowl concentrations.

Comment: There are in fact 5 IBA in the immediate area, these are indicated by the crosshatching in the map below. Furthermore, the entire area depicted below sits squarely in the Atlantic Migratory Flyway.



2.2.4.1 Seasonal Concentration Areas

Waterfowl Stopover and Staging Areas

Areas generally considered candidate significant wildlife habitat for waterfowl staging areas are very large wetlands, associated with lakes that generally have a diversity of vegetation communities interspersed with open water (MNR 2000). Marshes along Great Lakes shorelines are considered particularly valuable (MNR 2000). Amherst Island is noted in Appendix K of the Significant Wildlife Habitat Technical Guide (MNR 2000) as being significant for waterfowl migration. (page 44)

Terrestrial **– Records Review – No Comment**

Aquatic **Records Review – No Comment**

Shorebird Migratory Stopover Areas - Records Review / No Comment

Raptor Wintering Area – Records Review / No Comment

Bat Hibernacula – Records Review / No Comment

Bat Maternity Colonies – Records Review / No Comment

Bat Migratory Stopover Areas

Stopover areas for long distance migrant bats, including Hoary Bat, Eastern Red Bat and Silverhaired Bat, are important during fall migration. Long distance migratory bats typically migrate during late summer and early fall from summer breeding habitats throughout Ontario to southern wintering areas. Their annual fall migrations concentrate these species of bats at stopover areas. The location and characteristics of stopover habitats are generally unknown.

No known migratory stopover areas occur within the Study Area. Because criteria have not been developed for this habitat in this Ecoregion to date, it is not possible to further assess this

habitat (MNR 2012). Therefore this feature will not be carried forward into the Site Investigation.

Comment: According to the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012); information sources to be consulted when attempting to establish Candidate Significant Wildlife Habitat for Bat Migratory Stopover Areas include "Local experts". Why were the Kingston Field Naturalists not contacted with regards to identifying potential Bat Migratory Stopover Areas? A KFN bioblitz undertaken in 2007 list Little Brown Bat as one of the species found on Amherst Island.

Bats are regularly seen on Amherst Island and have been documented by KFN during 2 separate Amherst Island Bioblitz. Whether they live here through the winter or are a migratory species is unknown, as they have not been studied.

Amherst Island offers excellent summer habitat for bats with its high insect population and low pesticide residuals due to the low percentage of intensive cropping land. There are numerous cracks, fissures and evidence of Karst topography around the limestone shores of Amherst Island that might be suitable as a bat hibernacula. There are wooded areas, old abandoned buildings and other structures that are suitable for maternity colonies.

The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) has done an emergency assessment of three bat species that are at risk and has recommended that they be given endangered status.

These three species are; the Little Brown Bat (Myotis lucifugus),the Northern Long Eared Bat (Myotis septentrionalis) and theTricoloured Bat (Perimyotis subflavus). The Little Brown Bat and the Northern Long Eared Bat are also listed as endangered under the Ontario Endangered Species Act.

The new endangered designations for these three species are in part due to large scale wind farms. See articles -- "Bat Deaths from Wind Turbines Explained" by Erin Baerwald, H. D'Amour, Brandon J Klug and Robert M. R. Barclay and " Barotrauma is a significant cause of bat fatalities at Wind Turbines" online at www.current-biology.com.

Amherst Island lies within the range of these three endangered species. (See "Bats of United States and Canada." by Michael J. Harvey, J. Scott Altenbach and Troy L. Best.) We need to protect an already diminished population.

Amherst Island lies between Wolfe Island and Ostrander Point. The Wolfe Island post construction Bat monitoring report indicate high Bat mortality rates and the Gilead Radar monitoring (for Ostrander Point Wind Facility) also indicates high levels of bat movement. As Amherst Island is sandwiched between the two, it is clear that Bat studies must be undertaken on Amherst Island to ensure the appropriate protection of Ontario's threatened Bat population.

Turtle Wintering Areas

Wintering areas for turtles are generally the same general area as their core habitat: water that is deep enough not to freeze, with soft mud substrate (MNR 2012). Candidate turtle overwintering habitat is defined as permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen (MNR 2012). No known turtle wintering areas occur within the

Study Area.

Comment: According to the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012); information sources to be consulted when attempting to establish Candidate Significant Wildlife Habitat for Turtle Wintering Areas include "Local naturalists and experts". Why were the Kingston Field Naturalists not contacted with regards to identifying potential Turtle Wintering Areas on the island?

Snake Hibernacula – Records Review – No Comment

Colonial Bird Nesting Sites (bank/cliff, tree/shrub and ground) – Records Review / No Comment

Migratory Butterfly Stopover Areas

During fall migration, monarchs tend to move along the north shore of the Great Lakes (Calvert 2001). Fields and other open areas with a variety of habitat types that are found within 5 km of the Lake Erie or Lake Ontario shoreline are considered candidate significant wildlife habitat for migratory butterfly stopover areas (MNR 2000).

The Study Area is located along the northern shoreline of Lake Ontario and therefore may contain candidate significant wildlife habitat for migratory butterflies; however, no known records of significant migratory butterfly stopover areas were found.

Comment: The majority of the Study Area is in fact an island 2 km off of the northern shoreline of Lake Ontario. As the island is approximately 7km wide at its widest point, according to the 5km criteria above, the entire island should then be considered candidate significant wildlife habitat for migratory Butterfly stopover areas.

Landbird Migratory Stopover Areas

Migratory passerines are known to use forested landscapes along Great Lakes shorelines as stopover sites during spring and fall migration (Potter et al. 2007; MNR 2000). Landbirds tend to concentrate at tips of peninsulas, congregating in significant numbers at known significant stopover sites including Point Pelee and Long Point in Lake Erie, while raptors and shorebirds concentrate along the Great Lakes during migration. Areas that provide a diversity of habitat types ranging from open grasslands to large woodlands within 5 km of the Lake Erie or Lake Ontario shorelines are considered potential candidate significant wildlife habitat for migrating landbird stopover areas (MNR 2000).

The Amherst Island Project is located adjacent and along the Lake Ontario shoreline and as such, the Study Area may include areas that would constitute candidate significant wildlife habitat for a migratory landbird stopover.

Comment: The majority of the Study Area is in fact an island 2 km off of the northern shoreline of Lake Ontario. As Amherst Island is approximately 7km wide at its widest point, according to the 5km criteria above, the entire island should then be considered candidate significant wildlife habitat for migrating landbird stopover areas.

Deer Yarding Areas

Deer yards are areas of key winter habitat for White-Tailed Deer. They usually consist of a core area of coniferous forest, which provides shelter from snow and wind, adjacent to an area of deciduous forest or other foraging habitat (MNR 2012).

MNR undertakes the identification and delineation of deer yards. Given the absence of designated deer yards, no candidate significant wildlife habitat for deer yards occurs in or within 120 m of the Project Location. Therefore, this habitat will not be carried forward to the Site Investigation.

Deer Winter Congregation Areas

Deer winter congregation areas are applicable in the southern areas of Ecoregion 6E where deer movement in the winter is not constrained by snow depth, but where deer congregate in suitable woodlands to reduce or avoid winter conditions. Forested or treed swamp ecosites >100 ha in size or smaller conifer plantations are considered candidate significant wildlife habitat (MNR 2012).

MNR undertakes the identification and delineation of significant deer winter congregation areas. None were found in or within 120 m of the Project Location. Therefore, this habitat will not be carried forward to the Site Investigation.

Comment: According to the *Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2011),* a Site Investigation will follow the Records Review, "The applicant must verify the accuracy of the records review report while identifying any additional natural features not identified through the records review. It is the responsibility of the applicant to ensure that a physical site investigation is conducted and to submit a report which documents the details of that investigation."

Furthermore, section 4.4.1 of the *Significant Wildlife Technical Guide* provides the following information regarding Winter Deer Yards:

How to find

- OMNR biologists, foresters, conservation officers, and local hunters know the location of some deer yards.
- Use FRI maps in conjunction with aerial photographs to help to find other potential areas. Locate areas consisting of preferred tree species such as hemlock, white cedar, pines, and white spruce. Use aerial photographs to verify existence of potential sites and to assess the apparent canopy closure and features of the surrounding landscape.
- Conduct field investigations during mid to late winter to confirm use (can be done from a vehicle or aircraft).

Therefore, the fact that the MNR has not identified Deer Yarding Areas or Deer Winter Congregation Areas on Amherst Island does not negate the need for a physical site investigation. Any discussion with local landowners / local hunters would have identified the fact that Amherst Island has a substantial White Tailed Deer population. Estimates range from 200 to 500 animals.

Section 2.0 Record Review (page 16) of the Stantec *Natural Heritage Assessment & Environmental Impact Study*, has the following information regarding Deer Winter

Congregation Areas. "Forested or treed swamp ecosites >100 ha in size or smaller conifer plantations are considered candidate significant wildlife habitat (MNR 2012)."

According to *Table 7B: Site Investigation Results – Woodlands*,(Natural Heritage Assessment & Environmental Impact Study) there are 3 (Amherst Island) Woodlands that meet the >100 ha criteria. Woodland feature 21, 4 and 3. Furthermore, a portion of each of these woodlands, is within 120m of the Project Location. We find the following in the "function" column of Table 7B each of these 3 woodlands "Provides connectivity between Significant Natural Features". Per Table 7B the significance of all 3 Island Woodlands is "Unknown, requires Evaluation of Significance."

However section 4.2.2 of the Natural Heritage Assessment states: "Criteria for woodland significance were applied to each of the Woodland Features located within 120 m of the Project Location. Results of the evaluation are provided in Table 10B, Appendix B. Fifteen of the woodlands met the criteria for significance based on criteria standards within the NHA Guide for Renewable Energy Projects. These included Features 1, 2, 3, 4, 7, 9, 10, 15, 18, 20, 21, 23, 28, 32, and 36."

According to section 2.2.4.4 Animal Movement Corridors of the Stantec *Natural Heritage Assessment & Environmental Impact Study*,

> The Central Cataraqui Region Natural Heritage Study (2006) maps linkages between areas of core habitat that would act as wildlife corridors. These corridors may be used by a variety of wildlife, in particular deer movement. However, no deer yarding areas or deer winter congregation areas were identified by the MNR on Amherst Island. Therefore, there can be no deer movement corridors identified based on the criteria provided in the Draft SWH Ecoregion 6E Criterion Schedule (MNR 2012)."

However, according to the information provided above, the fact that the MNR has not identified Deer Yarding Areas or Deer Winter Congregation Areas on Amherst Island does not negate the need for a physical site investigation, and in fact Draft SWH Ecoregion 6E Criterion Schedule (MNR 2012) "Use of the woodlot by white-tailed deer will be determined by MNR, all woodlots exceeding the area criteria are significant, unless determined not to be significant by MNR Í"

Therefore, animal movement corridors must be identified / evaluated and carried forward to the Site Investigation.

Seasonal Concentration Areas Summary

Site investigations are required to determine whether the above features (with the exception of bat migratory stopover areas, deer yarding areas and deer winter congregation areas) exist in or within 120 m of the Project Location, and whether additional features exist other than those identified. This includes determining whether the critical habitat features required to support these concentration areas are present in the Study Area. Results of these further investigations are provided in the Site Investigation (Section 3.0).

2.2.4.2 Rare Vegetation Communities or Specialized Habitats

Rare Vegetation Communities – Records Review / No Comment

Specialized Habitats

Waterfowl Nesting Areas – Records Review / No Comment

Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat - Records Review / No Comment

Woodland Raptor Nesting Habitat – Records Review / No Comment

Turtle Nesting Habitat

Sandy or fine gravel soils in an open landscape setting with sparse vegetation are a requirement for turtle nesting (MNR 2000). Areas that would be considered candidate significant wildlife habitat for turtle nesting include areas containing sandy or fine gravel soils (e.g. shoreline beaches) in proximity or adjacent to wetland habitat occupied by turtles (MNR 2012).

The NHIC database included records for Northern Map Turtles on or near Amherst Island. Other turtles, not addressed through the Species at Risk Report, likely to occur on the island include Common Snapping Turtle and Midland Painted Turtle. Turtle nesting habitat was not identified through the Records Review.

Comment: Why were the Kingston Field Naturalists not consulted with regards to the presence of Turtle on Amherst Island? KFN are aware of several sites where a number of Midland Painted Turtles have been observed.

Seeps and Springs – Records Review / No Comment

Amphibian Breeding Habitat (Woodland) - Records Review / No Comment

Amphibian Breeding Habitat (Wetland) – Records Review / No Comment

Rare Vegetation Communities and Specialized Wildlife Habitats Summary – Records Review – No Comment

2.2.4.3 Habitat for Species of Conservation Concern

Marsh Bird Breeding Habitat – Records Review / No Comment

Bird Breeding Habitat (woodland area-sensitive, open country, and shrub/early successional) – Records Review / No Comment

Woodland Interior Breeding Birds - **Records Review / No Comment**

Open Country Breeding Birds **– Records Review / No Comment**

Shrub/Early Successional Breeding Birds **– Records Review / No Comment**

Terrestrial Crayfish – Records Review / No Comment

Rare Species

Within the context of O. Reg 359/09, endangered and threatened species are addressed as part of MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements. Information required as part of these requirements is being submitted to MNR as part of the Amherst Island APRD Report (separate cover). Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process.

Comment: Why have Loyalist Township and the General Public not been provided access to the APRD Report mentioned above? The Natural Heritage Assessment and Environmental Impact Study does not address the numbers of species at risk found on Amherst Island. Without this information it is virtually impossible to conduct a thorough review of this document.

2.2.4.4 Animal Movement Corridors

Animal movement corridors are elongated, naturally vegetated parts of the landscape used by animals to move from one habitat to another (MNR 2000).

The Central Cataraqui Region Natural Heritage Study (2006) maps linkages between areas of core habitat that would act as wildlife corridors. These corridors may be used by a variety of wildlife, in particular deer movement. However, no deer yarding areas or deer winter congregation areas were identified by the MNR on Amherst Island. Therefore, there can be no deer movement corridors identified based on the criteria provided in the Draft SWH Ecoregion 6E Criterion Schedule (MNR 2012). These movement corridors also do not necessarily correspond to amphibian movement corridors between breeding wetlands and terrestrial habitats.

Comment: Please see comments under section 2.2.4.1 Seasonal Concentration Areas, Deer Winter Congregation Areas. Comments explain why Animal Movement Corridors must be identified based on the criteria provided in the following:

- **Draft SWH Ecoregion 6E Criterion Schedule (MNR2012)**
- **Natural Heritage Assessment Guide for Renewable Energy Projects (MNR 2011)**
- **Significant Wildlife Technical Guide (MNR 2000)**

2.2.5 Areas of Natural and Scientific Interest (ANSIs) – Records Review / No Comment

2.2.6 Natural Features in Specified Provincial Plan Areas – Records Review / No Comment

2.2.7 Provincial Parks and Conservation Reserves – Records Review / No Comment

2.3 SUMMARY OF NATURAL FEATURES AND BOUNDARIES IDENTIFIED

Table 2.1 provides a summary of the natural features that will be carried forward to Site Investigation.

All reviewer comments recorded in sections above.

3.0 Site Investigation

Site investigations were conducted in accordance with O. Reg 359/09, s. 26 (1), Natural Heritage Site Investigation. This report is prepared in accordance with s. 26 (3) with guidance provided from the *Natural Heritage Assessment Guide for Renewable Energy Projects* (MNR 2011a).

Site investigations in support of this report were completed with the purpose of confirming the status and boundaries of natural features identified through the Records Review and identifying any additional features (**Section 3.1**). Data collected during the Records Review concerning natural features and species occurrences were used to guide the scope and direction of site investigations. The extent of the site investigation program and type of field surveys included in the program is directly reflective of the extent of natural features and triggers for significant wildlife habitat that are identified within the Study Area. The Project is primarily sited within actively farmed agricultural fields and has been sited outside of the majority of natural features in the Study Area.

Comment: While the Project is indeed primarily sited within actively farmed agricultural fields, Section 2.2.4.3 Habitat for Species of Conservation Concern states;

> …. due to the importance of Amherst Island for bird migration and grassland species such as the Short-eared Owl, all hayfields, pastures, and cultural meadows have been assessed as candidate significant wildlife habitat.

Therefore the fields themselves become "natural features".

Natural features that have the potential to occur in or within 120 m of the Project Location, as identified through the Records Review, are listed in **Table 2.1**. Site investigations are required to confirm the presence and delineate the boundaries of candidate significant wildlife habitat features within 120 m of the Project Location.

3.1 METHODS

The site investigations undertaken detailed the current conditions in and within 120 m of the Project Location, and were based on the information about the Project Location and siting that was current at the time of the respective survey. Survey dates, times, duration, field personnel and weather conditions are presented in **Table 4B, Appendix B**. All surveys conducted within the Study Area were completed by qualified personnel. Field notes from all Site Investigations are provided in **Appendix C**. Staff summaries and qualifications for personnel involved in conducting the site investigations are provided in **Appendix D**. Land access was available for all land parcels where Project components are proposed, and areas within 120 m of the Project Location were traversed on foot during site investigations where land access was available.

All site investigations were carried out in accordance with O. Reg. 359/09 and the NHA Guide for Renewable Energy Projects (MNR 2011a), using guidance provided in the SWHTG and the Draft SWH Ecoregion 6E Criterion Schedule (MNR 2012).

Comment: According to section 1.2 Report Requirements, of this report;

> for the purposes of measuring the distance from the Project Location to a natural feature, a Project Location boundary is considered to be the outer limit where site preparation and construction activities will occur and where infrastructure will be located

(e.g. temporary structures, lay down areas, storage facilities, generation equipment, access roads, etc.).

The Project Location also includes the public roads that the construction activities will occur on. These roads are also delineated on the maps in Appendix A (Figures) as being within the 120 meter Zone of Investigation (suggesting that they were investigated). However Appendix C Field Notes provides no studies which included all of the roads impacted being traversed on foot. In fact, there is no evidence of the roadside (120 meters on each side) being routinely included in any site investigations.

3.1.1 Alternative Site Investigation Methods

Alternative site investigations consisted of assessments conducted from roadsides and property boundaries in locations within 120 m of the Project Location where access was not required. This occurred in locations where underground transmission lines are proposed within the road right-of-way and the adjacent property is active agriculture or residential property. Alternative site investigations, comprised of visual scans from roadsides and/or property boundaries in combination with air photos, were undertaken in these locations.

The above paragraph is not clear, were site investigations undertaken from roadsides in a systematic fashion? If yes, where is the documentation of this?

Following is the definition of "Alternative Investigation" found in the NHA Guide for Renewable Energy Projects (MNR 2011a)

> **5.1 Alternative Investigation**
>
> Under Part IV, Section 26(1.1) of the REA Regulation, an alternative investigation may be conducted if the applicant determines that it is not reasonable to visit a site (a part of air, land or water within 120 meters of the project location) to conduct a site investigation. An alternative investigation must verify the accuracy of the Records Review Report while identifying any additional natural features not identified through the records review. In the Site Investigation Report, the applicant must provide an explanation of the factors considered in making the determination that it was not reasonable to visit the site. Table 7 provides examples of situations wherein visiting a site for the purposes of conducting a site investigation would not be reasonable, as well as information which is required to be provided in the Site Investigation Report to support the determination. The examples are not exhaustive; however, they represent commonly encountered scenarios. To ensure that the rationale for undertaking an alternative investigation of the site is accepted and the confirmation of the Site Investigation Report is not affected, applicants are advised to discuss the alternative investigation rationale and approach with MNR prior to proceeding. In all cases, applicants must be able to provide rationale for determining that a site is not reasonable to visit, efforts to access the site, and associated documentation.
>
> Table 7 provides the following as an example of a rationale for Alternative Investigation: Access to a site not granted by adjacent landowner.

Comment: The Site Investigation Report has not been provided for review, however, according to the definition of Alternative Investigation above, site investigations should have been undertaken along the dirt roads and road allowances and unopened road allowances which are within the Project Location / 120 meter zone of investigation. The

dirt roads and road allowances are public property and would not require access being granted by an adjacent landowner.

When will the Site Investigation Report be made available for review?

3.1.2 Vegetation Community and Vascular Plants Assessment

Ecological Land Classification (ELC) and preliminary botanical inventories of the vegetation communities in and within 120 m of the Project Location were conducted by Stantec on July 26-29, August 2-5, August 17-19, November 11, 2011 and March 27-28, May 18, and August 15, 2012.

3.1.3 Wetland Confirmation and Delineation – No Comment

3.1.4 Woodlands – No Comment

3.1.5 Valleylands – No Comment

3.1.6 Areas of Natural and Scientific Interest (ANSI) – No Comment.

3.1.7 Wildlife and Wildlife Habitat – No Comment

3.1.7.1 Seasonal Concentration Areas of Animals

Table 3.1: Characteristics Used to Identify Candidate Seasonal Concentration Areas - Abridged

Candidate Seasonal Concentration Area	Criteria	Methods
Waterfowl Stopover and Staging Area (Terrestrial)	Fields with sheet water during Spring (mid - March to May) or annual spring melt water flooding found in any of the following Community Types: Meadow (CUM1), Thicket(CUT1). Agricultural fields with waste grains are commonly used by waterfowl, and these are not considered SWH.	Vegetation community classifications were utilized to assess features within 120 m of the Project Location that would support waterfowl stopover and staging areas (terrestrial). ELC surveys and GIS analysis of the landscape were used to identify large wetlands or marshes with a diversity of vegetation communities interspersed with cultural meadows that flood each spring (terrestrial staging areas). All potential waterfowl stopover and staging areas (including CUM, CUT, and hay and pasture agricultural fields) were searched in early spring 2011 for evidence of spring flooding. Subsequent transects and points counts were conducted in those areas with spring flooding. Areas with no evidence of spring flooding were not considered

		candidate waterfowl stopover and staging habitat. **Comment: See 3.1.2 above and table 4B there is no evidence of searches for potential waterfowl stopover and staging area in early March 2011. The first ELC evaluations listed in Table 4B occurred in July of 2011.** **How were the areas with no evidence of spring flooding evaluated?**
Waterfowl Stopover and Staging Area (Aquatic)	The following Community Types: Meadow Marsh (MAM), Shallow Marsh (MAS), Shallow Aquatic (SA), Deciduous Swamp (SWD). Ponds, marshes, lakes, bays, coastal inlets, and watercourses used during migration These habitats have an abundant food supply (mostly aquatic invertebrates and vegetation in shallow water) The combined area of the ELC ecosites and a 100 m radius area is the SWH. Sewage treatment ponds and storm water ponds do not qualify as a SWH, however a reservoir managed as a large wetland or pond/lake does qualify.	Vegetation community classifications were utilized to assess features within 220 m of the Project Location that would support waterfowl stopover and staging areas (aquatic). ELC surveys and GIS analysis of the landscape were used to identify large wetlands or marshes with a diversity of vegetation communities interspersed with open water (aquatic staging areas). Only those communities that contain standing water for a portion of the year were considered candidate SWH. **Comment: See 3.1.2 above and table 4B there is no evidence of searches for potential waterfowl stopover and staging area in early March 2011. The first ELC evaluations listed in Table 4B occurred in July of 2011.** **How were the areas evaluated to ascertain if they contained standing water for a portion of the year prior to the site selection for investigation being completed?**
Bat Hibernacula	Hibernacula may be found in caves, mine shafts, underground foundations and karsts. May be found in these Community Types: Crevice (CCR), Cave (CCA).	Specialized site investigations were conducted to identify potential bat hibernacula. A search of karst features and abandoned mines found within 1120 m of the Project Location was conducted with data obtained through Ministry of Northern Development and Mines. **Comment: The above suggest that no physical search occurred. Furthermore, a review of the ELC forms available in Appendix C does not indicate any Bat Hibernacula Specific searches.** **Bats are regularly seen on Amherst Island**

		during the summer. Whether they live here through the winter or are a migratory species no one knows, as they have not been studied. **Amherst Island offers excellent summer habitat for bats with it's high insect population and low pesticide residuals due to the low percentage of intensive cropping land.** **There are numerous cracks, fissures and evidence of Karst topography around the limestone shores of Amherst Island that might be suitable as a bat hibernacula. There are wooded areas, old abandoned buildings and other structures that are suitable for maternity colonies.**
Bat Maternity Colonies	Maternity colonies considered significant wildlife habitat are found in forested ecosites. Any of the following Community Types: Deciduous Forest (FOD), Mixed Forest (FOM), or Deciduous Swamp (SWD) that have>10/ha wildlife trees >25cm diameter at breast height (dbh). Maternity colonies can be found in tree cavities, vegetation and often in buildings (buildings are not considered to be SWH). Female Bats prefer wildlife tree (snags) in early stages of decay, class 1-3 or class 1 or 2. Northern Myotis prefer contiguous tracts of older forest cover for foraging and roosting in snags and trees Silver-haired Bats prefer older mixed or deciduous forest and form maternity colonies in tree cavities and small hollows. Older forest areas with at least 21 snags/ha are preferred.	Vegetation community classifications were utilized to assess features within 120 m of the Project Location that would support bat maternity colonies. Specialized site investigations were conducted to identify potential bat maternity colonies. Wooded areas were traversed and the presence and frequency of features that may support maternity colonies of bats were recorded **Comment: What dates did this occur on? A review of the ELC forms available in Appendix C does not indicate any Bat Maternity Colony Specific searches.** **Bats are regularly seen on Amherst Island during the summer. Whether they live here through the winter or are a migratory species no one knows, as they have not been studied.** **Amherst Island offers excellent summer habitat for bats with it's high insect population and low pesticide residuals due to the low percentage of intensive cropping land.** **There are numerous cracks, fissures and evidence of Karst topography around the limestone shores of Amherst Island that might be suitable as a bat hibernacula. There are wooded areas, old abandoned buildings and other structures that are suitable for maternity colonies.**
Turtle Wintering Areas	Snapping and Midland Painted turtles utilize ELC community classes: Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog	Vegetation community classifications were utilized to assess features within 120 m of the Project Location that would support turtle wintering areas.

	(BOO). Northern Map turtle- open water areas such as deeper rivers or streams and lakes can also be used as over-wintering habitat. For most turtles, wintering areas area in the same general area as their core habitat. Water has to be deep enough not to freeze and have soft mud substrate. Over-wintering sites are permanent water bodies, large wetlands, and bogs or fens with adequate dissolved oxygen	Specialized site investigations were conducted to identify potential turtle wintering areas. . **Comment: Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). are considered candidate Significant Wildlife Habitat for Turtle Wintering Areas** **All Turtle Wintering Surveyes Occured in TO1, however Appendix has many references to SW and MA habitat that are outside of the TO1 area. Why were the other SW, MA habitat within the project area (including roadside) not surveyed?**
Snake Hibernacula	Hibernation occurs in sites located below frost lines in burrows, rock crevices, broken and fissured rock and other natural features. Wetlands such as conifer or shrub swamps and swales, poor fens, or depressions in bedrock terrain with sparse trees or shrubs with sphagnum moss or sedge hummock ground cover can be important over-wintering habitat. Any ecosite in southern Ontario other than very wet ones may provide habitat. The following Community Types may be directly related to snake hibernacula: Talus (TA), Rock Barren (RB), Crevice (CCR), Cave (CCA), and Alvar (RBOA1, RBSA1, RBTA1).	Vegetation community classifications were utilized to assess features within 120 m of the Project Location that would support snake hibernacula. Specialized site investigations were conducted to identify potential snake hibernacula. Surveys for snakes and associated hibernacula features were conducted throughout natural feature communities and hedgerows. Habitat features that would provide an underground route, act as a potential hibernacula including exposed rock crevices or inactive animal borrows were recorded. **Comment: What dates did this occur on? A review of the forms in Appendix C does not reveal any snake specific searches.**

3.1.7.2 Rare Vegetation Communities or Specialized Habitats

Rare vegetation communities often contain rare species, particularly plants and small invertebrates, which depend on such habitats for their survival and cannot readily move to or find alternative habitats. Some wildlife species require large areas of suitable habitat for their long-term survival. Many wildlife species require substantial areas of suitable habitat for successful breeding. Their populations decline when habitat becomes fragmented and reduced in size. Specialized habitat for wildlife is a community or diversity-based category, therefore, the more wildlife species a habitat contains, the more significant the habitat becomes to the planning area. The largest and least fragmented habitats within a planning area will support the most significant populations of wildlife.

Rare Vegetation Communities and Candidate Specialized Wildlife Habitat have been identified by using the habitat criteria found in the SWHTG (MNR 2000) and Draft SWH Ecoregion 6E

Criterion Schedule (MNR 2012). The habitat criteria for each potential rare vegetation community and candidate specialized wildlife habitat, and methods employed to identify them in and within 120 m of the Project Location, has been summarized in **Table 3.2**.

Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Abridged)

Candidate Specialized Wildlife Habitat	Criteria	Methods
Waterfowl Nesting Area	• All upland habitats located adjacent to these wetland ELC Ecosites are Candidate SWH: • MAS1, MAS2, MAS3, SAS1, SAM1, SAF1, MAM1, MAM2, MAM3, MAM4, MAM5, MAM6, SWT1, SWT2, SWD1, SWD2, SWD3, SWD4 • Note: includes adjacency to Provincially Significant Wetlands	• The results of ELC surveys and GIS analysis of the landscape were used to identify upland areas of open habitat >120 m wide that occurred adjacent to a large marsh, pond, swamp or swamp thicket communities or clusters of these vegetation communities within 120 m of the Project Location. • Habitats adjacent to wetlands without standing water were not considered candidate SWH. **Comment: See 3.1.2 above and table 4B there is no evidence of searches for potential waterfowl stopover and staging areas in early spring 2011. The first ELC evaluations listed in Table 4B occurred in July of 2011.** **How were the areas evaluated to ascertain if they contained standing water for a portion of the year? Standing water would be expected in the spring not July when the ELC evaluations were conducted.**
Woodland Raptor Nesting Habitat	• All natural or conifer plantation woodland/forest stands combined >30 ha or with >4 ha of interior habitat. Interior habitat determined with a 200 m buffer. • Stick nests found in a variety of intermediate-aged to mature conifer, deciduous or mixed forests within tops or crotches of trees. Species such as Coopers hawk nest along forest edges sometimes on peninsulas or small offshore islands. • In disturbed sites, nests may be used again, or a new nest will be in close proximity to old nest. • May be found in all forested ELC Ecosites. • May also be found in SWC, SWM, SWD and CUP3	Searches for stick nests (active or not) as well as a general habitat assessment were conducted during wildlife habitat assessment surveys in the fall of 2011 and spring of 2012. **Comment: Please provide dates as these cannot be located in Appendix C**
Turtle Nesting Areas	• Exposed mineral soil (sand or gravel) areas adjacent (<100 m) cxlviii or within the following ELC Ecosites: MAM1 • MAM1, MAM2, MAM3, MAM4, MAM5,	• As lands within the Study Area consisted primarily of cultivated agricultural cropland, the search for turtle nesting habitat focused on watercourses and any marshy wetlands within 120 m of the Project Location.

	MAM6, SAS1, SAM1, SAF1, BOO1, FEO1 • Best nesting habitat for turtles is close to water, away from roads and sites less prone to loss of eggs by predation from skunks, raccoons or other animals. • For an area to function as a turtle- nesting area, it must provide sand and gravel that turtles are able to dig in and are located in open, sunny areas. Nesting areas on the sides of municipal or provincial road embankments and shoulders are not SWH. • Sand and gravel beaches adjacent to undisturbed shallow weedy areas of marshes, lakes, and rivers are most frequently used.	**Comment: Many watercourses intersect with or parallel the dirt roads found on Amherst Island.** **According to the information in Appendix A, the area of investigation included 120 meters on either side of the municipal roads which would be traveled by Turbine Construction Traffic.** **While the sides of municipal roads are not considered SWH, the 120 meter zone of investigation far exceeds a road embankment or shoulder. Why were these not investigated as potential Turtle nesting areas.** **Note: page 1538 of the report indicates that a painted turtle was found on 2nd concession, near feature SWD2-2 which is not listed in 8B, but which is in the zone of investigation indicated on Table 2.2 Appendix A**
Amphibian Breeding Habitat (Woodland)	• All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD • Breeding pools within the woodland or the shortest distance from forest habitat are more significant because they are more likely to be used due to reduced risk to migrating amphibians • Presence of a wetland, lake, or pond within or adjacent (within 120 m) to a woodland (no minimum size). Some small wetlands may not be mapped and may be important breeding pools for amphibians. • Woodlands with permanent ponds or those containing water in most years until mid-July are more likely to be used as breeding habitat	• Natural vegetation communities with the potential to support amphibian breeding habitat (woodland) were assessed by Stantec during vegetation assessment surveys. Each feature was visited, and areas of standing water or areas which showed evidence of holding water through the spring (based on topography and vegetation) were identified. Size of pools, presence and depth of standing water, surrounding vegetation community, emergent and submergent vegetation and canopy cover were recorded. **Comment: According to Section 3.1.2 and Table 4B, the first ELC and preliminary botanical inventories of vegetation communities occurred on July 26 – 29 of 2011.** **Surveys occurred in April and May of 2011. The only areas that were surveyed for amphibian breeding were ABW01, ABW02, ABW03, ABWE1 and ABWE2. The surveys occurred April 19 / 20 and 26, may 17, and June 18 and 19 for a total of 14.5 hours.** **The first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.**

Amphibian Breeding Habitat (Wetland)	• ELC Community Classes SW, MA, FE, BO, OA and SA. • Wetland areas >120 m from woodland habitats. • Wetlands and pools (including vernal pools) >500 m_2 (about 25 m diameter) supporting high species diversity are significant; some small or ephemeral habitats may not be identified on MNR mapping and could be important amphibian breeding habitats. • Presence of shrubs and logs increase significance of pond for some amphibian species because of available structure for calling, foraging, escape and concealment from predators. • Bullfrogs require permanent water bodies with abundant emergent vegetation.	• Vegetation community classification surveys were used to identify habitat features within 120 m of the Project Location including those that may support bullfrogs (i.e., natural open aquatic and marsh habitats greater than 1 ha in size). • Each feature was visited, and areas of standing water or areas which showed evidence of holding water through the spring (based on topography and vegetation) were identified **Comment: According to Section 3.1.2 and Table 4B, the first ELC and preliminary botanical inventories of vegetation communities occurred on July 26 – 29 of 2011.** **Surveys occurred in April and May of 2011. The only areas that were surveyed for amphibian breeding were ABW01, ABW02, ABW03, ABWE1 and ABWE2. The surveys occurred April 19 / 20 and 26, may 17, and June 18 and 19 for a total of 14.5 hours.** **The first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.**

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3.1.7.3 Species of Conservation Concern

Habitats in and within 120 m of the Project Location were assessed for their suitability to support historic species of conservation concern that are known to occur or have the potential to occur within the vicinity of the Study Area (**Table 8B, Appendix B**). Assessments were carried out for the following categories of species of conservation concern:

- Marsh breeding bird habitat;
- Breeding bird habitat (area-sensitive, open country, and shrub/early successional); and
- Special Concern and rare wildlife species.

Site investigations were carried out through a combination of vegetation surveys for plant species of conservation concern, and ELC-based habitat assessments for both plant and wildlife species of conservation concern as described in the Draft SWH Ecoregion 6E Criterion Schedule (MNR 2012). Additional survey information for specific categories is discussed in **Table 3.3**.

Table 3.3: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern

Candidate Habitat for Species of Conservation Concern	Criteria	Methods
Marsh Bird Breeding Habitat	• Nesting occurs in wetlands. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently it may be found in upland shrubs or forest at a considerable distance from water. • All wetland habitats with shallow water and emergent aquatic vegetation. • May include any of the following Community Types: Meadow Marsh (MAM), Shallow Aquatic (SA), Open Bog (BOO), Open Fen (FEO), or for Green Heron: Swamp (SW), Marsh (MA) and Meadow (CUM) Community Types	• Site investigations were conducted to assess the potential for this habitat using ELC to delineate previously unidentified wetland communities within 120 m of the Project Location. **Comment: The earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **All Breeding Bird Surveys and Point Counts occurred between May 2011 and 11 July 2011. (Table 4B does not provided specific references to Marsh Bird Breeding Habitat, I am therefore assuming that this is rolled into the Breeding Bird Surveys and Point Counts)** **Conducting ELC evaluations after the fact, seems disingenuous at best.**
Woodland Area sensitive Bird Breeding Habitat	• Habitats where interior forest is >4 ha (at least 200 m from the forest edge) breeding birds are breeding. • These include any of the following Community Types: Forest (FO), Treed Swamp (SW) that are mature (>60 years old) and >30 ha. • Condition of existing habitat at site • Size and location of habitat • Potential for long-term protection of the habitat • Representation of species/habitat within the municipality.	• Site investigations were conducted to assess the potential for woodlots within 120 m of the Project Location >30 ha in size with the potential to host populations of area sensitive species, through the delineation and verification of forest communities by ELC. **Comment: The earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **All Breeding Bird Surveys and Point Counts occurred between May 2011 and 11 July 2011. (Table 4B does not provided specific references to Woodland Area Sensitive Bird Breeding Habitat, I am therefore assuming that this is rolled into the Breeding Bird Surveys and Point Counts)** **Conducting ELC evaluations after the fact, seems disingenuous at best.**
Open Country Bird Breeding Habitat	• Grassland areas > 30 ha, not Class 1 or Class 2 agricultural lands, with no row-cropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Type: Meadow (CUM). • Condition of existing habitat at site (level of disturbance) is an important consideration. For example, fields with intensive agriculture are not considered candidate habitat. Fields with light grazing are considered candidate habitat) • Size and location of habitat • Potential for long-term protection of the	• Site investigations were conducted to assess the potential for grassland communities in and within 120 m of the Project Location to support area-sensitive bird species, through the delineation and verification of grassland communities by ELC. • Swallow migratory staging was also included in this type of habitat for Amherst Island because these species use this habitat for foraging during fall migration. More information is provided in Section 4.2.3. • The farming practice of hay field cutting before the end of the breeding cycle for grassland birds can reduce breeding success for these species up to 94% and hayfields are not considered to support

	habitat • Representation of species/habitat within the municipality.	viable populations of grassland breeding bird species (COSSARO 2010); however, due to the importance of Amherst Island for bird migration and grassland species such as the Short-eared Owl, all hayfields, pastures, and cultural meadows have been identified as candidate significant wildlife habitat.
Shrub/Early Successional Bird Breeding Habitat	• Oldfield areas succeeding to shrub and thicket habitats >10 ha, not Class 1 or Class 2 agricultural lands, with no rowcropping or intensive hay or livestock pasturing in the last 5 years, in the following Community Types: Thickets (CUT), Savannahs (CUS), or Woodlands (CUW). • Condition of existing habitat at site. • Size and location of habitat. • Potential for long-term protection of the habitat – should have a history of longevity, either abandoned fields or pasturelands. • Representation of species/habitat within the municipality.	• Site investigations were conducted to assess the potential for this habitat type using ELC to delineate thicket and savannah type communities. **Comment: The earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **All Breeding Bird Surveys and Point Counts occurred between May 2011 and 11 July 2011. (Table 4B does not provided specific references to Shrub/Early Successional Bird Breeding Habitat, I am therefore assuming that this is rolled into the Breeding Bird Surveys and Point Counts)** **Conducting ELC evaluations after the fact, seems disingenuous at best.**
S1-S3, Special Concern and SH Species and Communities	• All Species Concern or provincial rare plant and animal species element occurrences within a 1 or 10km grid.	• Site investigations were carried out through a combination of vegetation surveys for plant species of conservation concern, and ELC based habitat assessments for both plant and wildlife species of conservation concern as described in the Draft SWH Ecoregion 6E Criterion Schedule. • **Table 3B, Appendix B** provides a description of each species of conservation concern and their associated habitat.

Comment: Please specify as to the methodology used to select the species to appear in Table 3B Appendix B. It would seem that Table 3B selects species at random.

Please see the table below. The first column (heading: Amhurst Island Table) has the most extensive listing of species at risk potentially found on Amherst Island. The second column (heading: Table 2B) contains 12 fewer species. The final column (headingTable 3B) removes 16 species found in the previous column but adds 4 birds, none of which are species at risk.

Red typeface indicates that the species does not appear in the next column to the right.

<u>The inaccuracies / omissions found in Table 3B are of great concern</u>, as this is the table upon which table 3.7 is based.

Table 3.7 *Summary of Site Investigation Results for Habitat for Species of Conservation Concern* indicates if a species was carried forward to the Evaluation of Significance.

Three species of birds were selected and a cursory review of Appendix F (Field Survey Results) was undertaken. See below in the comments section for Eastern Meadowlark, Bobolink and Barn Swallow. Clearly these species at risk are present on Amherst Island in notable numbers. However, the Eastern Meadowlark and Bobolink are not mentioned once in the entire 143 page Natural Heritage Assessment & Environmental Impact Report. The Barn Swallow is mentioned once in section 4.2.3. Paragraph below.

> Over the nine driving transect surveys that were conducted between the period of mid-July to mid-September, a total of 11, 240 swallow observations were made. Six species of swallow were observed in numbers: Bank Swallow (2682 individuals), Barn Swallow (2378 individuals), Cliff Swallow (3 individuals), Northern Rough-winged Swallow (110 individuals), Purple Martin (160 individuals), and Tree Swallow (6087 individuals). The largest numbers of swallows were seen in late-July and early-August

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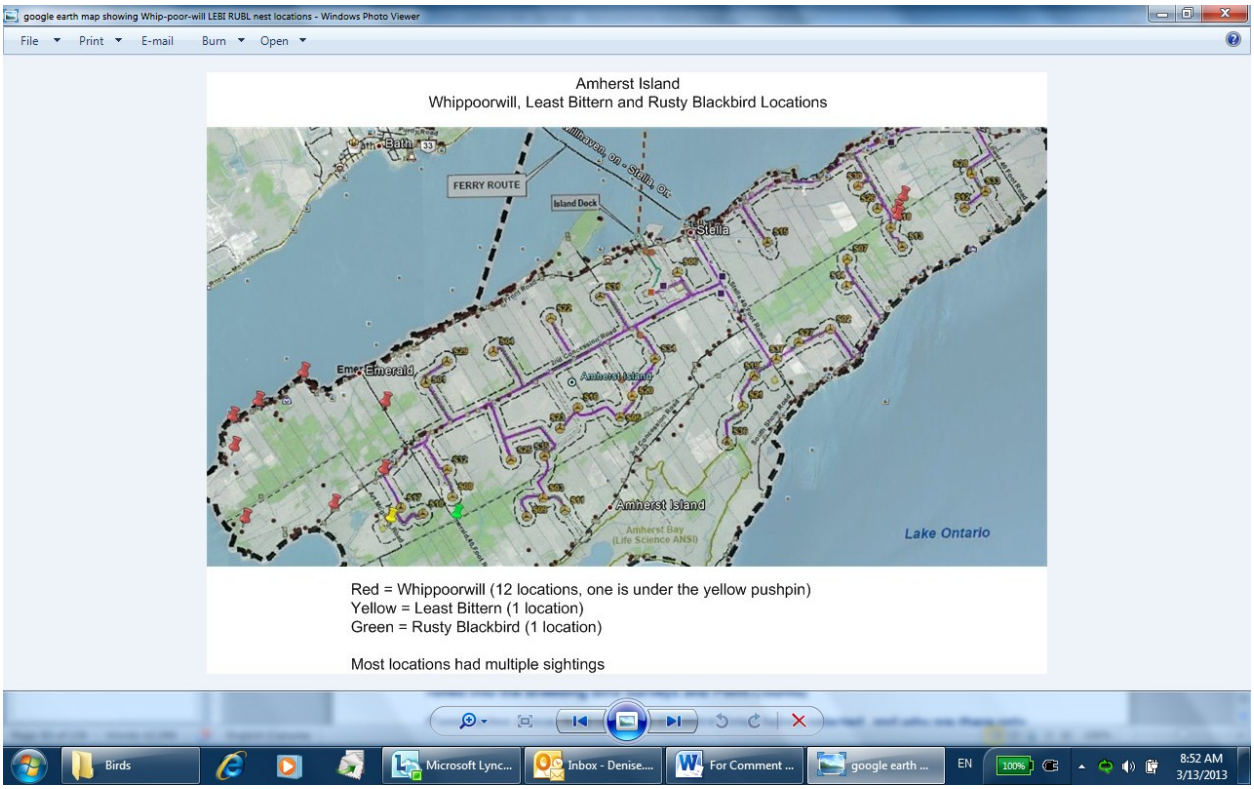
Amhurst Island Table	Table 2B / Background Wildlife List	Table 3B / Potential Species of Conservation Concern Occurring within the Study Area	Comments
Butterflies	**Butterflies**	**Butterflies**	**Butterflies**
Monarch	Monarch	Monarch	2 surveys in August of 2011 - in conjunction with Staging Swallow Survey
Amphibians	**Amphibians**	**Amphibians**	**Amphibians**
Western Chorus Frog (Great lakes - shield)	Western Chorus Frog (Great lakes - shied)	Western Chorus Frog (Great lakes - shield)	
Reptiles	**Reptiles**	**Reptiles**	**Reptiles**
Snapping Turtle	Snapping Turtle	Snapping Turtle	
Northern Map Turtle	Northern Map Turtle	Northern Map Turtle	
Eastern Milksnake	Eastern Milksnake	Eastern Milksnake	
Blanding's Turtle			Not listed in Appendix F
Eastern Spiny Softshell			Not listed in Appendix F
Birds	**Birds**	**Birds**	**Birds**
Barn Swallow			**Appendix F/Field Survey Results:** **Staging Swallow Surveys - 2378 reported** **Overall Wildlife List - noted as "Obseved Breeding"** **Grassland Breeding Bird Survey noted as observed at 28 of 33 map locations** **Marsh Breeding Birds - noted as observed**

Bobolink			Appendix F/Field Survey Results: Overall Wildlife List - It is very concerning to note that the Bobolink is not listed. Grassland Breeding Bird Survey noted as observed at **32 of 33 map locations** Marsh Breeding Birds - noted as observed Woodland Breeding Bird Survey noted as observed at 3 of 9 map locations
Eastern Meadowlark			Appendix F/Field Survey Results: Overall Wildlife List - listed as Observed Breeding / Migration / Winter Grassland Breeding Bird Survey noted as observed at **32 of 33 map locations** Marsh Breeding Birds - noted as observed Woodland Breeding Bird Survey noted as observed at 3 of 9 map locations
Least Bittern			Not listed in Appendix F
Black Tern	Black Tern	Black Tern	
Barn Owl	Barn Owl		Not listed in Appendix F
Short-eared Owl	Short-eared Owl	Short-eared Owl	
Common Nighthawk	Common Nighthawk	Common Nighthawk	
Eastern Whip-poor-will			Not listed in Appendix F
Chimney Swift			Not listed in Appendix F
Red-headed Woodpecker		Red-headed Woodpecker	
Olive-sided Flycatcher	Olive-sided Flycatcher	Olive-sided Flycatcher	Appendix F / Table A - observed during migration
Acadian Flycatcher			Not listed in Appendix F
Loggerhead Shrike			Not listed in Appendix F
Golden-winged Warbler	Golden-winged Warbler	Golden-winged Warbler	
Louisana Waterthrush	Louisana Waterthrush	Louisana Waterthrush	
Canada Warbler	Canada Warbler	Canada Warbler	
Yellow-breasetedCchat	Yellow-breaseted Chat	Yellow-breaseted Chat	
Henslow's Sparrow			Not listed in Appendix F
		Redhead	A species of conservation concern, not listed as species at risk / Table 2B lists as S2B/S4N S2B = imperiled in province / breeding status rank S4N = apparently secure / nonbreeding status rank

		Black-crowned Night Heron	A species of conservation concern, not listed as species at risk Table 2B lists as S3B/S3N S3B = vulnerable in province / breeding status rank S4N = vulnerable in province / nonbreeding status rank
		Greater Black Backed Gull	A species of conservation concern, not listed as species at risk Table 2B lists as S2B S2B = imperiled in province / breeding status rank
		Caspian Tern	A species of conservation concern, not listed as species at risk Table 2B lists as S3BS3B = vulnerable in province / breeding status rank
		Wilson's Phalarope	A species of conservation concern, not listed as species at risk / Table 2B lists as S3B S3B = vulnerable in province / breeding status rank
Mammals	**Mammals**	**Mammals**	**Mammals**
Little Brown Bat	Little Brown Bat		Not listed in Appendix F
Northern Long-eared Bat	Northern Long-eared Bat		Not listed in Appendix F
Easern Pipistrelle	Easern Pipistrelle		Not listed in Appendix F

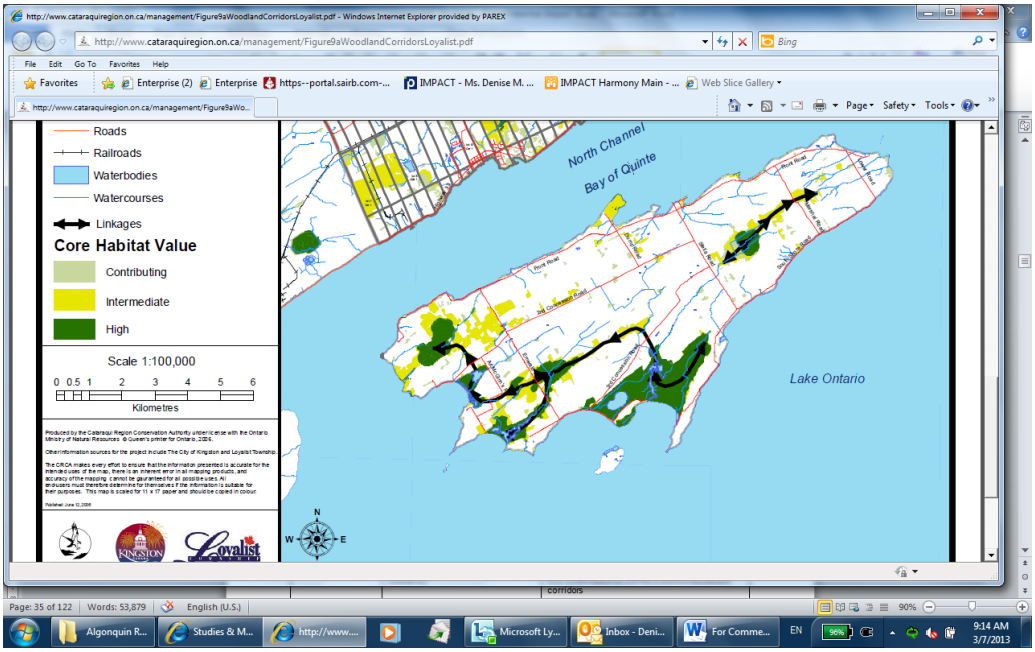
Comment: Below is a map indicating Whipporwill, Least Bittern and Rusty Blackbird sightings in 2012.



3.1.7.4 Animal Movement Corridors

Habitats within 120 m of the Project Location were assessed for their suitability to support animal movement corridors that are known to occur or have the potential to occur within the vicinity of the Study Area. Assessments were carried out for amphibian movement corridors.

Comment: Why were assessments carried out exclusively for amphibian movement corridors as 7 of the 36 woodlands listed in table 7B *Site Investigation Results – Woodlands*, have "Provides connectivity between significant natural features" listed as a function. Furthermore, Figure 1B indicates extensive Wildlife Habitat Linkage which is not addressed in this report. The Central Cataraqui Region Natural Heritage Study Figure 9A Corridors and Linkages indicates that many of the linkages run through Core Habitat of "High" value.
Central Cataraqui Region Natural Heritage Study Figure 9A:
http://www.cataraquiregion.on.ca/management/Figure9aWoodlandCorridorsLoyalist.pdf



Amphibian movement corridors have been identified by using the habitat criteria found in the SWHTG (MNR 2000) and Draft Significant Wildlife Habitat: Ecoregion 6E Criteria Schedules (MNR 2012). Habitat criteria and methods employed to identify them in and within 120 m of the Project Location, have been summarized in **Table 3.4**.

Table 3.4: Characteristics Used to Identify Candidate Habitat for Animal Movement Corridors

Candidate Animal Movement Corridor	Criteria	Methods
Amphibian Movement Corridor	• Corridors may be found in all ecosites associated with water • Determined based on identifying significant amphibian breeding habitat (wetland).	• Identified after Amphibian Breeding Habitat - Wetland (see Section 3.1.7.2) is confirmed. • Site investigations will be conducted after this confirmation to identify potential movement corridors **Comment: As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.** **As the Amphibian Breeding Habitat needs to be reassessed – the Amphibian Movement Corridors will need be established once the Breeding Habitat has been appropriately established.**

3.2 RESULTS – No Comment

3.2.1 Vegetation Community and Vascular Plants Assessment

Site investigations identified discrete naturally-vegetated features in or within 120 m of the Project Location. Each feature was delineated and assigned a unique identification number (**Figures 2.1-2.5, Appendix A**), an appropriate ELC vegetation community code (as per Lee et al. 1998) and is summarized in **Tables 6B and 7B (Appendix B)**, which serves as a point of reference. This table describes the type, attributes, composition, function, and significance (if known) of each natural feature. Delineated ELC communities are shown on **Figures 2.1-2.5, Appendix A**. A memo describing the ELC communities in included with the field notes in **Appendix C**.

Comment: Tables 6B and 7B are in fact Site Investigation Results Wetland and Site Investigation Results Woodland respectively. What table is actually being reference above?

3.2.2 Wetlands

3.2.2.1 Provincially Significant Wetlands – No Comment

3.2.2.2 Unevaluated Wetlands – No Comment

3.2.3 Woodlands – No Comment

3.2.4 Valleylands – No Comment

3.2.5 ANSIs – No Comment

3.2.6 Wildlife and Wildlife Habitat – No Comment

3.2.6.1 Seasonal Concentration Areas of Animals

Site Investigations involved a thorough assessment of natural areas for seasonal concentration areas for wildlife habitat. Potential habitat for seasonal concentration areas was examined during the Site Investigation phase, and is discussed in **Table 3.5**. Seasonal concentration areas that did not have any candidate significant wildlife habitat will not be carried forward to the Evaluation of Significance phase.

Table 3.5: Summary of Site Investigation Results for Seasonal Concentration Areas - Abridged

Candidate Seasonal Concentration Areas	Present within 120 m of Project Location	Present in Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Waterfowl Stopover and Staging Area	Yes (WT3)	Yes (WT1, WT2,	Areas of cultural meadows and agricultural pastures with flooding in the spring are present in and within 120 m of the Project Location.	**Yes**

(Terrestrial)		and WT4)	**Comment: As the first ELC evaluations occurred on 26 July of 2011 (per Table 4B) how were the cultural meadows and agricultural pastures reviewed for spring flooding?**	
Waterfowl Stopover and Staging Area (Aquatic)	Yes (WA1)	**No**	Waterfowl stopover and staging habitat was identified in the IBA report between the island and the mainland. Shallow marsh habitat is found within 120 m of the Project Location in Long Point Marsh. The Project Location is not in these features. **Comment: It would seem from above that the only Waterfowl Stopover and Staging habitat considered for evaluation is the habitat identified through Record Review.** **However, Stantec comments in Table 3.1:** All potential waterfowl stopover and staging areas (including CUM, CUT, and hay and pasture agricultural fields) were searched in early spring 2011 for evidence of spring flooding. Subsequent transects and points counts were conducted in those areas with spring flooding. Areas with no evidence of spring flooding were not considered candidate waterfowl stopover and staging habitat. **The earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **There is no documentation of any activity on the part of Stantec in Early March – therefore, how were the waterfowl stopover and staging areas selected?**	**Yes**
Shorebird Migratory Stopover Area	Yes (SM1)	**No**	The shoreline of Lake Ontario is present within 120 m of the Project Location. Much of the Amherst Island shoreline is naturalized, with the exception of portions of the shoreline through the village or adjacent to residences. The shoreline predominate consists of rocky shelf, with sandy beach habitat along the western end of the island. The Amherst Bar on the east end of the island, which forms part of this candidate habitat feature, is a known shorebird stopover area.. The Project Location is not in the candidate shorebird migratory stopover area, but is located within 120 m. **Comment: According to Table 4B all Shorebird Migration Surveys Occurred on May 3, 11, 17, 20, 25 and 26 of 2011 for a total of 13 hrs and 4 minutes.** **As previously mentioned, the earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **How was the single site selected? The fact that a single site was selected is of particular concern as Amherst Island is an IBA of Global and Continental significance due to shorebirds.**	**Yes**
Bat Hibernacula	**No**	**No**	There are no caves, abandoned mine shafts, underground foundations, and karst features or Crevice / cave communities within 1120 m of the Project Location	**No**

			Comment: A review of the ELC forms available in Appendix C does not indicate any Bat Maternity Colony Specific searches. **Bats are regularly seen on Amherst Island during the summer. Whether they live here through the winter or are a migratory species no one knows, as they have not been studied.** **Amherst Island offers excellent summer habitat for bats with its high insect population and low pesticide residuals due to the low percentage of intensive cropping land.** **There are numerous cracks, fissures and evidence of Karst topography around the limestone shores of Amherst Island that might be suitable as a bat hibernacula. There are wooded areas, old abandoned buildings and other structures that are suitable for maternity colonies.** **Furthermore, Amherst Island is sandwiched between Wolfe Island and Ostrander Point, both areas documented to have high Bat populations. Why were no studies undertaken to ensure the protection of this species in decline?**	
Bat Maternity Colonies	**No**	**No**	No snags or trees capable of supporting bat maternity roosts were found in numbers greater than 10 per hectare within 120 m of the Project Location **Comment: A review of the ELC forms available in Appendix C does not indicate any Bat Maternity Colony Specific searches.** **Bats are regularly seen on Amherst Island during the summer. Whether they live here through the winter or are a migratory species no one knows, as they have not been studied.** **Amherst Island offers excellent summer habitat for bats with it's high insect population and low pesticide residuals due to the low percentage of intensive cropping land.** **There are numerous cracks, fissures and evidence of Karst topography around the limestone shores of Amherst Island that might be suitable as a bat hibernacula. There are wooded areas, old abandoned buildings and other structures that are suitable for maternity colonies.** **Furthermore, Amherst Island is sandwiched between Wolfe Island and Ostrander Point, both areas documented to have high Bat populations. Why were no studies undertaken to ensure the protection of this species in decline?**	**No**
Turtle Wintering Areas	Yes (TO1	**No**	The Long Point Marsh is a large coastal marsh which could provide habitat for overwintering Midland Painted Turtles or Snapping Turtles. Lake Ontario provides	**Yes**

			habitat for Northern Map Turtles. These habitats are located within 120 m of the Project Location. The Project Location is not in this feature. Snapping Turtle and Northern Map Turtle (species of conservation concern) are considered under this habitat type. **Comment: Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). are considered candidate Significant Wildlife Habitat for Turtle Wintering Areas** **All Turtle Wintering Surveyes Occured in TO1, however Appendix has many references to SW and MA habitat that are outside of the TO1 area. Why were the other SW, MA habitat within the project area (including roadside) not surveyed?**	
Snake Hibernacula	Yes (SN1)	**No**	Yes (SN1) No Snake hibernacula features such as buried concrete or rock (e.g. building foundations, culverts, rock crevices or abandoned animal burrows) were found within 120 m of the Project Location. One feature was found; however, this feature was found in the vicinity of Front Road in the east end of Amherst Island, within 120 m of underground cabling only. This type of Project component would not have an operational impact on this type of habitat. It will therefore be treated as generalized significant wildlife habitat. The Project Location is not in this feature. **Comment: Stone Walls made of stacked stones with no concrete to bind them, line some of the roads that Stantec will be using for construction purposes. There is no indication that these stone walls were surveyed for potential Snake Hibernacula.**	Yes; treated as significant
Migratory Butterfly Stopover Areas	Yes (MB2, MB3)	**No**	There are undisturbed fields with mixed habitat (forest, thicket, plantation, and/or edge) located along the shoreline of Lake Ontario within 120 m of the Project Location. The Project Location is not in these features. Monarch butterflies (a species of conservation concern) are considered under this habitat type.	**Yes**
Landbird Migratory Stopover Areas	Yes (ML1, ML2, ML3, ML4, ML5	**No**	There are woodlands >10 ha located within 2 km of Lake Ontario with a variety of habitats. These are also located within 120 m of the Project Location. The Project Location is not in these features. **Comment: Section 10 "How much Habitat to Protect" of the Ontario Ministry of Natural Resources *Significant Wildlife Habitat Technical Guide* has the following information on page 121, Table 10-5. Primary locations of seasonal concentrations of wildlife, under Key Requirements for Landbird Migratory Stopover Area: Great Lakes shorelines and adjacent lands within 5 km (especially Lake Erie & Lake Ontario) are very important.**	**Yes**

			Therefore the entire project location can be considered as a Landbird Migratory Stopover Area.	

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3.2.6.2 Rare Vegetation Communities or Specialized Habitats for Wildlife

Site Investigation results pertaining to rare vegetation communities and specialized habitats in and within 120 m of the Project Location are summarized in **Table 3.6**. Rare vegetation community types or specialized habitats for wildlife that did not have any candidate significant wildlife habitat will not be carried forward to the Evaluation of Significance phase.

Table 3.6: Summary of Site Investigation Results for Rare Vegetation Communities and Specialized Wildlife Habitat - Abridged

Candidate Rare Vegetation Community/Specialized Wildlife Habitat	Present within 120 m of Project Location	Present in Project Location	Rationale	Carried Forward to Summary and EOS (Y/N)
Waterfowl Nesting Area	Yes (WN1)	Yes (WN2)	Long Point Marsh represents a large open aquatic habitat in proximity to the Project Location. Upland habitats adjacent to the Long Point Marsh provide candidate habitat for nesting waterfowl. The Project Location is not in these features. Other wetlands adjacent to the Project Location do not provide the standing water that would support breeding waterfowl. **Comment: How did Stantec ascertain systematically all those communities that contain standing water for a portion of the year. This is not detailed in Appendix C** **Furthermore, how was the area to be investigated decided upon?** **According to 3.1.2 Vegetation Community and Vascular Plants Assessment the first ELC and preliminary botanical inventories of vegetation communities occurred on July 26 – 29 of 2011. According to Table 4B, the Waterfowl Nesting Area surveys occurred on June 5 and 7, 2011 for a total of one hour.**	**Yes**
Woodland Raptor Nesting Habitat	Yes (WR1, WR2)	No	Two candidate habitats for woodland raptor nesting are available in woodlands that are >30 ha in size, composed of swamp (SW) and forest (FO). These are associated with Woodlands 4 and 21. The Project Location is not in these features **Comment: In fact per SWH Ecoregion 6E Criterion Schedule, Candidate SWH for woodland raptor nesting includes : all forested ELC Ecosites. All natural or conifer plantation woodland / forest stands >30h with >10 ha of interior habitat are**	**Yes**

			candidate SWH. **Therefore Woodlands 3 and 36 must be considered as candidate Woodland Raptor Nesting Habitat.** **When will Stantec undertake surveys in these woodlands?**	
Turtle Nesting Areas	No	No	ELC and habitat assessment surveys undertaken in all woodlands and watercourses within 120 m of the Project Location did not locate any exposed mineral soil (sand or gravel) or contain suitable habitat to support turtle nesting habitat. No candidate significant wildlife habitat was present in or within 120 m of the Project Location for turtle nesting habitat. Snapping Turtle and Northern Map Turtle (species of conservation concern) are considered under this habitat type **Comment: As previously addressed in Table 3.2, many watercourses intersect with or parallel the dirt roads found on Amherst Island.** **According to the information in Appendix A, the area of investigation included 120 meters on either side of the municipal roads which would be traveled by Turbine Construction Traffic.** **While the sides of municipal roads are not considered SWH, the 120 meter zone of investigation far exceeds a road embankment or shoulder. Why were these not investigated as potential Turtle nesting areas.** **Note: page 1538 of the report indicates that a painted turtle was found on 2nd concession, near feature SWD2-2 which is not listed in 8B, but which is in the zone of investigation indicated on Table 2.2 Appendix A**	No
Amphibian Breeding Habitat (Woodland)	Yes (ABWO1, ABWO2, ABWO3)	No	Candidate amphibian breeding habitat is present within 120 m of the Project Location and within 120 m of woodlands. The Project Location is not in these features. Western Chorus Frog (a species of conservation concern) is considered under this habitat type **Comment: Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; FOC, FOM, FOD, SWC, SWM, SWD are considered candidate Significant Wildlife Habitat.** **Appendix A Figures 2.2, 2.3, 2.4 and 2.5 all contain habitat identified as SWD, FOD which is not in the ABW01, ABW02 or ABW03 areas.** **All amphibian breeding (Wooldland) surveys**	**Yes**

			occured in ABW01, ABW02 and ABW03. Why were the other SWD, FOD habitat not surveyed? **According to Section 3.1.2 and Table 4B, the first ELC and preliminary botanical inventories of vegetation communities occurred on July 26 – 29 of 2011.** **The Amphibian Surveys occurred in April and May of 2011. The only areas that were surveyed for amphibian breeding were ABW01, ABW02, ABW03, ABWE1 and ABWE2. The surveys occurred April 19 / 20 and 26, may 17, and June 18 and 19 for a total of 14.5 hours. ELC and preliminary botanical inventories of vegetation communities occurred prior to the Surveys taking place, how were the sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.** **As the Amphibian Breeding Habitat needs to be reassessed – the Amphibian Movement Corridors will need be established once the Breeding Habitat has been appropriately established.**	
Amphibian Breeding Habitat (Wetland)	Yes (ABWE1, ABWE2	No	Candidate amphibian breeding habitat is present within 120 m of the Project Location which is >500 m_2 and not located within 120 m of woodlands. The Project Location is not in these features. Western Chorus Frog (a species of conservation concern) is considered under this habitat type **Comment: Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; SW, MA, FE, BO, OA, SA are considered candidate Significant Wildlife Habitat.** **Appendix A Figures 2.2, 2.3, 2.4 and 2.5 all contain habitat identified as SW, which is not in the ABWE1 or ABWE2 areas.** **Furthermore, as noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.**	**Yes**

3.2.6.3 Species of Conservation Concern

Site Investigation results pertaining to habitats for species of conservation concern in and within 120 m of the Project Location are summarized in **Table 3.7**. Species of conservation concern that did not have any candidate significant wildlife habitat will not be carried forward to the Evaluation of Significance phase.

Table 3.7: Summary of Site Investigation Results for Habitat for Species of Conservation Concern Present in Project Location

Comment: As previously mentioned, the inaccuracies / omissions found in Table 3B are of great concern, as this is the table upon which table 3.7 is based.

Table 3.7 *Summary of Site Investigation Results for Habitat for Species of Conservation Concern* indicates if a species was carried forward to the Evaluation of Significance. Many of the species at risk dependent on the habitat found on Amherst Island are not included in this table. At a minimum this includes, Bobolink, Eastern Meadowlark, and Barn Swallow – species that are documented in this report to use the habitat found on Amherst Island in large numbers. This documentation is located in Appendix F of this report.

Note: Page 22 of this report states (my italics in red):

> The farming practice of hay field cutting before the end of the breeding cycle for grassland birds can reduce breeding success for these species up to 94% and hayfields are not considered to support viable populations of grassland breeding bird species (COSSARO 2010*);* however, due to the importance of Amherst Island for bird migration and grassland species such as the Short-eared Owl, all hayfields, pastures, and cultural meadows have been assessed as candidate significant wildlife habitat.

The results of additional studies conducted on Amherst Island are available in Appendix 1, 2 and 3. Kurt Hennige performed a survey of several threatened bird species on Amherst Island . The island Open Country Breeding Bird Habitat is known to provide critical habitat for several threatened species and the proposed wind turbine project is slated to cover a great deal of this habitat. During June 2012 Kurt traveled four routes (East, Centre, Northwest and Southwest) around the island observing and recording the presence of these species from a total of 64 stopping points spread along public roads

Of these 64 stopping points, 27 had suitable habitat on both sides of the road. In this case two "stations" were defined at that point and separate observations were made on each side of the road. At the other 37 points with suitable habitat on one side of the road so only one station was defined. Each stopping point was given a number and the one or two stations at that point were given a direction, depending on the orientation of the road. Thus the station on the east side of the fifth stopping point of the East route would be named EA 5-E. There were a total of 91 stations (27*2 + 37 = 91).

He made three trips along each of the routes, observing for five minutes at each station.

Kurt concentrated on the Bobolink and Meadowlark as both species are presently listed as threatened in Ontario. His observations show that Amherst Island supports large numbers of both species. During his trips he observed a high-water mark of 561 Bobolinks (of which 316 were within 100m) and 158 Meadowlarks (of which 91 were within 100m).

Table 3.7 has been abridged.

Candidate Habitat for Species of Conservation Concern	Present in or within 120 m of Project Location	Present in Project Location	Rationale	Carried Forward to EOS (Y/N)
Marsh Bird Breeding Habitat	Yes (MBB1)	No	Marsh habitats identified in the Site Investigation are all along small agricultural drains and do not provide adequate nesting habitat for marsh breeding birds. The Long Point Marsh provides the best habitat for marsh breeding birds in the region. The Project Location is not in this feature. Black Tern and Black-crowned Night Heron (species of conservation concern) are considered under this habitat. **Comment: As previously mentioned, the earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **By the end of July, any shallow marshes would have dried up, the Stantec team missed quite a bit of Marsh Breeding Bird Habitat due to the date the surveys were begun.**	Yes
Woodland Area sensitive Bird Breeding Habitat	Yes (ABB1, ABB2	No	Two candidate habitats for woodland area-sensitive bird breeding are available in woodlands that are >30 ha in size with >4 ha of interior habitat, composed of swamp (SW) and forest (FO). These are associated with Woodlands 4 and 21. The Project Location is not in these features. Red-headed Woodpecker and Canada Warbler (species of conservation concern) are considered under this habitat type. **Comment: In fact SWH Ecoregion 6E Criterion Schedule Isits the flowing ELC Ecosite as Candidate SWH, FOC, FOM, FOD, SWC, SWM and SWD. As woodland 36 meets the ha criterion as well as the FOC criterion, it must be searched.**	Yes
Open Country Bird Breeding Habitat	Yes	Yes Yes (OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8, OCB9)	Site investigations confirmed that open country habitat exceeding 30 ha was present within 120 m of the Project Location. Swallow migratory staging was also included under this habitat, which provides the ecological functions required for swallow foraging. Red-headed Woodpecker and Common Nighthawk (species of conservation concern) are considered under this habitat type. **Comment: Why are the Bobolink, Barn Swallow and Eastern Meadowlark not included**	Yes

			under this habitat as Appendix K contains numerous references to sightings of these species at risk.	
Shrub/Early Successional Bird Breeding Habitat	Yes (SSB1, SSB2, SSB3, SSB4, SSB5)	No	Site investigations confirmed that thicket or woodland habitat exceeding 10 ha was present within 120 m of the Project Location. The Project Location is not in these features. Red-headed Woodpecker, Common Nighthawk, Golden-winged Warbler, and Yellow-breasted Chat (species of conservation concern) are considered under this habitat type.	Yes
Special Concern and Rare Wildlife Species (3 species of plants, 1 species of Lepidoptera, 1 species of amphibian, 3 species of reptiles, 3 species of mammal, and 14 species of birds as per **Table 3B, Appendix B**			**Comment: Where are the following species of special concerns – all of which have been documented in this report to use the habitat found on Amherst Island:** **Barn Swallow** **Bobolink** **Eastern Meadowlark**	
Eastern Milksnake	Yes	No	This species prefers farmlands, meadows, hardwood or aspen stands; pine forest with brushy or woody cover; river bottoms or bog woods; hides under logs, stones, or boards or in outbuildings; often uses communal nest sites (MNR 2000). Habitat for this species has been determined through the consideration of Snake Hibernacula (Section 3.2.6.1). The Project Location is not in these features. Due to the generalist nature of this species, special mitigation measures will be provided in the Environmental Impact Study report (Section 5.5.5). **Comment: There is no section 5.5.5**	Yes; considered through Snake Hibernacula
Short-eared Owl	Yes	Yes (OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8, OCB9)	This species prefers grasslands, open areas or meadows that are grassy or bushy; marshes, bogs or tundra; both diurnal and nocturnal habits; ground nester; destruction of wetlands by drainage for agriculture is an important factor in the decline of this species; home range 25 -125 ha; requires 75-100 ha of contiguous open habitat (MNR 2000). The Short-eared Owl breeding territories have been studied extensively on Amherst Island by Kristen Keyes of McGill University (Keyes 2011). The locations of known breeding territories in 2009, 2010, and observations by Stantec in 2011 were used in the consideration of this habitat. Four of these areas are located within 120 m of the Project Location. Although habitat for this species has been determined through the consideration of Open	Yes

			Country Breeding Bird Habitat and Raptor Wintering Areas, it is also considered as a separate habitat due to the relative abundance of this species on Amherst Island. **Comment: Point counts conducted by Stantec (Appendix F Table G – Grassland Breeding Bird Surveys (includes Open Country Breeding Birds and Shore-eared Owl Breeding Surveys) clearly indicate a "relative abundance" of Bobolink, Barn Swallows and Eastern Meadowlark. Why are these species at risk not considered as a separate habitat as well as the Short-eared Owl?** **Note: While Table G's header states that Short-eared Owl Breeding Surveys are included in the table, there is no information pertaining to Short –eared Owls listed in the table.** **Appendix 3 lists short-eared owl nesting sites from 2009 through 2012, the nests are spread throughout the island.**	
Bats	No	No	Little Brown Bat, Eastern Pipistrelle, and Northern Long-eared Bat all have maternity sites in cavity trees and hibernate in caves, tunnels, or abandoned mine sites (MNR 2000). Habitat for these species has been determined through the consideration of Bat Hibernacula and Bat Maternity Colonies. **Comment: As mentioned in Table 3.1, a review of the ELC forms available in Appendix C does not indicate any Bat Maternity Colony Specific searches.** **Bats are regularly seen on Amherst Island during the summer. Whether they live here through the winter or are a migratory species no one knows, as they have not been studied.** **Amherst Island offers excellent summer habitat for bats with it's high insect population and low pesticide residuals due to the low percentage of intensive cropping land.** **There are numerous cracks, fissures and evidence of Karst topography around the limestone shores of Amherst Island that might be suitable as a bat hibernacula. There are wooded areas, old abandoned buildings and other structures that are suitable for maternity colonies.** **Amherst Island lies within the range of these three endangered species. (See "Bats of United States and Canada." by Michael J. Harvey, J. Scott Altenbach and Troy L. Best.) We need to protect an already diminished**	No

			population. This is also noted in the Table entitled "Amhurst Island" in Appendix B. **The new endangered designations for these three species are in part due to large scale wind farms. See articles -- "Bat Deaths from Wind Turbines Explained" by Erin Baerwald, H. D'Amour, Brandon J Klug and Robert M. R. Barclay and " Barotrauma is a significant cause of bat fatalities at Wind Turbines" online at www.current-biology.com.**	

3.2.6.4 Animal Movement Corridors

Site Investigation results pertaining to animal movement corridors in and within 120 m of the Project Location are summarized in **Table 3.8**. Animal movement corridors that were not observed in the Study Area will not be carried forward to the Evaluation of Significance phase.

Comment: As mentioned in section 3.1.7.4 Animal Movement Corridors, why were assessments carried out exclusively for amphibian movement corridors as 7 of the 36 woodlands listed in table 7B *Site Investigation Results – Woodlands*, have "Provides connectivity between significant natural features" listed as a function. Furthermore, Figure 1B indicates extensive Wildlife Habitat Linkage which is not addressed in this report. The Central Cataraqui Region Natural Heritage Study Figure 9A Corridors and Linkages indicates that many of the linkages run through Core Habitat of "High" value.

Central Cataraqui Region Natural Heritage Study Figure 9A:
http://www.cataraquiregion.on.ca/management/Figure9aWoodlandCorridorsLoyalist.pdf

Table 3.8: Characteristics Used to Identify Candidate Habitat for Species of Conservation Concern

Candidate Animal Movement Corridor	Present in or within 120 m of Project Location	Present in Project Location	Rationale	Carried Forward to EOS (Y/N)
Amphibian Movement Corridor	**No**	**No**	The areas around ABWE1 and ABWE2 were examined for amphibian movement corridors, as these wetlands are candidate significant wildlife habitat for amphibian breeding habitat (wetland). Amphibian movement corridors should consist of native vegetation, no road crossings, no gaps such as fields, waterways or bodies, and undeveloped areas are most significant (OMNR 2011a). Movement corridors must be considered when Amphibian breeding habitat is confirmed as SWH from Amphibian Breeding Habitat – Wetland, which has not yet been confirmed. Corridors should be at least 200 m wide with gaps <20 m and if following riparian area with at least 15 m of vegetation on both sides of waterway. Shorter corridors are more significant than longer corridors; however amphibians must be able to get to and from their summer and breeding habitat (OMNR 2011a). As the two wetland habitats (ABWE1 and ABWE2) are bounded by roads with no corridor >200 m, the habitat within the Study	**No**

			Area does not meet the criteria identified as significant. **Comment: As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.** **As the Amphibian Breeding Habitat needs to be reassessed – the Amphibian Movement Corridors will need be established once the Breeding Habitat has been appropriately established.**	

3.3 SITE INVESTIGATION RESULTS SUMMARY

Table 3.9 provides a summary of only those natural features that will be carried forward to the Evaluation of Significance.

Comment: Per the comments in table 3. 7 – where is the information pertaining to Bobolink, Barn Swallow, Eastern Meadowlark, all species at risk documented by Stantec to be using the habitat found on Amherst Island.

The results of additional studies conducted on Amherst Island are available in Appendix 1, 2 and 3. Kurt Hennige performed a survey of several threatened bird species on Amherst Island . The island Open Country Breeding Bird Habitat is known to provide critical habitat for several threatened species and the proposed wind turbine project is slated to cover a great deal of this habitat. During June 2012 Kurt traveled four routes (East, Centre, Northwest and Southwest) around the island observing and recording the presence of these species from a total of 64 stopping points spread along public roads

Of these 64 stopping points, 27 had suitable habitat on both sides of the road. In this case two "stations" were defined at that point and separate observations were made on each side of the road. At the other 37 points with suitable habitat on one side of the road so only one station was defined. Each stopping point was given a number and the one or two stations at that point were given a direction, depending on the orientation of the road. Thus the station on the east side of the fifth stopping point of the East route would be named EA 5-E. There were a total of 91 stations (27*2 + 37 = 91).

He made three trips along each of the routes, observing for five minutes at each station.

Kurt concentrated on the Bobolink and Meadowlark as both species are presently listed as threatened in Ontario. His observations show that Amherst Island supports large numbers of both species. During his trips he observed a high-water mark of 561 Bobolinks (of which 316 were within 100m) and 158 Meadowlarks (of which 91 were within 100m).

Table 3.9: Natural Features Carried Forward to Evaluation of Significance

Please refer to pages 59 through 67 of the Stantec Report as this table was not duplicated here.

Natural features identified in the Records Review were confirmed through the Site Investigation program. Corrections made to the Records Review are provided in **Table 5B, Appendix B**.

3.4 QUALIFICATIONS – No Comment

4.0 Evaluation of Significance

4.1 METHODS
4 Paragraphs – No Comment

Within the context of O. Reg 359/09, Endangered and Threatened species are addressed as part of MNR's *Approval and Permitting Requirements Document for Renewable Energy Projects* (APRD) requirements and are therefore not included as part of this NHA. Information required with regards to endangered and threatened species is being submitted to MNR under separate cover as part of the Amherst Island Wind Energy Project APRD Report. Where this information indicates that approvals or permits are required, these will be addressed separately through the applicable statute and its permitting process.

Comment: Where is the Endangered and Threatened Species Report? Why has it not been provided to Loyalist Township 90 days prior to the Public Meeting scheduled for March 2013, as required by the Green Energy Act? Why has access to the Endangered and Threatened Species Report not been provided to the general public 60 days prior to the Public Meeting scheduled for March 2013, as required by the Green Energy Act?

These features are shown on **Figures 2.1-2.5, Appendix A**. Specific methods used in the Evaluation of Significance for each type of natural feature are detailed in the following sections.

4.1.1 Wetlands

For the purposes of this evaluation, wetlands previously identified and confirmed by MNR as provincially significant or locally significant are considered to meet the requirements for a determination of significance. Unless field investigations provided evidence to contradict the existing MNR assessment of significance, the designation as assigned by MNR is used. Wetland boundaries as delineated by MNR were confirmed during site investigations by an Ontario Wetland Evaluation System (OWES) trained evaluator. Boundaries as delineated during field investigations were considered accurate for the purposes of this report; however, additional wetland ELC polygons surrounding the two PSWs (Nut Island Duck Club Marsh and Long Point Marsh) were identified, which were included in the final boundaries for these two wetlands (**Table 5B, Appendix A**).

During site investigations additional wetland communities were identified within 120 m of the Project Location. Data were collected through desktop procedures (e.g. aerial photograph interpretation) to supplement on-site field investigations. The Wetland Characteristics and Ecological Functions Assessment (WCEFA) for Renewable Energy Projects approach provided in Appendix C of the NHA Guide for Renewable Energy Projects (MNR 2011a) was used to assess previously-unevaluated wetlands identified in LIO (LIO 2012) and to assess additional

wetlands identified during field investigations. Although this procedure does not evaluate the significance of these wetlands with the same level of rigour as the OWES, it provides a procedure by which the significance of these wetlands can be assumed and their functions assessed based on the criteria established within the OWES manual.

As described in **Section 3.2.2.2**, 20 unevaluated wetlands were identified within 120 m of the Project Location, and required an Evaluation of Significance. For the two wetlands located in the Project Location (Wetlands 6 and 7), an OWES evaluation was completed.

Comment: Wetlands 6 and 7 surround turbines S33, S12 and S28 (Figure 2.3 / Appendix A) and the entire area is documented as being Short-eared Owl Breeding Territory in 2010 (Figure 1B / Appendix A).

Furthermore a review of the OWES documents for wetland 6 reveal the following issues of grave concern:

Section 2.2 Recreational Activities and Section 2.4.3: Research Studies are both rated at 0, however Kingston Field Naturalists have been studying the area in and around wetlands 6 and 7 for decades – specifically with regards to Short-eared Owl habitat and nesting sites.

Section 2.8.1 Aboriginal Values is rated as 0, however Stantec Stage 2 Archeological Work uncovered an artifact labeled as Late Archaic. 4500 - 3800 BP. This will necessitate Stage 3 Archeological Work.

Section 4..2 Breeding habitat for an endangered or threatened species. In addition to KNF documentation of Short-eared Owl breeding in the area, this report's Figure 1B indicates the entire area surrounding wetlands 6 and 7 are Short-eared Owl Breeding Territory (2010). The investigators indicate that there an no species at risk using this breeding habitat and quote Stantec Field Studies as the source of information.

Section 4.1.2.1 Traditional Migration or Feeding Habitat for an Endangered or Threatened Species. Figure 3.3 indicates that a section of Wetland 6 is listed as a Migratory Butterfly Stopover Area. However, the investigators indicate that there is traditional migration habitat and quote Stantec Field Studies as the source of information.

Section 4.1.2.3 Provincially Significant Animal Species. Wetlands 6 and 7 are encompassed within RWA7 and OCB 8 (Figure 4.0)

RWA7: According to *Table 4.5: Summary of Evaluation of Significance Results for Seasonal Concentration Areas RWA7:* A total of 36 individuals of the listed raptor species were observed during walking and driving transects conducted in this habitat, including 4 Short-eared Owls. This is, therefore, significant wildlife habitat.

OCB8 According to Table 4.7*: Summary of Evaluation of Significance Results for Habitat for Species of Conservation OCB8*: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. Short-eared Owls have also been observed nesting in this habitat (Keyes 2011). In addition, 2211 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat.

Further, section 4.2.3. paragraph below states that 2,378 Barn Swallow were observed during nine driving transect surveys. Table G Grassland Breeding Bird Surveys indicates that of the 5 stops in OCB8, sightings of Barn Swallow, Bobolink and Eastern Meadowlark occurred on all but one occasion.

> Over the nine driving transect surveys that were conducted between the period of mid-July to mid-September, a total of 11, 240 swallow observations were made. Six species of swallow were observed in numbers: Bank Swallow (2682 individuals), Barn Swallow (2378 individuals)

However, the investigators indicate that there are no provincially significant animal species present and quote Stantec Field Studies as the source of information.

Section 4.2.5 Migratory Passerine, Shorebird or Raptor Stopover Area. Section 5.6.1. page 132 of this report states:

> "Nearshore" turbines (defined as those within 250 m of the lakeshore) were shown to be responsible for a disproportionate amount of bird and bat mortality at the Erie Shores Wind Project, which is also located at a shoreline location in a raptor migration corridor (but in an agricultural landscape found along Lake Erie)

As Amherst Island in its entirety is located in a raptor migration corridor (per Stantec) then Wetlands 6 and 7 are also located in a Raptor Stopover Area. However, the investigators indicate that this area is not significant as a raptor stopover area and quote Stantec Field Studies as the source of information.

4.2.6.2 Migration and Staging Habitat. Per the information above Wetland 6 is migration habitat for Monarch Butterfly and Raptors, and potentially a staging area for Barn Swallows. However, the investigators indicate that Staging and Migration Habitat is not present.

While I am not an Ontario Wetland Evaluation System (OWES) trained evaluator, a careful review of this report and the attached Appendicies raises some serious questions.

4.1.2 Woodlands – No Comment

4.1.3 Wildlife and Wildlife Habitat

3 Paragraph – No Comment

The field survey program to assess wildlife use of the Study Area included (see **Table 4B, Appendix A** for a summary):

- Spring and fall waterfowl stopover and staging surveys (March-May and October-December 2011); - **No Comment**

- Winter raptor driving and walking transect surveys (December 2010 – March 2011); **Comment: Table 4B indicates Winter raptor driving and walking transect surveys to have occurred in November, December of 2011 and January, February and March of 2012- not December 2010 through March 2011 as noted above.**

• Spring migratory shorebird surveys (May 2011);
Comment: A review of the observation forms indicates that total of 13 hours and 40 minutes were devoted to all surveys – however even that small amount of time is not in fact inaccurate. On May 3, 20011 (Observation Form page 1340 of report) the survey was rained out and no bird sightings were recorded, however those 4 hours and 10 minutes are included in the total observation time. Therefore the true time for all surveys with some expectation of success was 9.5 hours. (Note Table 4B lists Precipitation as).

Furthermore, many of the early shorebird species were not recorded as the first survey without rain occurred on 11 May 2011. One of the most important shorebird species regularly sighted in late May and early June is the Red Know (endangered). This species is more likely to be sighted in evening surveys on rainy days.

The only evening survey recorded on Table 4B was from 4:15 to 7:47 pm on 3 May 2011, which was rained out. Therefore, effectively, no surveys were undertaken in the evenings.

Birds Recorded:
May 3 – 0
May11 – 7
May 17 – 3
May 20 (walking survey with KFN member) – 25
May 25 – 1
May 26 - 444

• Spring migratory landbird survey (April-May 2011)
Comment: Section 10 "How much Habitat to Protect" of the Ontario Ministry of Natural Resources *Significant Wildlife Habitat Technical Guide* has the following information on page 121, Table 10-5. Primary locations of seasonal concentrations of wildlife, under Key Requirements for Landbird Migratory Stopover Area: Great Lakes shorelines and adjacent lands within 5 km (especially Lake Erie & Lake Ontario) are very important.

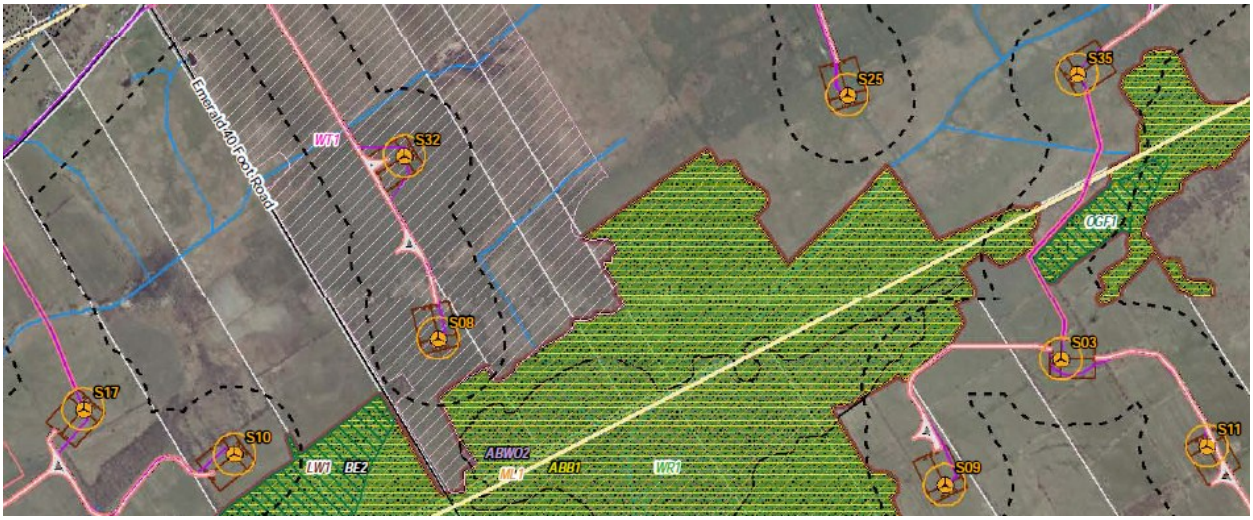
Therefore the entire project location can be considered as a Landbird Migratory Stopover Area.

• Fall migratory landbird survey (September-October 2011);
Comment: Below is a simulation of Owl Woods (ML5) with the turbines superimposed at a scale approximating their actual height of 154.5 meters (506 feet) with a blade swept area of 2.5 acres per turbine, the speed at blade tip can reach up to 275 kilometers per hour. The picture is oriented north south and on the far left of the picture is ML4. Outside of the picture frame (to the left) is turbine S15. The turbine closest to the water is S30 followed by S26, S18 and S13.

During fall the south bound migrants will fly in from the north (typically in the mornings). ML5 and ML4 are clearly positioned directly behind turbines S15, S30 and S26. These three turbines will be directly in the path of the south bound migrants.

Furthermore, Table 3.4 indicates that turbines S17, S10, S32, S08, SS25 and S35 are sited directly in front of ML1, directly in the path of south bound migrants which have been documented by Stantec to use ML1 extensively.

Section of Table 3.4



It is difficult to envision a poorer sighting choice for these turbines.

• Fall migratory butterfly surveys (September 2011);
Table 4 B indicates two migratory butterfly surveys occurred ,August 16 and 26 of 2011. These occurred in conjuction with Staging Swallow Surveys.

Furthemore, the butterfly surveys were completed far too early. Monarch Butterfly's typically appear on the island following a strong cold front, (mid – September to mid – October). Butterfly surveys conducted in August would not be expected to record many sightings.

• Fall migratory swallow surveys (July-September 2011);
Comment: Table 4B indicates 9 Staging swallow surveys occurred, 2 in conjuction with butterfly surveys.

• Spring waterfowl nesting surveys (May-July 2011);
Comment: Table 4B indicates 2 waterfowl nesting surveys , one on June 7, 2011 and the other on June 5, 2011. A total of one hour was spent on both surveys.

• Summer woodland raptor nesting surveys (May-July 2011);
Comment: There are no Site Investigations for summer woodland raptor nesting listed in table 4B

Furthermore, per SWH Ecoregion 6E Criterion Schedule, Candidate SWH for woodland raptor nesting includes : all forested ELC Ecosites. All natural or conifer plantation woodland / forest stands >30h with >10 ha of interior habitat are candidate SWH.

Therefore Woodlands 3 and 36 must be considered as candidate Woodland Raptor Nesting Habitat, as well as woodlands 4 and 21 which were.

When will Stantec undertake surveys in these woodlands?

• Amphibian surveys (April-June 2011); and
Comment: As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011.

However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.

Furthermore, according to the Amphibian Survey Observation Forms all surveys occurred in the vicinity of previously identified Provincially Significant Wetlands. However, there are hundreds of small ponds and wetlands on the island – this report identified twenty unevaluated wetlands, not previously identified by MNR as being within 120 m of the Project Location during site investigations. According to section 4.2.1 of the report these wetlands (with exception to Wetlands 6 & &7) are being treated as significant for the purposes of the NHA and Project siting.

A total of 14.5 hours of observations were completed for all Amphibian surveys. This is clearly not an acceptable effort.

• Breeding bird point count and area search surveys – including open country breeding birds, marsh breeding birds, shrub/early successional breeding birds, and area-sensitive woodland breeding birds, including targeted surveys for Louisiana Waterthrush, Short eared Owl, and Wilson's Phalarope (May-July 2011).
Comment: As the Grassland Breeding Bird Surveys (Table G) clearly indicates a preponderance of Barn Swallow, Bobolink and Eastern Meadowlark, why were targeted surveys not undertaken for these species at risk as well?

Note: Page 22 of this report states (my italics in blue):

> The farming practice of hay field cutting before the end of the breeding cycle for grassland birds can reduce breeding success for these species up to 94% and hayfields are not considered to support viable populations of grassland breeding bird species (COSSARO 2010); however, due to the importance of Amherst Island for bird migration and grassland species such as the Short-eared Owl, all hayfields, pastures, and cultural meadows have been assessed as candidate significant wildlife habitat.

A summary of the methods and the criteria used to evaluate the significance of each component of candidate significant wildlife habitat are provided below. The approved workplan submitted to the MNR in 2011 is included in **Appendix G**. Full detailed methods are also provided in **Appendix G**.

Comment: While the Table of Contents and the above reference Appendix G – this Appendix is not available. It is impossible to conduct a reasonable review of the Natural Heritage Assessment & Environmental Impact Study without this information? Why has Algonquin not provided this information to Loyalist Township and the general public as required by the Green Energy Act?

4.1.3.1 Seasonal Concentration Areas of Animals

The criteria and methods used to evaluate the significance of candidate significant wildlife seasonal concentration areas in and within 120 m of the Project Location are presented in **Table 4.1.**

Comment: As the Grassland Breeding Bird Surveys (Table G) clearly indicates a preponderance of Barn Swallow, Bobolink and Eastern Meadowlark, are these species at risk not represented in table 4.1?

Table 4.1: Criteria and Methods Used to Evaluate Seasonal Concentration Areas of Animals

Candidate Seasonal Concentration Area	Criteria	Methods	Timing
Waterfowl Stopover and Staging Areas (Terrestrial)	• Presence of annual concentration of listed species (American Black Duck, Wood Duck, Green-winged Teal, Bluewinged Teal, Mallard, Northern Pintail, Northern Shoveler, American Widgeon, Gadwall) • Mixed species aggregations of 100 or more individuals • Annual use of habitat	• Studies were completed during the spring migratory season. Evaluation methods followed "Bird and Bird Habitats: Guidelines for Wind Power Projects" for stopover driving transects and point counts • Stopover counts were conducted by driving a set transect, stopping at candidate habitats and conducting waterfowl counts to estimate numbers and species • Counts timed to coincide with peak numbers (dates and times) **Comment: Table 4B indicates 2 waterfowl nesting surveys , (no differentiation between terrestrial or**	• March-May

		aquatic) were completed, one on June 7, 2011 and the other on June 5, 2011. A total of one hour was spent on both surveys.	
Waterfowl Stopover and Staging Areas (Aquatic)	• Presence of annual staging of listed species (Canada Goose, Cackling Goose, Snow Goose, American Black Duck, Northern Pintail, Northern Shoveler, American Widgeon, Gadwall, Green-winged Teal, Blue-winged Teal, Hooded Merganser, Common Merganser, Lesser Scaup, Greater Scaup, Longtailed Duck, Surf Scoter, Whitewinged Scoter, Black Scoter, Ring-necked Duck, Common Goldeneye, Bufflehead, Redhead, Ruddy Duck, Redbreasted Merganser, Brant, Canvasback) • Mixed species aggregations of 100 or more individuals for 7 days • Areas with annual staging of Ruddy Ducks, Canvasbacks, and Redheads are significant wildlife habitat • Annual use of habitat	• Studies were completed during the spring migratory season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" for stopover driving transects and point counts • Stopover counts conducted by driving a set transect, stopping at candidate habitats and conducting waterfowl counts to estimate numbers and species • Counts timed to coincide with peak numbers (dates and times) **Comment: Table 4B indicates 2 waterfowl nesting surveys , (no differentiation between terrestrial or aquatic) were completed, one on June 7, 2011 and the other on June 5, 2011. A total of one hour was spent on both surveys.**	• March-May
Shorebird Migratory Stopover Area	• Presence of 3 or more of listed species (Greater Yellowlegs, Lesser Yellowlegs, Marbled Godwit, Hudsonian Godwit, Black-bellied Plover, American Golden Plover, Semipalmated Plover, Solitary Sandpiper, Spotted Sandpiper, Semipalmated Sandpiper, Pectoral Sandpiper, Whiterumped Sandpiper, Baird's Sandpiper, Least Sandpiper, Purple Sandpiper, Stilt Sandpiper, Short-billed Dowitcher, Red-necked Phalarope, Whimbrel, Ruddy Turnstone, Sanderling, Dunlin) and >1000 shorebird use days during spring or fall migration period • >100 Whimbrel for 3 or more years is considered significant	Studies were completed during the spring migratory season. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" for stopover driving transects and point counts • Stopover counts conducted by driving a set transect, stopping at candidate habitats and conducting waterfowl counts to estimate numbers and species • Counts timed to coincide with peak numbers (dates and times) **Comment: As noted in section 4.1.3, a review of the observation forms indicates that total of 13 hours and 40 minutes were devoted to all surveys – however even that small amount of time is not in fact inaccurate. On May 3, 20011 (Observation Form page 1340 of report) the survey was rained out and no bird sightings were recorded, however those 4 hours and 10 minutes are included in the total observation time. Therefore the true time for all surveys with some expectation of success was 9.5 hours. (Note Table 4B lists Precipitation as).** **Furthermore, many of the early shorebird species were not recorded as the first survey without rain occurred on 11 May 2011. One of the most important shorebird species regularly sighted in late May and early June is the Red Know (endangered). This**	• April-May

		species is more likely to be sighted in evening surveys on rainy days. **The only evening survey recorded on Table 4B was from 4:15 to 7:47 pm on 3 May 2011, which was rained out. Therefore, effectively, no surveys were undertaken in the evenings.**	
Turtle Overwintering	• Presence of 5 over-wintering Midland Painted Turtles, or 1 Northern Map Turtle or Snapping Turtle • Mapped ELC ecosite area with the over-wintering turtles is the significant wildlife habitat	• Studies will be completed during warm, sunny days spring when turtles are exiting hibernation sites • Area searches for basking turtles will be conducted throughout the habitat, concentrating on areas with more basking potential (ex. floating logs) and near deeper pools within the habitat • This habitat will be evaluated prior to construction **Comment: As we have not been provided with the Species at Risk studies mentioned elsewhere in this report, it is impossible to ascertain how the proponent plans to deal with the species at risk turtles potentially found on Amherst Island.** **Again, where is the species at risk report and why was it not provided to Loyalist Township and the general public?**	• spring (March-May)
Landbird Migratory Stopover Areas	• Studies confirm the use of the woodlot by >200 birds/day and with >35 species with at least 5 different survey dates.	• Studies were completed during spring and fall migration periods. Evaluation methods followed "Bird and Bird Habitats: Guidelines for Wind Power Projects" for line transect sampling • A combination of standardized walking transects established within and along the edge of candidate habitat, were conducted in the early morning hours. **Comment: Section 10 "How much Habitat to Protect" of the Ontario Ministry of Natural Resources *Significant Wildlife Habitat Technical Guide* has the following information on page 121, Table 10-5. Primary locations of seasonal concentrations of wildlife, under Key Requirements for Landbird Migratory Stopover Area: Great Lakes shorelines and adjacent lands within 5 km (especially Lake Erie & Lake Ontario) are very important.** **Therefore the entire project location can be considered as a Landbird Migratory Stopover Area.**	• spring (April-May) and fall migration period (August-October) **K/ OK**
Migratory	• Presence of >5000 Monarch Use	• Studies were conducted during fall	• August-

Butterfly Stopover Area	Days (MUD) or >3000 with White Admirals or Painted Ladies present is considered significant.	migration. A combination of point counts and driving transects established within and along the edge of candidate habitat, were conducted on sunny afternoons. **Comment: According to the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR2012); information sources to be consulted when attempting to establish Candidate SWH for Migratory Butterfly Stopover Areas include "Naturalist Clubs". The Defining Criteria states: "Numbers of butterflies can range from 100-500/ day, significant variation can occur between years and multiple years of sampling should occur".** **Why were the Kingston Field Naturalists not contacted with regards to identifying Migratory Butterfly Stopover Areas on the Island?** **If the MNR recommends multiple years of sampling, why does Stantec consider 2 surveys on partially cloudy afternoons, conducted in conjuction with Staging Swallow Surveys in August of 2011 sufficient to establish the lack of significant migratory butterfly stopover habitat?**	October

.4.1.3.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for rare vegetation communities or specialized habitat for wildlife in and within 120 m of the Project Location are presented in **Table 4.2.**

Table 4.2: Criteria and Methods Used to Evaluate Rare Vegetation Communities or Specialized Habitat for Wildlife - Abridged

Candidate Rare Vegetation Community or Specialized Habitat for Wildlife	Criteria	Methods	Seasonal Timing
Waterfowl Nesting Areas	• Presence of 3 or more nesting pairs for listed species (i.e., American Black Duck, Northern Pintail, Northern Shoveler, Gadwall, Bluewinged Teal, Green-winged Teal, Wood Duck, Hooded Merganser and Mallard) excluding Mallards, or; • Presence of 10 or more nesting pairs for listed species including Mallards.	• Nesting studies were completed during the spring breeding season. Evaluation methods followed "Bird and Bird Habitats: Guidelines for Wind Power Projects" for area searches and point counts • A field study confirming waterfowl nesting habitat was used to determine the boundary of the waterfowl nesting habitat for the SWH, this may be greater or less	• Early June

	• Any active nesting site of an American Black Duck is considered significant.	than 120 m from the wetland and will provide enough habitat for waterfowl to successfully nest. **Comment: The point above makes no sense, please clarify**. **Table 4B indicates 2 waterfowl nesting surveys , (no differentiation between terrestrial or aquatic) were completed, one on June 7, 2011 and the other on June 5, 2011. A total of one hour was spent on both surveys**.	
Woodland Raptor Nesting	• Presence of 1 or more active nests from listed species (Northern Goshawk, Cooper's Hawk, Sharpshinned Hawk, Red-shouldered Hawk, Barred Owl, Broad-winged Hawk) is considered significant	• A search for stick nests during vegetation classification was conducted, which were then monitored in early spring • Nesting studies were completed during the spring breeding season. Evaluation methods followed "Bird and Bird Habitats: Guidelines for Wind Power Projects" for behavioural studies. **Comment: There are no Site Investigations from March through May for woodland raptor nesting listed in table 4B**	• mid-March to end of May
Amphibian Breeding Habitat (Woodland)	• Presence of breeding population of 1 or more of the listed salamander species (i.e., Eastern Newt, Bluespotted Salamander or Spotted Salamander) or 2 or more of the listed frog species (i.e., Gray Treefrog, Spring Peeper, Western Chorus Frog or Wood Frog) with at least 20 individuals (adults, juveniles, eggs/larval masses). • The habitat is the woodland (ELC polygons) and wetland (ELC polygons) combined, or in the case of a wetland, the wetland and shoreline. • A travel corridor connecting the woodland and wetland polygons is to be included in the habitat.	• Studies to determine breeding/larval stages were conducted during the spring when amphibians were concentrated around suitable breeding habitat within or near the woodland. • Evaluation methods followed the 'Marsh Monitoring Protocol' (BSC 2003). **Comment: As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.**	• April-June
Amphibian Breeding Habitat (Wetland)	• Presence of breeding population of 1 or more of the listed salamander species (i.e., Eastern Newt, Bluespotted Salamander, Four-toed Salamander or Spotted Salamander) or 2 or more of the listed frog species	• Studies to determine breeding/larval stages were conducted during the spring when amphibians were concentrated around suitable breeding habitat within or near the woodland.	• April-June

	(i.e., American toad, Northern Leopard Frog, Pickerel Frog, Green Frog, Mink Frog, Bullfrog, Gray Treefrog, or Western Chorus Frog) with at least 20 individuals (adults, juveniles, eggs/larval masses). • The ELC ecosite wetland area and shoreline are included in the habitat	• Evaluation methods followed the 'Marsh Monitoring Protocol' (BSC 2003). **Comment: As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.** **As the Amphibian Breeding Habitat needs to be reassessed – the Amphibian Movement Corridors will need be established once the Breeding Habitat has been appropriately established.**	

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4.1.3.3 Habitat for Species of Conservation Concern

The criteria and methods used to evaluate the significance of candidate significant wildlife habitat for species of conservation concern for wildlife in and within 120 m of the Project Location are presented in **Table 4.3**.

Comment: As the Grassland Breeding Bird Surveys (Table G) clearly indicates a preponderance of Barn Swallow, Bobolink and Eastern Meadowlark, why are these species at risk not represented in table 4.3?

Table 4.3: Criteria and Methods Used to Evaluate Habitat for Species of Conservation Concern - Abridged

Candidate Habitat for Species of Conservation Concern	Criteria	Methods	Timing
Marsh Breeding Bird Habitat	• Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or 1 pair of Sandhill Cranes or breeding by any combination of 5 or more of the listed species (American Bittern, Virginia Rail, Sora, Common Moorhen, American Coot, Pied-billed Grebe, Marsh Wren, Sedge Wren, Common Loon, Sandhill Crane, Green Heron, Trumpeter Swan). • Any site with breeding or 1 or more	• Studies were completed in spring and early summer when birds were singing and defending their territories. Evaluation methods followed Bird and Bird Habitats: Guidelines for Wind Power Projects" for standardized point counts • Standardized point counts were conducted within the candidate habitat during the early morning hours. **Comment: As previously mentioned, the**	• May-June **K/ OK**

	Black Terns, Trumpeter Swan, Green Heron, or Yellow Rail is SWH	**earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **By the end of July, any shallow marshes would have dried up, the Stantec team missed quite a bit of Marsh Breeding Bird Habitat due to the date the surveys were begun.**	
Woodland Area Sensitive Bird Breeding Habitat	• Presence of nesting or breeding pairs of 3 or more of the listed species (Yellow-bellied Sapsucker, Red-breasted Nuthatch, Veery, Blue-headed Vireo, Northern Parula, Black-throated Green Warbler, Blackburnian Warbler, Blackthroated Blue Warbler, Ovenbird, Scarlet Tanager, Winter Wren) • Based on information collected by Stantec regarding area-sensitivity of songbird species (those requiring >30 ha of continuous habitat, see **Table 2B, Appendix B**), the following species were also considered under this habitat: Acadian Flycatcher, Brown Creeper, Blue-gray Gnatcatcher, Black-andwhite Warbler, and Mourning Warbler • Any site with breeding Cerulean Warbler or Canada Warbler is significant	• Studies were completed in spring and early summer when birds were singing and defending their territories. Evaluation methods followed Bird and Bird Habitats: Guidelines for Wind Power Projects" for standardized point counts • Standardized point counts were conducted within the candidate habitat during the early morning hours. **Comment: SWH Ecoregion 6E Criterion Schedule lists the flowing ELC Ecosite as Candidate SWH, FOC, FOM, FOD, SWC, SWM and SWD. As woodland 36 meets the ha criterion as well as the FOC criterion, it must be searched.**	**May – June K / OK**
Open Country Bird Breeding Habitat	• Presence of nesting or breeding of 2 or more of the listed species (Upland Sandpiper, Grasshopper Sparrow, Vesper Sparrow, Northern Harrier, Savannah Sparrow) or a field with 1 or more breeding Short-eared Owl is considered significant wildlife habitat • Area of the significant wildlife habitat is contiguous ELC ecosite field areas • Swallow migratory staging is not included in the draft Ecoregion 6E Criteria as a significant wildlife habitat, but for the purposes of this study, it was included under open country breeding bird habitat as providing the ecological functions required for staging swallows	• Studies were completed in spring and early summer when birds were singing and defending their territories. Evaluation methods followed "Bird and Bird Habitats: Guidelines for Wind Power Projects" for standardized point counts and line transects • Staging swallow surveys were conducted during fall migration when swallows are migrating south, staging before crossing Lake Ontario. • Standardized point counts and walking transects were conducted within the candidate habitat during the early morning hours. **Comment: The point counts and walking transects were largely restricted to road survey techniques. MNR has been provided with documentation of large numbers of Barn Swallows and Tree Swallows roosting in the interior of the island.**	• May-June (grassland birds) • July-September (staging swallows

4.2 RESULTS

4.2.1 Wetlands

Two wetlands assessed by MNR as provincially-significant occurred within 120 m of the Project Location: the Nut Island Duck Club Marsh (Wetland 10a) and the Long Point Marsh (Wetland 21).

Twenty unevaluated wetlands, not previously identified by MNR, were identified within 120 m of the Project Location during site investigations. These communities were evaluated using the *Wetland Characteristics and Ecological Functions Assessment for Renewable Energy Projects* described in **Section 4.1.1**. All wetlands except Wetlands 6 and 7 assessed under this protocol are being treated as significant for the purposes of the NHA and Project siting. **Table 9B, Appendix B** provides the evaluations of these wetland communities. Rare species information is addressed through the Habitat for Species of Conservation Concern evaluation, **Section 4.2.3.3**.

No Project components are proposed in, on, or over a wetland, with the exception of underground cabling and access roads crossing a small portion of Wetlands 6 and 7. These two wetlands were evaluated under the OWES and found to be not provincially-significant. Details regarding these assessments are provided in **Appendix E**. These two wetlands are not considered significant and will not be carried forward to the EIS.

Comment: As mentioned in section 4.1., Wetlands 6 and 7 surround turbines S33, S12 and S28 (Figure 2.3 / Appendix A) and the entire area is documented as being Short-eared Owl Breeding Territory in 2010 (Figure 1B / Appendix A). According to the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR2012), "A field with 1 or more breeding Short-eared Owls is to be considered SWH."

Furthermore a review of the OWES documents for wetland 6 reveals the many issues of grave concern elaborated upon in the comments to section 4.1.

An EIS has been completed for those significant wetlands where the Project Location is proposed within 120 m of the feature (Section 5.4.2).

4.2.2 Woodlands

4.2.3 Wildlife and Wildlife Habitat – No Comment

Staging Waterfowl **– No Comment**

Staging Shorebirds

Results of the spring staging shorebird surveys are provided in **Table C, Appendix F**. Fifteen species of shorebird were observed, the most common species being Dunlin (a total of 366 individuals observed), followed by Semi-palmated Sandpiper (36 individuals), Spotted Sandpiper (25 individuals), and Least Sandpiper (10 individuals).

The majority of these observations (92% of individuals observed) were made at the Amherst bar on the Kingston Field Naturalists property.

Comment: As previously noted, a review of the observation forms indicates that total of 13 hours and 40 minutes were devoted to all Spring migratory shorebird surveys – however even that small amount of time is not in fact inaccurate. On May 3, 20011

(Observation Form page 1340 of report) the survey was rained out and no bird sightings were recorded, however those 4 hours and 10 minutes are included in the total observation time. Therefore the true time for all surveys with some expectation of success was 9.5 hours. (Note Table 4B lists Precipitation as).

Furthermore, many of the early shorebird species were not recorded as the first survey without rain occurred on 11 May 2011. One of the most important shorebird species regularly sighted in late May and early June is the Red Know (endangered). This species is more likely to be sighted in evening surveys on rainy days.

The only evening survey recorded on Table 4B was from 4:15 to 7:47 pm on 3 May 2011, which was rained out. Therefore, effectively, no surveys were undertaken in the evenings.

Winter Raptors

Wintering raptors were found throughout the Study Area, most commonly observed hunting in the open woodlands. Results of the winter raptor surveys are found in **Table D, Appendix F**. In total the winter raptor surveys recorded 11 species of raptors and owls and one predatory songbird, the Northern Shrike, within the Study Area.

Short-eared Owl was the most common species observed, with a total of 242 observations over the 18 surveys. Other commonly observed species include Rough-legged Hawk, Northern Harrier and Red-tailed Hawk with respective totals of 199, 128 and 119 observations over the 18 surveys.

The highest one day totals observed during the driving transect surveys, which provide a conservative estimate of raptors using the Study Area; include 37 Rough-legged Hawks, 22 Red-tailed Hawks, 20 Northern Harriers, 2 American Kestrels, 2 Snowy Owls and **23 Short-eared Owls.**

Please note that according to the author if this report, the numbers above provide a CONSERVATIVE estimate of the raptors using the study area.

Generally, observations of hunting raptors were spread out around the Study Area, with some of the higher concentrations observed in the western portion of the island, along 2nd Concession Rd, south of Stella, along Front Rd and between Marshall 40 Foot Rd and Lower 40 Foot Rd.

Two **Bald Eagles** were observed throughout the study period, both on Feb 7, 2012. Both of the observations were made along the south shoreline, outside of the Zone of Investigation, one in the vicinity of the Long Point Marsh PSW, and the other along the coastline at the east end of the island. Other raptor species observed in smaller numbers include Cooper's Hawk, Merlin, and Red-shouldered Hawk; all of which were likely migrants.

Several **Short-eared Owl roost** were identified throughout the open grassland habitat within the Study Area ranging in use of a single individual to 28 individuals. There was generally some shifting in ground roosting sites between surveys. Some larger sites were relatively consistently used, with shifting within the site. Some smaller roost site did not appear to be consistently used on different surveys.

Comment: During the winter of 2011 / 2012 some of the Short-eared Owl roosting sites where heavily disturbed due to windelectric surveying staff presence near the roosting sites. Of greater concern, contractors plowed over some of the larger roosting sites for the purpose of the archeological study required by the REA. One of the larger roosing sites is well documented to have been in use for several years.

While carrying out Short-eared Owl survey from the roadside, Kurt Hennige (KFN) observed /documented working Windlectric / Stantec staff flushing 11 Short Eared Owl from their roosting sites, this occurred just south of Front Road and 1 km east of Stella 40 road. This area was plowed within the next two weeks and the group of around 20 birds vacated the habitat to settle near the Emerald 40 Road for the next two months. This suggests that Windlectic / Stantec recording of regular movements of SEOW between roosting sites was most likely the result of Windlectric / Stantec's disturbance and destructions of their roosting sites . It is an established fact that Short Eared Owl will modify their ground roosting sites if snow cover reaches more than 10 cm, which was not observed during the 2011/ 2012 season.

The above mentioned roosting site was destroyed prior to the Sponsor receiving REA approval. This clearly demonstrates a flaw in the process, archeological studies which include plowing up sections of land should not be undertaken prior to approval.

Numbers of Northern Saw-whet Owls and Long-eared Owls were relatively low on Amherst Island in the winter of 2011/2012, as a result roost likely under-represented these species. However, significant roost sites were identified using historical knowledge of the Study Area, and signs of past use such as pellets.

Migratory Landbirds

Songbirds – **No Comment**

Swallows

Concentrations of swallows are known to stage on Amherst Island during their fall migration. Results of the staging swallow surveys can be found in **Table I, Appendix F**. Staging Swallow were most commonly observed either flying over open country areas or resting on hydro wires along roadsides. The largest flock of swallows were a flock of 800 Tree Swallows observed along the southern edge of the island next to the Long Point Marsh PSW on August 9, 2011. In general, the majority of the birds were observed within 100 m of the shoreline, and along the southern shoreline of the island, including in the vicinity of the Amherst Bar.

Over the nine driving transect surveys that were conducted between the period of mid-July to mid-September, a total of 11, 240 swallow observations were made. Six species of swallow were observed in numbers: Bank Swallow (2682 individuals), **Barn Swallow (2378 individuals),** Cliff Swallow (3 individuals), Northern Rough-winged Swallow (110 individuals), Purple Martin (160 individuals), and Tree Swallow (6087 individuals). The largest numbers of swallows were seen in late-July and early-August.

Comment: It's clear from a review of the Appendix B Swallow Staging Observation Forms and Maps that the Stantec Survey Route followed Amherst Island roads for the most part. As a result, the areas close to the turbines were not appropriately documented as the majority of the turbines will be positioned at some distance from the roads. Furthermore,

many of the swallow roosts are impossible to see and record from the roads, as they are located at a distance of more than 1 km from any roads.

In 2012 between July 27 and August 24 Non- Stantec Species at Risk Surveys documented staging swallow flocks sleeping and resting overnight on fence wire, hawthorns and other shrubs in marginal pastures south east of Stella and south of 2 nd concession along the south and west end of the Community pasture. The largest flock containing 600 Tree Swallow, 250 Barn Swallow, 50 Bank Swallow and 40 Rough-winged Swallow was seen on August 6, 2012.

Over 5 walking surveys a total of 3250 Swallows were observed, most of them clearly sleeping there overnight, since most observation were within 1hour of sunset or sunrise. This observation included 1800 Tree Swallow, 624 Barn Swallow, 533 Bank Swallow and 293 Rough-winged Swallow

Raptors – **No Comment**

Amphibians

Amphibian surveys were completed from April to June 2011 in wetland habitats and vernal pools. Most wetland habitat within the Study Area consisted of low depressions with wetland vegetation, but lacked the standing water that would support breeding amphibians. Most of the amphibian breeding habitat within the Study Area occurred in the large coastal wetlands in the southwestern portion of the Study Area.

Comment: As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .

However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.

Results of the amphibian surveys are found in **Table F, Appendix F**. Results of the field surveys found seven species of amphibians within the Study Area over 24 stations: Northern Leopard Frog, Wood Frog, **Western Chorus Frog**, Spring Peeper**,** Bullfrog**,** Green Frog, and American Toad.

Spring Peeper and Western Chorus Frog were generally the most common species; the shallow water wetlands found within the Study Area are generally consistent with the breeding requirements of these two species. Bullfrog, an area sensitive species which requires permanent water, was restricted to the Long Point Marsh PSW.

Comment: According to Table F, Appendix F, Amphibian Breeding Surveys were restricted to 24 stations within the ABW01 and ABW02 areas, the remaining wetlands are not documented as being surveyed.

Breeding Birds

In the late spring and early summer of 2011, extensive breeding bird surveys were conducted in all natural habitats, including open country, woodland, and wetlands. A complete list of all birds observed is provided in **Tables G, Appendix F**. The fifteen most abundant species in the study area and in each habitat type, determined from calculated species densities, are summarized in **Table 4.4** below.

Table 4.4: Abundant bird species based on density, by habitat type

Table 4.4: Abundant bird species based on density, by habitat type

Grassland		Woodland		Marsh	
Species	Density/ 10 ha	Species	Density/ 10 ha	Species	Density/ 10 ha
Savannah Sparrow	10.67	American Robin	3.93	Red-winged Blackbird	18.05
Red-winged Blackbird	6.21	Red-winged Blackbird	3.56	European Starling	15.92
Tree Swallow	3.11	Song Sparrow	3.37	Mallard	10.08
Song Sparrow	2.79	Rose-breasted Grosbeak	3.00	Swamp Sparrow	10.08
European Starling	2.71	Common Grackle	3.00	Herring Gull	9.55
Eastern Kingbird	2.39	Red-eyed Vireo	2.62	American Wigeon	4.25
Yellow Warbler	1.75	European Starling	2.62	Wilson's Phalarope	3.18
Ring-billed Gull	1.19	Eastern Wood-Pewee	2.44	Killdeer	3.18
American Robin	1.19	Blue Jay	2.25	Wilson's Snipe	3.18
Grasshopper Sparrow	0.72	House Wren	2.25	Ring-billed Gull	3.18
Northern Harrier	0.64	Gray Catbird	2.25	Yellow Warbler	3.18
Wilson's Snipe	0.56	Yellow Warbler	2.25	Common Yellowthroat	3.18
American Goldfinch	0.56	Swamp Sparrow	1.50	Gadwall	2.65
Cedar Waxwing	0.48	Great Crested Flycatcher	1.31	Savannah Sparrow	2.65
Common Yellowthroat	0.48	Wood Thrush	1.31	Tree Swallow	2.12

Comment: While the information in table 4.4 is interesting, of greater interest are the following facts, per Table G, Appendix F:

Barn Swallow were documented at 28 of 33 survey locations.
Eastern Meadowlark were documented at 32 of 33 survey locations.
Bobolink were documented at 32 of 33 survey locations.

Why is this information about species at risk not highlighted?

4.2.3.1 Seasonal Concentration Areas

Evaluations of significance for candidate SWH for seasonal concentration areas within 120 m of the Project Location are presented in **Table 4.5**. Field notes are provided in **Appendix C**. A detailed table of results for each type of survey is provided in **Appendix F**.

Table 4.5: Summary of Evaluation of Significance Results for Seasonal Concentration Areas - abridged

Candidate Seasonal Concentration Areas	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)

Waterfowl Stopover and Staging Areas (Terrestrial)	**Yes**	**WT1**: Over 10 surveys in the spring and 8 surveys in the fall, none of the listed species were observed. A congregation of 100 individuals of the listed species in one day is considered significant. This is therefore not a significant waterfowl terrestrial stopover and staging area. **WT2**: Over 10 surveys in the spring and 8 surveys in the fall, none of the listed species were observed. A congregation of 100 individuals of the listed species in one day is considered significant. This is therefore not a significant waterfowl terrestrial stopover and staging area. **WT3**: Over 10 surveys in the spring and 8 surveys in the fall, none of the listed species were observed. A congregation of 100 individuals of the listed species in one day is considered significant. This is therefore not a significant waterfowl terrestrial stopover and staging area. **WT4**: Over 10 surveys in the spring and 8 surveys in the fall, the highest daily total of listed waterfowl species was 2. A congregation of 100 individuals of the listed species in one day is considered significant. This is therefore not a significant waterfowl terrestrial stopover and staging area.	No (WT1, WT2, WT3 and WT4)
Waterfowl Stopover and Staging Areas (Aquatic)	**No**	**WA1**: Over 8 surveys in the fall, the highest daily total of waterfowl individuals was 20. A congregation of 100 individuals is considered significant. This is therefore not a significant waterfowl terrestrial stopover and staging area.	No (WA1)
Shorebird Migratory Stopover Area	**No**	**SM1**: A total of 460 shorebirds were seen over 5 survey dates in May 2011. The largest concentration was 365 Dunlin observed on May 26, 2011, at the Amherst Bar. The IBA report also lists higher concentrations of shorebirds at the Amherst Bar in previous years (IBA Canada undated). This habitat is therefore considered a significant shorebird migratory stopover area. **Comment: As previously mentioned, a review of the observation forms indicates that total of 13 hours and 40 minutes were devoted to all surveys – however even that small amount of time is not in fact inaccurate. On May 3, 20011 (Observation Form page 1340 of report) the survey was rained out and no bird sightings were recorded, however those 4 hours and 10 minutes are included in the total observation time. Therefore the true time for all surveys with some expectation of success was 9.5 hours. (Note Table 4B lists Precipitation as).** **Furthermore, many of the early shorebird species were not recorded as the first survey without rain occurred on 11 May 2011. One of the most important shorebird species regularly sighted in late May and early June is the Red Know (endangered). This species is more likely to be sighted in evening surveys on rainy days.** **The only evening survey recorded on Table 4B was from 4:15 to 7:47 pm on 3 May 2011, which was rained out. Therefore, effectively, no surveys were undertaken in the evenings.**	Yes (SM1)
Turtle Overwintering	**Unknown**	Evaluation of significance surveys have not yet been completed; this habitat will be treated as significant. These surveys will be conducted prior to construction and are further described in the Environmental Impact Study (Section 5.5.3.3).	Yes (TO1)

		Comment: Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). are considered candidate Significant Wildlife Habitat for Turtle Wintering Areas **All Turtle Wintering Surveyes Occured in TO1, however Appendix has many references to SW and MA habitat that are outside of the TO1 area. Why were the other SW, MA habitat within the project area (including roadside) not surveyed?** **When will additional surveys take place?**	
Landbird Migratory Stopover Areas	Yes	**ML1**: Over 6 survey dates in the spring, the following numbers of individuals were observed: 66, 48, 126, 49, 76, and 36 with the following number of species: 23, 20, 38, 23, 27, and 17. A total of 57 species were observed over all of the survey dates in the spring. Over 7 survey dates in the fall, the following numbers of individuals were observed: 3, 10, 38, 34, 20, 24, and 50 with the following number of species: 2, 3, 10, 6, 7, 9, and 5. A total of 23 species were observed over all of the survey dates in the fall. **ML2**: Over 6 survey dates in the spring, the following numbers of individuals were observed: 62, 46, 33, 29, 88, and 63 with the following number of species: 23, 17, 14, 20, 36, and 23. A total of 57 species were observed over all of the survey dates in the spring. Over 8 survey dates in the fall, the following numbers of individuals were observed: 17, 13, 24,12, 85, 29, 23, and 60 with the following number of species: 7, 7, 12, 4, 18, 9, 7, and 17. A total of 45 species were observed over all of the survey dates in the fall. **ML3**: Over 6 survey dates in the spring, the following numbers of individuals were observed: 111, 67, 63, 55, 62, and 59 with the following number of species: 17, 11, 22, 20, 28, and 22. A total of 46 species were observed over all of the survey dates in the spring. Over 8 survey dates in the fall, the following numbers of individuals were observed: 30, 25, 25, 12, 35, 42, 43, and 17 with the following number of species: 9, 9, 16, 6, 14, 12, 12, and 8. A total of 35 species were observed over all of the survey dates in the fall. **ML4**: Over 6 survey dates in the spring, the following numbers of individuals were observed: 26, 32, 36, 34, 44, and 61 with the following number of species: 11, 16, 18, 17, 19, and 24. A total of 45 species were observed over all of the survey dates in the spring. Over 7 survey dates in the fall, the following numbers of individuals were observed: 26, 46, 28, 159, 107, 94, and 112 with the following number of species: 11, 15, 13, 19, 17, 16, and 21. A total of 45 species were observed over all of the survey dates in the fall. **ML5**: Over 6 survey dates in the spring, the following numbers of individuals were observed: 60, 40, 64, 45, 53 and 36 with the following number of species: 21, 15, 25, 17, 18 and 15. A total of 47 species were observed over all of the survey dates in the spring. Over 8 survey dates in the fall, the following numbers of individuals were observed: 46, 38, 40, 15, 108, 99, 24 and 197 with the following number of species: 24, 14, 14, 13, 20, 22, 14 and 31. A total of 59 species were observed over all of the survey dates in the fall. Although the number of species using these woodlands meet the criteria, there were not >200 birds/day for 5 days	Yes (ML1, ML2, ML3, ML4 and ML5)

		observed at any one woodland. However, because the transects covered less than 25% of the woodland area, we are considering 50 individuals observed per day on each transect to be significant. Therefore, all five habitats are considered significant **Comment: Section 10 "How much Habitat to Protect" of the Ontario Ministry of Natural Resources *Significant Wildlife Habitat Technical Guide* has the following information on page 121, Table 10-5. Primary locations of seasonal concentrations of wildlife, under Key Requirements for Landbird Migratory Stopover Area: Great Lakes shorelines and adjacent lands within 5 km (especially Lake Erie & Lake Ontario) are very important.** **Therefore the entire project location can be considered as a Landbird Migratory Stopover Area.**	
Migratory Butterfly Stopover Area	**No**	**MB2**: Occasional Monarch butterflies were noted during two surveys in August 2011; however, no large flocks or numbers were observed. This is therefore not significant migratory butterfly stopover habitat. **MB3:** Occasional Monarch butterflies were noted during two surveys in August 2011; however, no large flocks or numbers were observed. This is therefore not significant migratory butterfly stopover habitat. **Comment: According to the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR2012); information sources to be consulted when attempting to establish Candidate SWH for Migratory Butterfly Stopover Areas include "Naturalist Clubs". The Defining Criteria states: "Numbers of butterflies can range from 100-500/ day, significant variation can occur between years and multiple years of sampling should occur".** **Why were the Kingston Field Naturalists not contacted with regards to identifying Migratory Butterfly Stopover Areas on the Island?** **If the MNR recommends multiple years of sampling, why does Stantec consider 2 surveys on partially cloudy afternoons in August of 2011 sufficient to establish the lack of significant migratory butterfly stopover habitat?**	No (MB2, MB3)

4.2.3.2 Rare Vegetation Communities or Specialized Habitat for Wildlife

Evaluations of significance for candidate SWH for rare vegetation communities or specialized habitat for wildlife within 120 m of the Project Location are presented in **Table 4.6**. Detailed table of results for each type of survey is provided in **Appendix F**.

Table 4.6: Summary of Evaluation of Significance Results for Rare Vegetation Communities or Specialized Habitat for Wildlife - Abridged

Candidate Rare Vegetation Communities or Specialized	Present in or within 120 m of Project Location	Rationale	Carried Forward to Summary and EIS (Y/N)

Habitat for Wildlife			
Waterfowl Nesting Areas	No	**WN1**: Two of the indicator species were observed during breeding bird surveys: Mallard and Wood Duck. This type of habitat requires breeding evidence of three or more listed species, excluding mallard, to be considered significant. Therefore, this habitat is not a significant waterfowl nesting area. **WN2**: Two of the indicator species were observed during breeding bird surveys: Mallard and Wood Duck. This type of habitat requires breeding evidence of three or more listed species, excluding mallard, to be considered significant. Therefore, this habitat is not a significant waterfowl nesting area. **Comment: According to 3.1.2 Vegetation Community and Vascular Plants Assessment the first ELC and preliminary botanical inventories of vegetation communities occurred on July 26 – 29 of 2011. According to Table 4B, the Waterfowl Nesting Area surveys occurred on June 5 and 7, 2011 for a total of one hour.** **How then were WN1 and WN2 decided upon? Additional surveys must be undertaken.**	No (WN1, WN2)
Woodland Raptor Nesting Habitat	No	**WR1**: One stick nest was found in this habitat during ELC surveys. It was confirmed in spring 2011 to be an active Red-tailed Hawk nest. Because this is not a listed species for this habitat, this is not significant woodland raptor nesting habitat. **WR2**: No stick nests were found in this habitat during ELC surveys. Therefore, this is not significant woodland raptor nesting habitat. **Comment: Per SWH Ecoregion 6E Criterion Schedule, Candidate SWH for woodland raptor nesting includes : all forested ELC Ecosites. All natural or conifer plantation woodland / forest stands >30h with >10 ha of interior habitat are candidate SWH.** **Therefore Woodlands 3 and 36 must be considered as candidate Woodland Raptor Nesting Habitat.** **When will Stantec undertake surveys in these woodlands?**	No (WR1, WR2)
Amphibian Breeding Habitat (Woodland)	Yes	**ABWO1**: Two species of anurans (Spring Peeper and American Toad) were observed in this feature, with 3 individuals heard calling. Two or more of the listed frog species with at least 20 individuals confirms significant amphibian breeding habitat (woodland). This is therefore not significant amphibian breeding habitat. **ABWO2**: Five species of anurans, including Western Chorus Frog, were observed in this feature, with more than 20 individuals. Two or more of the listed frog species with at least 20 individuals confirms significant amphibian breeding habitat (woodland). This is therefore significant amphibian breeding habitat. **ABWO3**: Two species of anuran (Gray Treefrog and Spring Peeper) were observed in this feature, with greater than 20 individuals in total. Two or more of the listed frog species	Yes (ABWO2 and ABWO3) And No (ABWO1)

		with at least 20 individuals confirms significant amphibian breeding habitat (woodland). This is therefore significant amphibian breeding habitat. **Comment: As previously documented, much breeding habitat was not surveyed.** **As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.**	
Amphibian Breeding Habitat (Wetland)	Yes	**ABWE1**: Six species of anurans, including western chorus frog, were observed in this feature, with more than 20 individuals. Two or more of the listed frog species with at least 20 breeding individuals confirms significant amphibian breeding habitat (woodland). This is therefore significant amphibian breeding habitat. **ABWE2**: Three species of anurans (American toad, spring peeper, and western chorus frog) were observed in this feature, with more than 20 individuals observed. Two or more of the listed frog species with at least 20 breeding individuals confirms significant amphibian breeding habitat (woodland). This is therefore significant amphibian breeding Habitat **Comment: As previously documented, much breeding habitat was not surveyed.** **As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .** **However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected? t is notable that most of the Surveys Occurred in the vicinity of Provincially Significant Marshes.**	Yes (ABWE1, ABWE2)

4.2.3.3 Habitat for Species of Conservation Concern

Evaluations of significance for candidate SWH for rare vegetation communities or specialized habitat for wildlife within 120 m of the Project Location are presented in **Table 4.7**. Detailed table of results for each type of survey is provided in **Appendix F**.

Table 4.7: Summary of Evaluation of Significance Results for Habitat for Species of Conservation - Abridged

Concern Candidate	Present in or within	Rationale	Carried Forward to

Habitat for Species of Conservation Concern	120 m of Project Location		Summary and EIS (Y/N)
Marsh Breeding Bird Habitat	**Yes**	**MBB1**: Five of the listed species were observed with breeding evidence during breeding bird surveys in this habitat: Common Loon, American Bittern, Green Heron, Marsh Wren, and Yellow Rail. The presence of 4 or more of the listed species indicates significant marsh breeding bird habitat. This habitat is therefore significant wildlife habitat. **Comment: As previously mentioned, the earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.** **By the end of July, any shallow marshes would have dried up, the Stantec team missed quite a bit of Marsh Breeding Bird Habitat due to the date the surveys were begun.**	Yes (MBB1)
Woodland Area-Sensitive Bird Breeding Habitat	**Yes**	**ABB1**: Four of the species listed in the Ecoregion criteria were observed with breeding evidence during breeding bird surveys: Yellow-bellied Sapsucker, Scarlet Tanager, Blackthroated Green Warbler, and Veery. The presence of 3 or more listed species observed with breeding evidence indicates significant area sensitive bird breeding habitat. This habitat is therefore significant woodland area-sensitive bird breeding habitat, and it contains >4 ha of interior habitat, calculated 200 m from the habitat edge. **ABB2**: Two of the species listed in the Ecoregion criteria were observed with breeding evidence during breeding bird surveys: Yellow-bellied Sapsucker and Veery. The presence of 3 or more listed species observed with breeding evidence indicates significant area sensitive bird breeding habitat. This habitat is therefore not significant woodland area-sensitive bird breeding habitat. **Comment: SWH Ecoregion 6E Criterion Schedule lsits the flowing ELC Ecosite as Candidate SWH, FOC, FOM, FOD, SWC, SWM and SWD. As woodland 36 meets the ha criterion as well as the FOC criterion, it must be searched.**	Yes (ABB1) And No (ABB2)
Open Country Bird Breeding Habitat	**Yes**	**OCB1**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. In addition, 15 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB2**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. Short-eared Owls have also been observed nesting in this habitat (Keyes 2011). In addition, 286 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB3**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. In addition, 19 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB4**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and	Yes (OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8, OCB9)

		Savannah Sparrow. In addition, 1596 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB5**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. Short-eared Owls have also been observed nesting in this habitat (Keyes 2011). In addition, 250 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB6**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. In addition, 148 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB7**: Four listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, Short-eared Owl, and Savannah Sparrow. In addition, 2923 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **Table 4.7: Summary of Evaluation of Significance Results for Habitat for Species of Conservation** **OCB8**: Three listed species were observed during breeding bird surveys: Upland Sandpiper, Grasshopper Sparrow, and Savannah Sparrow. Short-eared Owls have also been observed nesting in this habitat (Keyes 2011). In addition, 2211 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **OCB9:** Two listed species were observed during breeding bird surveys: Upland Sandpiper and Savannah Sparrow. Short-eared Owls have also been observed nesting in this habitat (Keyes 2011). In addition, 2253 staging swallows were observed over 9 swallow surveys. This feature is therefore significant open country breeding bird habitat. **Note: Above encompasses virtually the entire island. The only areas not included are the marsh and the westernmost tip of the island that Stantec did not canvas as there are no plans to erect turbines in this area.**	
Shrub/Early Successional Bird Breeding Habitat	**Yes**	**SSB1**: One of the listed indicator species (Brown Thrasher) and four of the listed common species (Field Sparrow, Eastern Towhee, Willow Flycatcher, and Black-billed Cuckoo) were observed in this habitat during breeding bird surveys. No species of special concern were observed. The presence of 1 of the indicator listed species and 2 of the common listed species indicate significant shrub/early successional bird breeding habitat. This is therefore significant shrub/early successional bird breeding habitat. **Note: SSBI runs longitudinally along 2nd concession road, sections of which are lined with decades old hedgerows. Specifically, there are hedgerows on the north side and for small section on both sides of 2nd concession in the SSB1 area. A section of these hedgerows will need to be removed in order to allow for turbine construction traffic. Per KNF, these hedgerows are important habitat for several species.** **SSB2**: Three of the listed common species (Black-billed Cuckoo, Eastern Towhee, and Willow Flycatcher) were	Yes (SSB1, SSB3, SSB4 and SSB5) and No (SSB2)

		observed in this habitat during breeding bird surveys. No indicator species or species of special concern were observed. The presence of 1 of the indicator listed species and 2 of the common listed species indicate significant shrub/early successional bird breeding habitat. This is therefore not significant shrub/early successional bird breeding habitat. **Note: SSB2 is a long rectangular parcel of land bordered on one side by the access road to turbine S04 and on the other by 2nd concession road, sections of 2nd concession in the vicinity of sSB2 are lined with decades old hedgerows. A section of these hedgerows will need to be removed in order to allow for turbine construction traffic. Per KNF, these hedgerows are important habitat for several species.** **SSB3**: One of the listed indicator species (Brown Thrasher) and two of the listed common species (Eastern Towhee and Willow Flycatcher) were observed in this habitat during breeding bird surveys. No species of special concern were observed. The presence of 1 of the indicator listed species and 2 of the common listed species indicate significant shrub/early successional bird breeding habitat. This is therefore significant shrub/early successional bird breeding habitat. **SSB4:** One of the listed indicator species (Brown Thrasher) and three of the listed common species (Field Sparrow, Eastern Towhee and Willow Flycatcher) were observed in this habitat during breeding bird surveys. No species of special concern were observed. The presence of 1 of the indicator listed species and 2 of the common listed species indicate significant shrub/early successional bird breeding habitat. This is therefore significant shrub/early successional bird breeding habitat. **SSB5:** One of the listed indicator species (Brown Thrasher) and three of the listed common species (Field Sparrow, Eastern Towhee and Willow Flycatcher) were observed in this habitat during breeding bird surveys. No species of special concern were observed. The presence of 1 of the indicator listed species and 2 of the common listed species indicate significant shrub/early successional bird breeding habitat. This is therefore significant shrub/early successional bird breeding habitat **Note: SSB5 intrudes well within the 120 meter zone of investigation for turbine S22 – why is this information not noted here?**	
Short-eared Owl	**Yes**	This species was observed at each of the open country breeding bird habitats (**OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8,** and **OCB9**). Therefore, each of these features are considered significant Short-eared Owl habitat. **As Noted Above: This encompasses virtually the entire island. The only areas not included are the marsh and the westernmost tip of the island that Stantec did not canvas as there are no plans to erect turbines in this area.**	Yes (OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8, OCB9)

4.3 SUMMARY

This NHA was undertaken to identify natural features found in or within 120 m of the Project Location and evaluate their significance. Based on an Evaluation of Significance, significant natural features identified in and within 120 m of the Project Location are presented in **Table 4.8**.

PLEASE SEE PAGES 93 – 98 OF STANTEC REPORT AS THIS TABLE NOT REPLICATED IN THIS DRAFT "FOR COMMENT" VERSION OF THE NATURAL HERITAGE ASSESSENT & ENVIRONMENTAL IMPACT STUDY.

The locations of the significant features are presented in **Figures 5.1-5.5, Appendix A**.

An Environmental Impact Study Report will be prepared to identify mitigation measures in respect to any negative environmental effects on these features.

5.0 Environmental Impact Study

5.1 PROJECT FOOTPRINT OVERVIEW – No Comment

5.2 LAND USE OF PROJECT LOCATION

The Project Location and the associated 120 m Zone of Investigation consisted of a mix of naturalized habitat and active cropland (mainly hay and pasture). Woodland and wetland communities occurred throughout the Zone of Investigation. These communities frequently consisted of deciduous forest and cultural woodland, with fewer occurrences of deciduous swamp. Two large provincially significant coastal marshes occur within the Zone of Investigation: the Nut Island Duck Club Marsh and the Long Point Marsh.

All of the 36 turbines are sited within lands currently managed for agriculture (hay or pasture). The total amount of natural vegetation to be removed permanently for the duration of Project operation (i.e. long term removal areas) is 15.0 ha. An additional 40.5 ha of vegetation removal or disturbance is required temporarily during the construction of the Project. Long-term removal areas include infrastructure that will remain in place for the entire Project duration, including turbine bases and access roads. The evaluation of the total amount of vegetation to be impacted during construction includes consideration of the entire municipal road allowance (on both sides of the road) for roadside collector lines, and considers the potential for underground collector lines. Detailed design undertaken in consultation with the County will determine on which side of the road allowance the collector lines will be located. Therefore the assumption of disturbance of the entire road allowance is considered conservative in terms of area and magnitude of impact.

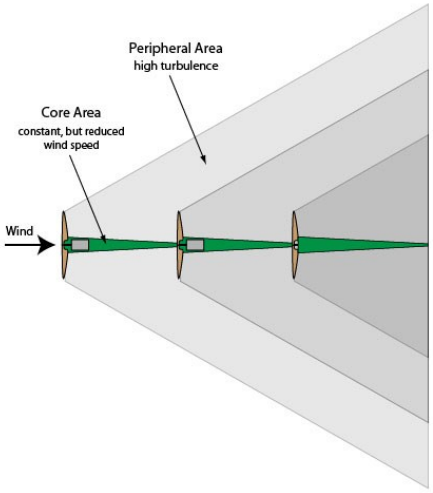
Vegetation to be removed or disturbed for the Project consists primarily of deciduous woodland and agricultural land. Details on habitat removal by vegetation community type is provided in **Table 12B, Appendix B**. Details on habitat to be removed by natural feature type is provided in **Table 13B, Appendix B**.

Comment: The above does not include the following pertinent information. Each of the turbines proposed for Amherst Island measures over 500 feet tall and the speed at the tip of the blade can reach up to 275 kilometers per hour. The turbines have a swept area (the area covered by the blades as they spin) of 10,000 square metres, almost 2.5 acres for each turbine. The 36 proposed turbines will directly remove 90 acres of air space over Amherst.

Impact with the turning rotor blades is of particular concern for the Short-eared Owl and Common Nighthawk. Both Short-eared Owls and the Common Nighthawk engage in courtship and territorial behavior brings them into the area of the turbine blades. Males perform aerial displays by rising quickly with rhythmic and exaggerated wing beats, hovering, gliding down, and rising again, often 200 to 400 meters (650 to 1,300 feet) above ground.

As well as the potential for direct impacts, below is a picture of turbine wake generated by Industrial Wind Turbines. Current research indicates that optimum spacing between wind turbines is at least the distance equal to 15 to 20 rotor blades. This is the distance estimated to be required to ensure that the wind turbulence generated by one turbine does not impact the wind available to another turbine.

The turbines on Amherst Island are within 5 to 9 rotor blades apart. Clearly, the entire island will be impacted by wind turbulence throughout the lifetime of the project.



5.3 NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE CONSTRUCTION AND DECOMMISSIONING PHASES OF THE PROJECT

The primary mitigation measure employed to reduce impacts to natural features and functions was avoidance; micro-siting decisions made during the development of the Project layout considered minimizing impacts to natural features and wildlife habitat. The Project is sited predominately within actively agricultural land with minimal natural habitat removal required for the Project. Modifications to the site plan were made to avoid placing the Project is significant features.

Comment: section 5.3.3.8 states:

> As the majority of the island is comprised of grassland habitat, avoidance of this habitat type was not possible; most project components are sited in the significant open country breeding bird habitat and Short-eared Owl breeding habitat.

It would therefore be impossible to modify the site plan in order to avoid placing the Project in significant features, as stated above.

Appendix 3 lists short-eared owl nesting sites from 2009 through 2012, the nests are spread throughout the island.

Large provincially significant coastal wetlands with open aquatic habitat are located in the southwestern portion of Amherst Island, the boundaries of which were re-delineated and expanded during the Evaluation of Significance. As a result of the re-delineation, turbines were removed and access roads relocated. Outside of these coastal wetlands, most wetlands within the Study Area consisted of early successional habitats; meadows regenerating in reed canary grass or early successional woodlands of green ash. To the extent possible, the project was sited outside of these features, with the exception of a small amount (0.143 ha temporarily and 0.087 ha permanently) of reed canary grass meadow marsh removal for access roads and collector lines.

The Project Location has been sited to avoid woodlands within the Study Area to the extent possible. Modifications to the layout has resulted in only a minimal amount of proposed tree removal within a single woodland for an access road and collector line, where avoidance was not possible due to access constraints. Proposed turbines locations are set back from significant woodlands. Most turbines are sited more than 50 m from significant woodlands, with the exception of three turbines sited 11 m, 47 m and 48 m from the dripline of significant woodlands. Impacts to shoreline and offshore habitat have been avoided. All proposed turbine locations are sited more than 550 m from the shoreline.

Comment: While the above paragraph does somewhat address the woodlands, the decades old hedgerows that line many of the narrow dirt roads are not addressed. In order to facilitate the movement of turbine related traffic, many of these hedgerows would be removed. Following is a quote from a letter from the Kingston Field Naturalists regarding the potential widening of a road due to turbine related traffic. While they speak specifically of one road, the same observations could be made for many of the roads on Amherst Island.

> **As part of our census of wildlife, the KFN has been observing birds and butterflies on Amherst Island over the past 40 years. During that time, we have noted that the hedgerows that run parallel to the Marshall forty Foot are an important habitat for several species of passerines (sparrows, thrushes, mimids) during fall and spring migration. Also, it is important as nesting habitat for Brown thrasher, an indicator species for shrub/early successional breeding bird habitat. Grasshopper Sparrow, Upland Sandpiper and Savannah Sparrow, listed species for open country bird breeding habitat, also nest near these hedgerows as reported in a recent Environmental Impact Study.**
>
> **Finally, the KFN believe that this mature hedgerow system will take over twenty years to reestablish itself if it is disturbed because of the presence of grazing mammals and shallow soil conditions.**
>
> **In summary, the KFN is opposed to the widening of the Marshall Forty Foot road because it will result in loss of critical habitat.**

Removal of relatively small amounts of hay and pasture habitat was unavoidable while siting the project, given the abundance of these habitat type on Amherst Island. However, overall the amount of grassland habitat removal is a small proportion of grassland available within the Study Area. Grasslands (including pasture and hayfields) provide habitat for open country breeding birds and wintering raptors, in particular the Short-eared Owl. In order to minimize impact on the habitat for these species, collector lines and access roads were made as short and as direct as possible to connect to the turbines. The width of access roads post construction will as also be minimized to 4-6 m to reduce habitat loss, and construction areas will be re-seeded immediately with hay or grass, in consultation with the landowners.

The initial layout design evaluation was a table top exercise by the consultants to examine all natural resource data (provincial and local government, stakeholder information and preliminary site investigations (Golder Associates 2007 and Stantec 2011), as well incorporating the REA regulatory setback constraints. The information gathered allowed the subject matter experts to identify key habitat areas of interest. In addition to natural resource information, the social and cultural aspects issues for the island were also considered for the project design were also significant large parameters components in the development of the initial project and layout. Existing land activity was also taken into consideration: Current farming activity, including a large cattle grazing operation on pastureland, was considered in turbine placement in order to reduce the impact on the highest quality grassland habitat available.

The Evaluation of Significance surveys, including surveys for grassland breeding birds and wintering raptors, were conducted in 2011. Information gathered through these surveys informed the design engineers of the locations of important areas for open country birds. This information, in conjunction with the social and cultural concerns, including private landowner input, allowed the proponent to develop the most appropriate project layout. This included moving and removing proposed turbine locations, minimizing access road widths and lengths, and using underground cabling where possible.

Comment: If social and cultural concerns were indeed considered when developing the most appropriate project layout, why then will the island school playground be within 550 meters of the nearest turbine? Why was an island dock (to be built in order to accommodate construction activities) situated in such a manner as to ensure that much of the construction truck traffic will pass close to the school, one quarter directly in front and three quarters on a construction road within 450 metres of the school. This equates to 22,000 heavy truckloads over 18 months, or one every 10 minutes. Most of the deliveries will probably take place over a shorter period of 6 months; that translates into a truck every 3 minutes. If social and cultural concerns were considered, why will one quarter of the truck traffic pass through the historic hamlet of Stella – with no regard for the children who play on the sidewalks, the park and walk to school?

5.3.1 Significant Woodlands

Fifteen of the woodlands met the criteria for significance based on criteria standards within the NHA Guide for Renewable Energy Projects. Potential negative impacts and proposed mitigation measure during the construction and decommissioning phases of the Project are detailed in **Table 14B, Appendix B**.

The primary mitigation strategy was avoidance of the significant woodlands. The 15 significant woodlands located in or within 120 m of the Project Location are shown on **Figures 5.1-5.5, Appendix A**.

Comment: As there are a total of 36 significant woodlands listed in this report, please explain how the placement of the project location within 120 meters of 15 of these significant woodlands can be considered avoidance?

Section 5.3 above states "most turbines are sited more than 50 m from significant woodlands, with the exception of three turbines sited 11 m, 47 m and 48 m from the dripline of significant woodlands."

As avoidance is listed as the primary mitigation strategy, and almost ½ of the significant woodlands on the island will be within 120 meters of the project location (project within three significant woodland), there was in fact no effective mitigation strategy put in place to protect Amherst Island's significant woodlands from the potential damaging effects of this installation. This is a clear indication that Amherst Island is not a suitable site for Industrial Wind Turbines.

The Project Location is proposed to occur within three significant woodlands: Woodlands 4, 9, and 36. Woodland 4 (**Figure 5.2, Appendix A**) is a 214.7 ha woodland that was determined to be significant based on six of the seven criteria: woodland size, interior habitat, proximity of other features, linkages, water protection and woodland diversity. It is comprised of a mosaic of deciduous forest, deciduous swamp and thicket habitat. It also provides significant wildlife habitat for migratory landbird stopover, area-sensitive bird breeding habitat, old growth forest and amphibian breeding. An underground collector line is proposed to run through a section of this feature. The collector line will follow an existing farm trail, approximately 6 m wide, and through the feature with no tree removal proposed. Overall, potential impacts to Woodland Feature 4 are anticipated to be very minor.

Comment: If linkages are considered to be one of seven criteria to determine the significance of woodland habitat, why is there no section addressing Animal Movement Corridors in this report?

Note: 7 of the 36 woodlands listed in table 7B *Site Investigation Results – Woodlands*, have "Provides connectivity between significant natural features" listed as a function. Furthermore, Figure 1B indicates extensive Wildlife Habitat Linkage which is not addressed in this report. The Central Cataraqui Region Natural Heritage Study Figure 9A Corridors and Linkages indicates that many of the linkages run through Core Habitat of "High" value.

Central Cataraqui Region Natural Heritage Study Figure 9A:
http://www.cataraquiregion.on.ca/management/Figure9aWoodlandCorridorsLoyalist.pdf

Woodland Feature 9 (**Figure 5.4, Appendix A**) is a 15.8 ha woodland that was determined to be significant based on three of the seven criteria: woodland size, interior habitat, and woodland diversity. It is composed of three habitat types: Fresh-Moist Oak-Maple-Hickory Deciduous Forest, Fresh-Moist Shagbark Hickory Deciduous forest, and Gray Dogwood Cultural Thicket. It does not contain any significant wildlife habitat. Removal of vegetation within this feature for construction of Project components could have the potential to affect both flora and fauna through loss of species diversity, by reducing or fragmenting available habitat (especially for

species with low mobility), from the introduction or spread of invasive species, and from the temporary disruption to movement of wildlife.

For ease of reference I have included "snapshots" and details of various woodlands.
Woodland Feature 4 – Figure 5.4

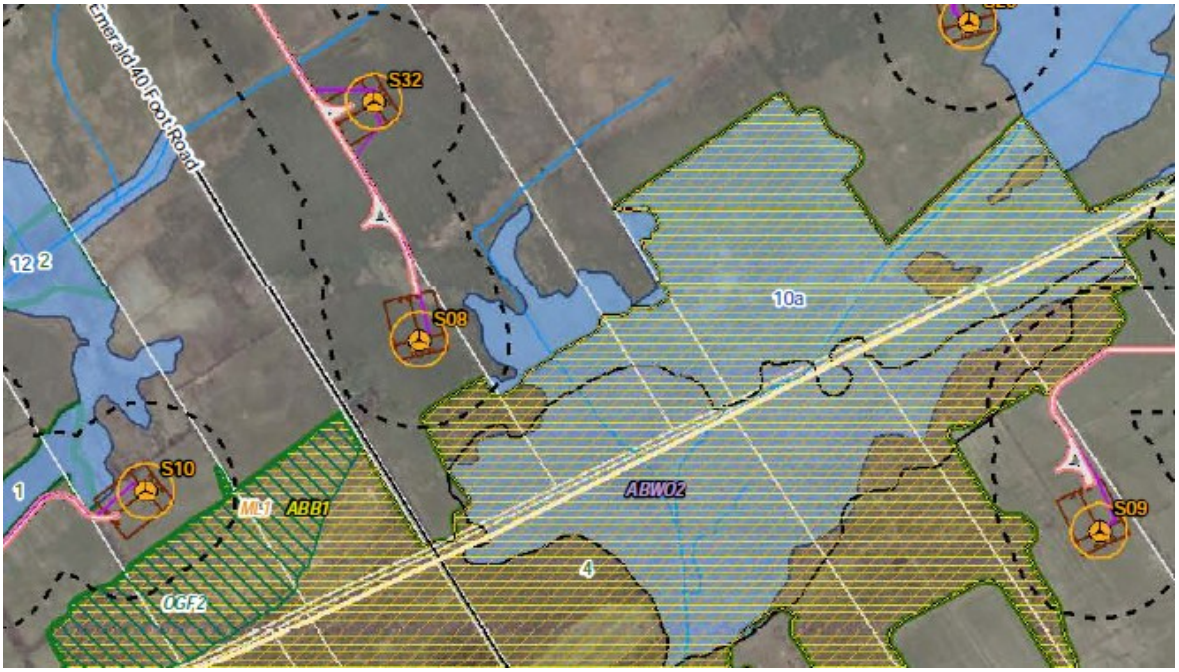


Table 7B description of Woodland Feature 4 includes "a very large contiguous woodland and wetland community encompassing portions of the Southwest corner of the island. The majority of the feature is not within 120m of the Project Location."

While the majority of Woodland Feature 4 is not within 120 meters of the Project Location, this Significant Woodland is surrounded by turbines.

Furthermore, this Woodland encompasses ABW02 – one of two areas on the island which were surveyed for amphibian breeding habitat. The purple cross-hatching in the picture above indicates Amphibian Breeding.

The yellow cross hatching in the picture above indicates Area Sensitive – Breeding Bird.

The orange cross hatching (/ to the right) in the picture above indicates – Landbird Migratory Stopover Area. ML1 (Woodland Feature 4) is approximately 215 ha in size

The solid pale blue which bleeds into Feature 4 indicates a significant wetland.

The dark green cross-hatching in the picture above indicates old growth forest. Furthermore, a glance at figure 4.0 indicates that the majority of the land surrounding Woodland Feature 4 is either Open Country Breeding Bird or Raptor Wintering Area.
Woodland Feature 9 – Figure 5.2

Although Woodland Feature 9 was observed from the edge due to lack of property access, Table 7B / Woodland Feature 9's attributes include "No trees were observed that were >25 dbh and contained cavities. No specialized wildlife habitat features (hibernacula, stick nests, etc.) observed. No vernal pools were observed"

Woodland feature 9 is adjacent to Wetland Feature 16. A 4 to 6 meter access road will bisect woodland 9.

Furthermore, a glance at figure 4.0 indicates that all of the land surrounding Woodland Feature 9 is either Open Country Breeding Bird or Raptor Wintering Area.

Woodland Feature 15 – Figure 5.5

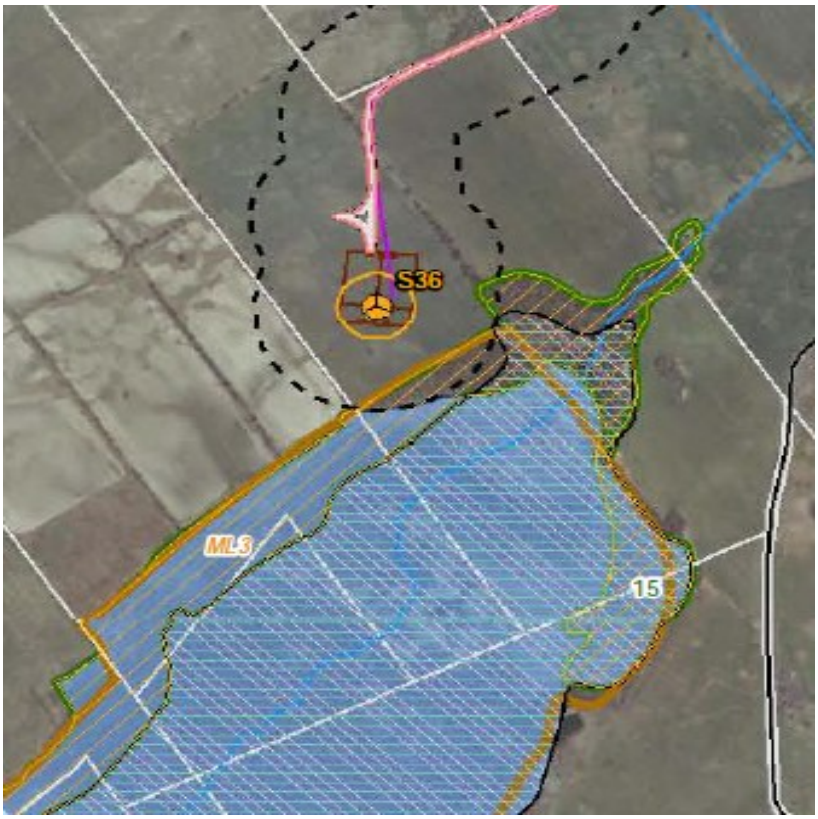


Table 7B Woodland Feature 9's attributes include "No specialized wildlife habitat features (hibernacula, stick nests, etc.) observed."

The orange cross hatching (/ to the right) in the picture above indicates – Landbird Migratory Stopover Area.

The solid pale blue which bleeds into Feature 15 indicates a significant wetland.

The green cross hatching in the picture above indicates Marsh Breeding Bird

Furthermore, a glance at figure 4.0 indicates that the majority of the land surrounding Woodland Feature 9 is either Open Country Breeding Bird, Raptor Wintering Area or an Amherst Island Life Science ANSI.

I am at a loss as to how the above equates to "no specialized wildlife habitat features".

Woodland feature 18 – Figure 5.2

Table 7B / Woodland Feature 18's attributes include "One trees was observed that was >25 dbh and contained cavities.Observed one potential bat roosting feature (large oak >50cm dbh, no cavities, decay class 1**);** no other significant habitat features observed. Vernal pools absent. No disturbance observations were noted."

Why was the potential bat roosting feature noted in Table 7 not investigated further?

The solid pale blue which abuts Feature 18 indicates a significant wetland.

Further, a glance at figure 4.0 indicates that the majority of the land surrounding Woodland Feature 18 is either Open Country Breeding Bird or Raptor Wintering Area

Woodland Feature 20 – Figure 5.5

Table 7B / Woodland Feature 20's attributes include "No specialized wildlife habitat features (hibernacula, stick nests, etc.) observed."

However, a glance at figure 4.0 indicates that the majority of the land surrounding Woodland Feature 20 is either Open Country Breeding Bird or Raptor Wintering Area.
Woodland Feature 21 – Figure 5.3

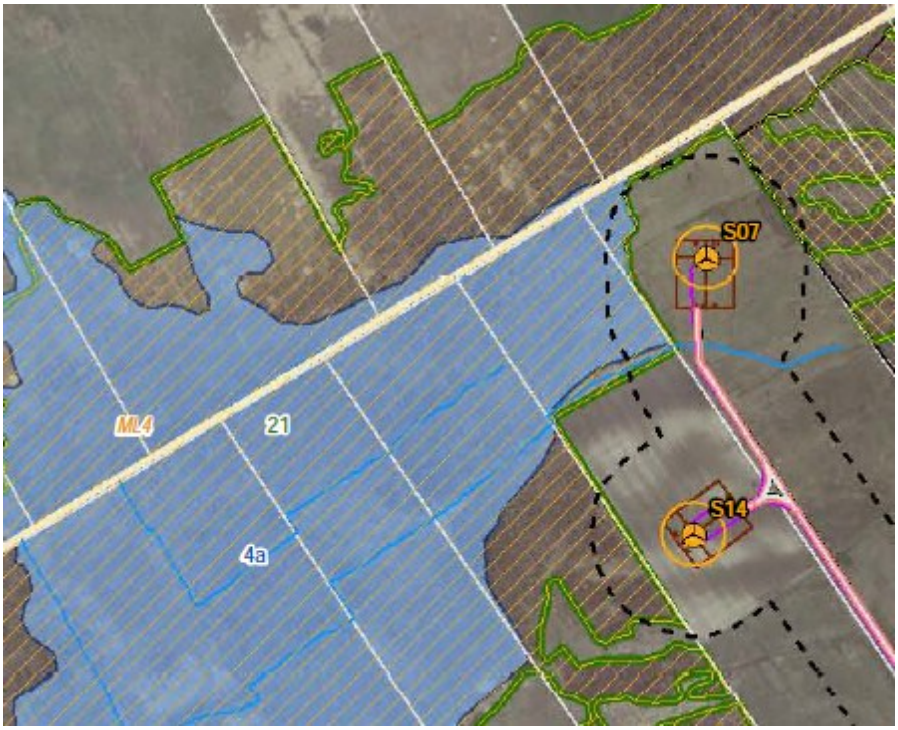


Table 7B Woodland Feature 21's description include "Woodland feature 21 is a very large contiguous swamp located north of S Shore Rd. and east of Marshall 40 Foot Rd. This feature is comprised of a mosaic of vegetation communities. The majority of the feature is not within 120m of the Project Location. Land use immediately surrounding the woodland feature is primarily actively managed agricultural lands and pasture."

The orange cross hatching (/ to the right) in the picture above indicates – Landbird Migratory Stopover Area.

The solid pale blue which bleeds into Feature 15 indicates a significant wetland.

While the Woodland Feature does not have a turbine constructed within its dripline border, the picture above clearly illustrates that the turbines will nonetheless be very much a part of the Woodland Feature is they are allowed to be built.

Furthermore, a glance at figure 4.0 indicates that the majority of the land surrounding Woodland Feature 9 is either Open Country Breeding Bird, Raptor Wintering Area.

Woodland Feature 23 – Owl Woods

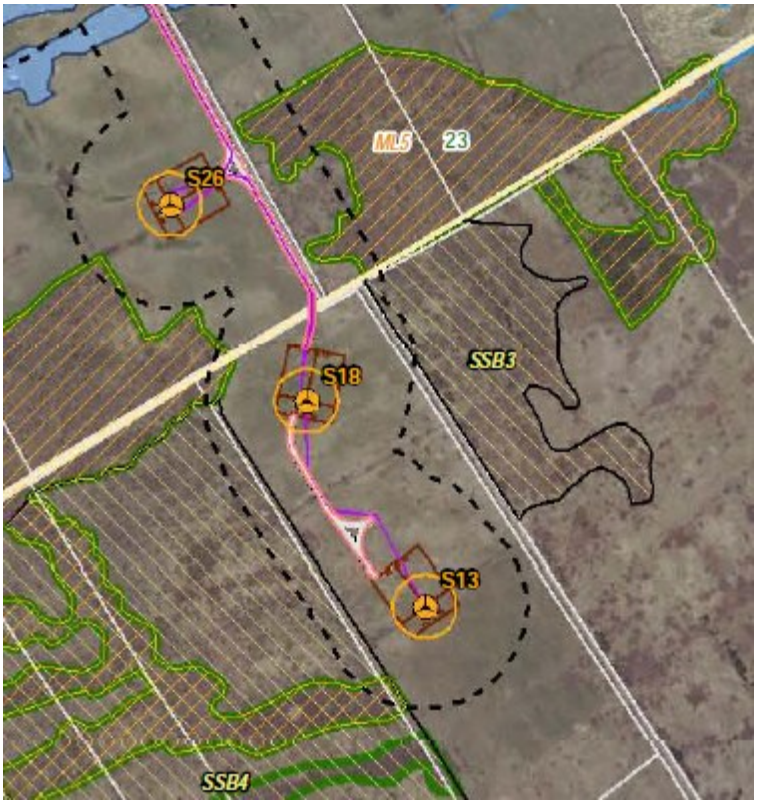


Table 7B description of Woodland Feature 4 includes "Woodland feature 23 is a moderately sized woodland found directly on the east side of Marshall 40 Foot Rd., between Front Rd. and S Shore Rd. This woodlot forms part of the Owl Woods. **Attributes includes the following** "No specialized wildlife habitat features (hibernacula, stick nests, etc.) observed"

It is interesting to note that Owl Woods, an Owl Meca of International reputation, possesses no "specialized wildlife habitat features".

The orange cross hatching (/ to the right) in the picture above indicates – Landbird Migratory Stopover Area.

While no feature of the project intrudes directly into Owl Woods, it must be noted that the series of turbines that bisect the island just to the west of Owl Woods. A wind swept area totaling 10 acres between the owls and their prey in the fields to the west of Owl Woods.

Furthermore, a glance at figure 4.0 indicates that all of the land surrounding Woodland Feature 23 is either Open Country Breeding Bird or Raptor Wintering Area.

Per Section 5.3.1; "The primary mitigation strategy was avoidance of the significant woodlands.**" How can this be considered avoidance?**

Indirect impacts to significant woodlands resulting from construction activities, such as dust

generation, sedimentation and erosion are expected to be **short term**, temporary in duration and mitigable through the use of standard site control measures. Potential impacts and mitigation requirements to significant woodlands are described in **Table 14B, Appendix B** as well as in the general construction mitigation recommendations in **Table 5.1** below.

Comment: Short Term:

The proponent is estimating an 18 month construction timeline, which would doubtless result in an 18 month de-construction timeline at the end of the 20 year project. This cannot be considered "short term".

Furthermore, there is mounting evidence that the 20 year turbine lifespan is not realistic. A study commissioned by the Renewable Energy Foundation of Britain and published in December of 2012 finds that "few wind farms will operate for more than 12–15 years". This translates to ongoing construction disruption throughout the predicted 20 year lifespan of this project.
http://www.ref.org.uk/publications/280-analysis-of-wind-farm-performance-in-uk-and-denmark

5.3.2 Significant Wetlands

Twenty wetlands, not previously identified by MNR, were identified in or within 120 m of the Project Location and are treated as provincially significant, with the exception of Wetlands 6 and 7. Both the Nut Island Duck Club Marsh (Wetland 10a) and Long Point Marsh (Wetland 21), previously identified as provincially significant by the MNR, remain as provincially significant in this report.

To clarify – section 3.2.2.2 states " the Project location is located in Wetland Features 6 and 7 and within 20m of the remaining 18 wetlands."

The primary mitigation strategy was avoidance of wetlands. Prior to final siting of the Project, significant wetlands were identified applying a conservative approach. Substantial effort was allocated to the design of the final layout to ensure that Project components were sited outside of conservatively identified significant wetland boundaries. Separation distances from Project components to significant wetlands were maximized to the extent possible as an impact avoidance strategy. The 20 significant wetlands located within 120 m of the Project Location are shown on **Figures 5.1-5.5, Appendix A**

Comment: As the Project location is located in Wetland Features 6 and 7 and within 20m of the remaining 18 wetlands, please explain how the placement of the project location can be considered avoidance?

As avoidance is listed as the primary mitigation strategy, and every significant wetland on the island will be within 120 meters of the project location (project within two significant wetlands), there was in fact no effective mitigation strategy put in place to protect Amherst Island's significant wetlands from the potential damaging effects of this installation. This is a clear indication that Amherst Island is not a suitable location for the installation of 36 industrial wind turbines as tall as a 50 story building.

There will be no direct loss of significant wetland habitat or function due to the Project. Indirect impacts resulting from construction activities, such as dust generation, sedimentation, and erosion are expected to be short term, temporary in duration and mitigable through the use of

standard site control measures.

Comment: While this report asserts that Wetland Features 6 and 7 are not significant wetland habitat, concerns with the methodology used to come to this conclusion have been expressed in comments in section 4.1.

In fact, the site plan indicates 3 turbines and their ancillary structures to be built in Wetland Features 6 and 7. This will clearly impact wetland habitat and function. Furthermore, as the remaining Wetland Features are all within 120 meters of project components, I am at a loss as to unsubstantiated assertion that there will be no direct "loss of function". Clearly, the indirect impacts acknowledged (dust generation, sedimentation, and erosion) will all result in "loss of function".

New access roads and infrastructure can alter surface flow, and the minimal increase in hard surface area could result in increased run-off quantities during precipitation events. Access roads at their permanent width of 6 m will cover approximately 20.7 ha in total over the entire study area. The percent area converted to hard surfaces is negligible and no effect to the water balance is anticipated. Potential impacts and mitigation measures for dewatering are provided in **Section 5.5**.

Comment: While 20.7 ha of additional access road does not seem like a large amount of land loss, this does not take into account the existing road system presently installed on the island. Amherst Island has a small number of lightly traveled dirt roads which are used by the 400 strong population. A glance at Table 1A reveals roads running along the outer edge of the island, 3 roads running in a north south direction and two roads running in a somewhat east to west direction. The addition of 20.7 ha of access roads is in fact the addition of approximately ¼ of the total amount of road presently on the island.

Furthermore, the placement of the access roads fragments the habitat.

During construction, there will be increased vehicular traffic and the potential for accidental spills. These potential impacts will be avoided where possible and mitigated via implementation of a sediment and erosion protection plan, including the identification of specific locations for material stock-piling and maintenance activities to isolate any spills from the wetland. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately. Mitigation measures for stock-piling, maintenance, and potential spills are provided in **Section 5.5**.

Table 5.1 lists the following mitigation measure under "maintenance "All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30 m from any significant feature." **As the entire project area is considered SWH for OCB and RWA will all activities listed above occur off-island?**

Vegetation clearing and construction disturbance in close proximity to wetland features may create new edges in adjacent communities. Such edges may cause changes in vegetation composition as result of increased exposure to sun and wind, particularly in closed canopy situations. This can create opportunities for the introduction and spread of invasive species in nearby wetland units.

Comment: The above paragraph does indeed speak to issues of concern. However no plans as to how to deal with the issues are presented. How does the Proponent intent to ensure that the introduction and spread of invasive species in nearby wetlands does not occur?

Potential negative impacts and proposed mitigation measures during the construction and decommissioning phases of the Project are detailed in **Table 14B, Appendix B**. Mitigation measures to be applied to each wetland feature are provided in **Table 15B, Appendix B**.

5.3.2.1 Non-Provincially Significant Wetlands

Wetlands 6 and 7 were evaluated using OWES and were determined not to be provincially significant (see Sections 4.1.1 and 4.2.1). These non-provincially significant wetlands consist of a concentration of reed canary grass, occurring in moist depressions in fields. These non-provincially significant wetlands do not require an EIS; regardless, the relatively small amount of removal of reed canary grass is not anticipated to have an impact on local vegetation or the ecological function of wetland habitat for wildlife. Results of the field surveys have found that ground roosting Short-eared Owls are often found in areas of reed canary grass. Potential impacts to ground roosting raptors are discussed further **Section 5.3.3.2**.

Comment: As mentioned in section 4.1., Wetlands 6 and 7 surround turbines S33, S12 and S28 (Figure 2.3 / Appendix A) and the entire area is documented as being Short-eared Owl Breeding Territory in 2010 (Figure 1B / Appendix A). According to the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR2012), "A field with 1 or more breeding Short-eared Owls is to be considered SWH."

Furthermore a review of the OWES documents for wetland 6 reveals the many issues of grave concern elaborated upon in the comments to section 4.1.

5.3.3 Significant Wildlife Habitats

5.3.3.1 Raptor Wintering Areas

Amherst Island contains abundant grassland habitat, predominantly hay and pasture, which provides significant habitat for wintering raptors, including owls. For the purpose of the NHA, the Study Area on the island has been divided into 8 large blocks of grassland and woodland (RWA1, RWA2, RWA3, RWA4, RWA5, RWA6, RWA7 and RWA8), each of which has been evaluated as significant habitat for raptor wintering areas (**Figures 4.1-4.5, Appendix A**). The extent of grassland habitat, the high meadow vole population and the windswept nature of Amherst Island, which helps to reduce snow cover, provide significant habitat for winter raptors.

The raptor wintering areas mostly consist of hay and pasture fields, with woodlands that provide roosting opportunities. Most of the woodlands on the island consist of deciduous trees, which may be used by roosting American Kestrel and Red-tailed and Rough-legged Hawks. Coniferous dominated woodlands occur in the northwestern portion of the island, and in and around the Owl Woods in the eastern portion of the island. These coniferous woodlands are used as roosting areas by Long-eared Owls, Northern Saw-whet Owls and, to a lesser extent, Boreal Owls. Snowy Owl will not necessarily use the woodlands for roosting, often utilizing posts, hay bales, hedgerows, etc. Some species, such as Northern Harriers and **Short-eared Owls** will roost in open fields. The grassland habitat on the island provides hunting opportunities for all of these species.

As the majority of the island is comprised of grassland habitat, avoidance of this habitat type was not possible; most Project components are sited in significant raptor wintering areas. As a result, construction will result in direct loss of habitat, although this amount represents a relatively small amount of significant open country habitat in the Study Area. In total, approximately 68.6 ha of significant raptor wintering area habitat will be temporarily removed and approximately 17.7 ha of significant raptor wintering area habitat will be removed for the life of the project; this respectively represents 1.8% and 0.5% of the total identified significant raptor wintering habitat of 3742 ha.

Comment: While the above states the "most" Projects components are sited in significant raptor wintering areas, please note that the only Project components not sited in significant raptor wintering areas are on the mainland. All of the Project components on proposed for Amherst Island are sited in significant raptor wintering areas. Proof once again that Amherst Island is not a suitable locale for this development.

Please review Section 5.2. which deals with turbine height, swept area, turbulence and their proven impact on a variety of avian species including raptors.

During the field studies for the Evaluation of Significance, several roost locations for Short-eared Owls were identified in the open grassland. Roost sites generally were comprised of grassy areas with dense residual dead vegetation, in particular areas dominated by reed canary grass. Results suggest that Short-eared Owls generally move between roosts or within a larger roost site; no specific roost locations were found to be used consistently throughout the winter of 2011/2012.

Comment: During the winter of 2011 / 2012 some of the Short-eared Owl roosting sites where heavily disturbed due to windelectric surveying staff presence near the roosting sites. Of greater concern, contractors plowed over some of the larger roosting sites for the purpose of the archeological study required by the REA. One of the larger roosing sites is well documented to have been in use for several years.

While carrying out Short eared Owl survey from the roadside, Kurt Hennige (KFN) observed /documented working Windlectric / Stantec staff flushing 11 SEOW from their roosting sites, this occurred just south of Front Road and 1 km east of Stella 40 road. This area was plowed within the next two weeks and the group of around 20 birds vacated the habitat to settle near the Emerald 40 Foot Road for the next two months. This suggests that Windlectic / Stantec recording of regular movements of SEOW between roosting sites was most likely the result of Windlectric / Stantec's disturbance and destructions of their roosting sites .

Access roads and underground collect lines (on private land) are proposed to pass through some of the sites where Short-eared Owls were observed roosting, however, there will be limited removal of vegetation. Ground roosting sites for Short-eared Owls do not appear to be a limiting factor on Amherst Island. This small loss of habitat is anticipated to have a negligible impact on the availability of roost sites within the Study Area. In most cases, Short-eared Owls would be are expected to continue using sites adjacent to the access roads, as documented on other wind projects (i.e. Wolfe Island).

Comment: As there is no reference attached to the statement above, I can only speculate about its provenance. I am assuming the Keyes report. A review of the Keyes report provides the following UTM coordinates on Wolfe Island for the 1 Short-eared Owl nest she located on Wolfe Island, 385960 E 4889663 N. Google maps indicates that this nest

is approximately 100 meters from the access road, and the nearest turbine is located at a distance of over 550 meters.

Furthermore, what is being documented on Wolfe Island is evidence of displacement due to the industrial wind turbines. Following is a quote from the summary of a report detailing the results of a multiple year study of Short-eared Owls on Amherst and Wolfe Islands.

> The results of standardized Short-eared Owl surveys during two winters on Amherst and Wolfe Islands, including all raptor observations, serve as a framework upon which to develop an understanding of current raptor abundance and distribution. Although preliminary, our results are evidence of the potential displacement effects of a large-scale wind-farm located in the area of the Wolfe Island Northwest Route, reflected in low numbers of Short-eared Owls and Red-tailed Hawks compared to other routes and historical records for the area.

Blue Bill Volume 5 No 3 September 2011 (p 63) http://kingstonfieldnaturalists.org/bluebill/bb-sep11.pdf

Additionally, some of the "limited removal of vegetation" will occur within documented Short-eared Owl roosts – thereby ensuring their destruction.

Under normal circumstances this destruction would result in the Short-eared Owls moving to another location on the island. However, looking at any of the maps provided in Appendix A it is apparent that the spread of turbines encompasses the entire island, as opposed to Wolfe Island where the turbines are situated on the west end of the island for the most part. The relative sizes of the islands is at issue, Wolfe Island at 271.97 kilometer squared and Amherst Island a mere 110.53 kilometer squared. Displaced Short-eared Owls will simply be forced to leave Amherst Island.

Potential indirect impacts to wintering raptors during construction, including disturbance due to increased traffic, noise, or dust, is likely to have a more significant impact than habitat loss. However, these disturbance impacts will be temporary and short term in duration.

The above statement, again lacking provenance, directly contradicts the science based information now available. The Great Lakes Regional Guidelines provide the information below in an Overview of Biological Interactions with Wind Turbine Siting (p8):

> **Potential biological impacts from wind energy include (1) direct mortality, (2) long-term habitat loss and population extirpation, (3) fragmentation and associated effects on species and ecosystem processes, (4) behavioral responses to presence and operations of turbines, such as barrier effects, displacement, avoidance, responses to light-shadow "flicker," and responses to vertical structures by species such as Lesser Prairie-Chicken (*Tympanuchus palldicinctus*) (and extrapolated to Greater Prairie-Chicken [*T. cupido*]) and Henslow's Sparrow (*Ammodramus henslowii*), and (5) short-term habitat loss during construction.**
>
> **These impacts may occur because of turbine operation, maintenance-related activities, or infrastructure. These factors may create or interact to create impacts that vary in magnitude, extent, duration, intensity, timing, probability, and**

cumulative effects. Overall, it has been estimated that 3-5% of the area of commercial wind turbine development is habitat loss due to construction, while 95-97% of the impact area is from fragmenting habitats, species avoidance behavior, and issues of bird and bat mortality (McDonald et al. 2009).

Fragmentation can have many different types of effects and is created by many activities other than wind energy production. Wildlife interactions with wind power are expressed at varying distances from wind turbines and associated infrastructure such as towers, roads, and transmission lines Fragmentation can result in low relative abundance, low productivity, changes in microclimate and thus species composition, spread of invasive species, changes in behavior (including avoidance, displacement, foraging), or other factors that reduce or eliminate populations or degrade natural communities.

However, the relative importance of these interactions will vary by landscape features, ecological system, and site. Fragmentation consequences operate at landscape and site scales and affect all taxa, although different taxa may be more or less susceptible to fragmentation; amphibians (see Cushman 2006) and reptiles, for example, are often considered to be especially vulnerable to fragmentation, even very locally. Direct mortality due to collisions will affect taxa using the air column (i.e., birds and bats, perhaps especially bats). Therefore, we consider these threats separately for each ecological focus.

The Owls Woods is a well-known roost location for wintering Long-eared Owls, Northern Sawwhet Owls and, to a lesser extent, Boreal Owls. The Project will have no encroachment into Owl Woods, with construction activities occurring approximately 500 m from the pine plantation within the woods, which supports the highest concentration of owls. Swengel (1987, in Sandilands 2010) found the Northern Saw-whet Owls were tolerant of moderate to heavy human activity, as long as they were not detected; suggesting activities in the fields outside of the Owl Woods are unlikely to result in significant disturbance. Overall, considering construction activities will be short term in duration and outside of the Owl Woods, construction of the Project is not anticipated to have a significant impact on wintering raptors roosting within the Owl Woods.

Comment: In fact, the entire quote from Sandilands(2010) presents a different picture than that presented in the paragraph above, please see below.

> The saw-whet owl may be susceptible to human disturbance, but this need further investigation. Nests disturbed early in the breeding season may be abandoned, but re-nesting usually occurs so it is not known whether this is significant effect (Cannings 1993). Swengle (1987a) stated that the saw-whet-owl tolerated moderate to heavy human activity while roosting as long as it was undetected, but also stated (swengle1987b) that it was adversely affected by human disturbance and may change roosts. Having to change roots is unlikely be a significant factor unless birds are frequently harassed.

Further, while the pine plantation is approximately 500 meters from where 18 months of construction activity is slated occur, according to section 2.2.4. the deciduous forest in the north section of the Owl Woods is located within 120 m of the Project Location. Sandilands(2011) states:

> One of the most important characteristics of breeding habitat is semi-mature trees and snag large enough to provide nesting cavities. Forest size does not appear to be important; the Saw-wet owl will nest in isolated groves of tees and narrow sands of trees in riparian areas as well as extensive forest. Forest type also does not appear to be critical, although this owl may show as slight preference swamps and treed bogs over upland forest….. Studies reporting that it requires dense conifers appear to be based primarily on roost locations instead of nest sites.

Also, the author of this report asserts above "Overall, considering construction activities will be short term in duration and outside of the Owl Woods, construction of the Project is not anticipated to have a significant impact on wintering raptors roosting within the Owl Woods." **However according to Sandiland (2011)" In winter the Northern Saw-whet Owl established a home range that may vary from 40 to 250 ha." Construction activities will most definitely be occurring with 40ha of Owl Woods.**

Further, construction activities will be ongoing for 18 months to build and 18 months to decommission the Project – not an insubstantial amount of time in a 20 year period. While the author of this report asserts that construction activities are not expected to impact wintering raptors, it is interesting to note what type of disturbances were considered to be of concern in the Owl Woods Management Pan. Below is a selection from the recommendations section of the Management Plan. If noisy photographers were considered to be a serious issue, one can only suppose that 18 months of construction traffic and the dust, noise and general disturbance entailed will have a significant effect on Owl Woods.

- It is recommended that Owl Woods be closed to visitors in the evening hours.
- It is recommended that limiting hours of access be used as a management tool for controlling negative visitor behavior (getting too close to the Owls)
- It is recommended that some camera restrictions be part of new and improved signs and permit systems
- If deemed necessary, it is recommended that a camera ban be considered

Please note, in an effort to minimize the impact from human distraction a section of the Owl woods was recently fenced off.

Windlectric Inc. is committed to having discussions with landowners, potentially including Cataraqui Region Conservation Authority, to augment wintering owl habitat on Amherst Island. This would include development of a management strategy with agencies, interested landowners, and other interested parties to implement some of the recommendations provided in the Owl Woods Management Plan (Ecological Services 2011). Recommendations in the plan that could be implemented include, but are not limited to, improvement of infrastructure, signage and public education at the Owl Woods, as well as future planting of trees to increase roosting options on the island.

Potential negative impacts and proposed mitigation measures during the construction and decommissioning phases of the Project are detailed in **Table 14B, Appendix B**.

5.3.3.2 Turtle Overwintering Area

A single turtle overwintering area (TO1, **Figure 5.4, Appendix A**) has been identified. This

feature has been assumed as significant, which will be confirmed prior to construction; see **Section 5.6.3.3** below.

Comment: Per the Draft Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012) All Ecosites associated with these ELC Community Series; Swamp (SW), Marsh (MA) and Open Water (OA). Shallow water (SA), Open Fen (FEO) and Open Bog (BOO). are considered candidate Significant Wildlife Habitat for Turtle Wintering Areas

All Turtle Wintering Surveyes Occured in TO1, however Appendix has many references to SW and MA habitat that are outside of the TO1 area. Why were the other SW, MA habitat within the project area (including roadside) not surveyed?

Note: Page 1538 of the report documents sighting 1 painted turtle on the 2nd concession – kilometers away from TO1.

TO1 occurs in the open water of the Long Point Marsh PSW. No Project components are sited within TO1. The closest project component is an access road, located approximately 77 m from TO1 and on the opposite side of an existing municipal road. As such there will be no encroachment or habitat loss.

During spring emergence, turtles seek out basking sites within, or in very close proximity to their overwintering area. It would be unlikely to encounter a turtle 77 m from the marsh during spring emergence. As such, direct impacts to wintering or spring-emerging turtles are very unlikely.

Comment: While the above generalization may be based in fact, many turtle species can in fact be expected to cover more that 77m in the spring. Of greater concern is the truck traffic that will service turbines S11,S03 and S09. In order to build these turbines a large number of heavy truckloads will travel 3rd Concession. Every spring sections of 3rd Concession plays host to basking turtles. This fact should have been established prior to deciding that Amherst Island's SWH for Turtle Wintering was limited to one locale. Additional studies are required.

Potential indirect impacts to TO1 could include wetland degradation from dust, siltation or accidental spills. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately. These potential impacts and mitigation measures are covered under the discussion of significant wetlands in **Section 5.4.2**.

5.3.3.3 Migratory Landbird Stopover Area

Four significant migratory landbird stopover and staging areas have been identified within 120 m of the Project Location: ML1, ML2, ML3, ML4 and ML5 (**Figures 5.1-5.5, Appendix A**). No Project components are in this type of significant wildlife habitat.

Comment: As detailed in section 4.1.3, the positioning of turbines vis a vis ML1, ML4 and ML5 is of grave concern. During fall the south bound migrants will fly in from the north (typically in the mornings). ML1, ML5 and ML4 are clearly positioned directly behind turbines S15, S30, S26, S17, S10, S08, S32, S24 and S36. These turbines will be directly in the path of the south bound migrants. This report establishes that for a

preponderance of the south-bound migrants, the destination of choice is ML1, ML5 and ML4.

ML1 (Woodland Feature 4) is approximately 215 ha in size, comprised of deciduous forest and swamp. It is located in the southwest portion of the island; the west end of ML1 is within 1 km of the shoreline (**Figure 5.4, Appendix A**).

ML2 (Woodland Feature 10) is approximately 29 ha in size, comprised of lowland deciduous forests. It is located centrally on the island, approximately 2.6 km from the southern shoreline and 3.2 km from the northern shoreline (**Figure 5.3, Appendix A**).

ML3 (Woodland Feature 15) is approximately 19.5 ha in size, comprised of lowland deciduous forest. It is located in the southwest portion of the island, immediately adjacent to the Long Point Marsh PSW. ML3 is located approximately 0.5 km from the southern shoreline (**Figure 5.5, Appendix A**).

ML4 (Woodland Feature 21) is approximately 198 ha in size, comprised of a mosaic of deciduous lowland forest and deciduous swamp. It occurs centrally within the island, approximately 1 km from the southern shoreline and 1.6 km from the northern shoreline (**Figure 5.3, Appendix A**).

ML5 (Woodland Feature 23) is approximately 18.3 ha in size, comprised of deciduous ash lowland forest, deciduous upland sugar maple forest, and dry jack pine coniferous forest. The coniferous forest is known as the Owl Woods. It occurs centrally within the island, approximately 1 km from the southern shoreline and 1.2 km from the northern shoreline (**Figure 5.3, Appendix A**).

No project components are sited within significant migratory landbird stopover areas. Project components located within 120 m of each feature are summarized in **Table 4.7**. No direct impacts to migratory landbird stopover areas are anticipated from construction of the project, as no encroachment into, or removal of, this habitat type is proposed.

Comment: Section 10 "How much Habitat to Protect" of the Ontario Ministry of Natural Resources *Significant Wildlife Habitat Technical Guide* has the following information on page 121, Table 10-5. Primary locations of seasonal concentrations of wildlife, under Key Requirements for Landbird Migratory Stopover Area: Great Lakes shorelines and adjacent lands within 5 km (especially Lake Erie & Lake Ontario) are very important.

Therefore the entire project location can be considered as a Landbird Migratory Stopover Area, which ensures that all project components are sited within Significant Landbird Stopover Areas.

Furthermore, the preponderance of evidence leans towards a migratory stopover area of which would encompass all the Woodland features listed above. According to Ewert (2011)[1], as with other large bodies of water, the shorelines of the Great Lakes provide landfall for birds migrating over the Great Lakes (Diehl et al. 2003). Landfall effects may be enhanced during adverse weather.

[1] Ewert, D.N., J.B. Cole, and E. Grman. 2011. Wind energy: Great Lakes Regional Guidelines, The Nature Conservancy, Lansing Michigan pp.11

Studies conducted throughout the Great Lakes basin (Bonter et al. 2009) and near Lakes Huron (Ewert and Hamas 1996, Smith et al. 1998, Smith et al. 2007, Ewert et al., in press), Erie (Rodewald 2007, MacDade 2009), Ontario (Agard and Spellman 1994), Michigan (Feucht 2003), and Superior (Johansen et al., no date, Anna Peterson, University of Minnesota, personal communication) suggest there may be a "shoreline effect," areas where landbirds concentrate, that is at least 0.6-6 miles (1.0-10 km) inland from the shoreline and large numbers of landbirds may be within 50 m of the canopy three or more miles inland (Anna Peterson, University of Minnesota, personal communication). There may be a rapid decrease in numbers of birds with increasing distance from the shoreline; significant declines in numbers of birds have been detected at 0.25 mile (0.4 km) (Ewert et al., in press) to 0.6 mile (1 km) (Johansen et al., no date) to 1.2-1.8 miles (2-3 km) from the shoreline (Agard and Spellman 1994). Migrants typically gain mass along the immediate shorelines of Lake Huron (Smith et al. 2007), Lake Ontario (Bonter et al. 2007), and Lake Erie (Dunn 2000, 2001), suggesting that most shoreline areas provide adequate food resources for most species (but see Dunn 2000). Migrants may also be relatively abundant near wetlands close to the shoreline along Lakes Michigan (Grveles 1998, Hyde 1998), Superior (Johansen et al., no date), and Huron (Hazzard 2001), and perhaps more generally.

Potential indirect impacts to migratory landbirds from the Project during construction include disturbance due to increased traffic, noise, or dust. The most adverse impacts associated with construction noise typically occur if critical life cycle activities are disrupted (i.e. nesting, mating) (NWCC 2002). Because migrating landbirds in general are able to use a much wider range of habitat types during migration compared to the breeding season, it is expected that the effects of disturbance would be less significant during migration than during the breeding season.

Comment: It is agreed that the most adverse impacts associated with construction would typically occur if critical life cycle activities are disrupted. However, what mitigation measures can be proposed to ensure that this is avoided - none are mentioned in the paragraph above.

Potential negative impacts and proposed mitigation measures during the construction and decommissioning phases of the project are detailed in **Table 14B, Appendix B**.

Comment: Table 14B proposes the following "mitigation measures": Minimize disturbance to wildlife, Minimize dust generation, Remove minimal amount of woodland, Prevent damage to the root zones, Prevent accidental damage to trees or damage to limbs, prevent sedimentation and erosion, Manage the risk of accidental spills. **How does the proponent plan to minimize disturbance to wildlife – as clearly there will be a great deal of "disturbance to wildlife".**

5.3.3.4 Old Growth Forest – No Comment

5.3.3.5 Amphibian Breeding (Woodland and Wetland)

Three significant amphibian breeding areas have been identified within 120 m of the Project Location: ABWO2, ABWO3, ABWE1 and ABWE2 (**Figures 5.1-5.5, Appendix A**). No Project components are in this type of significant wildlife habitat.

ABWO2 consists of deciduous swamp within the Nut Island Duck Club Marsh PSW. The Project Location is sited outside of this feature; the closest project component is an access road,

approximately 54 m away (Figure 5.4).

ABWO3 consists of meadow marsh on the mainland. The Project Location is sited outside of this feature; the closest project component is a temporary construction area, approximately 29 m away.

ABWE1 consists of deciduous woodland and open marsh within the Long Point Marsh PSW. The Project Location is sited outside of this feature; the closest project component is an access road, approximately 77 m away (Figure 5.4).

ABWE2 consists of reed canary grass marsh along a watercourse, upstream of the Long Point Marsh PSW. The Project Location is sited outside of this feature; the closest project component is an underground collector line, approximately 3 m away, within the municipal RoW (Figure 5.5).

Comment: As previously mentioned, much amphibian breeding habitat has not been surveyed. It is therefore impossible to make any generalizations with regards to potential loss of habitat, or potential negative effects resulting from construction / operations activities.

As noted in Table 3.2: Characteristics Used to Identify Rare Vegetation Communities and Candidate Specialized Wildlife Habitat (Amphibian Breeding Habitat Woodland & Wetland), that Amphibian Breeding Surveys occurred in April and May of 2011. .

However, the first ELC and preliminary botanical inventories of vegetation communities documented in Table 4B occurred in July of 2011. As this is post Amphibian Survey, how were the survey sites selected?

No loss of amphibian breeding habitat is anticipated from the project. The type of construction proposed involves works having little or minimal impact to pervious areas and precludes the potential for effects associated with changes in water influence (i.e. surface and water changes).

Construction activities are expected to be low impact and short term in duration. Potential impacts to amphibian habitat could include wetland degradation from dust, siltation, erosion or accidental spills. In the event of an accidental spill, the MOE Spills Action Centre will be contacted and emergency spill procedures implemented immediately. These potential impacts and mitigation measures are covered under the discussion of significant wetlands in **Section 5.4.2**.

Comment: Low Impact

Amherst Island is a small, quiet island. We have night sky as the lighting on the island is limited, there are 400 full time residents and the majority of the residents are over 55. Farming practices date to a few decades ago as our side loading ferry does not allow for large farm implements to be transported to the island. The process of turning this pastoral setting into an industrial complex includes the following (from Loyalist Township Report regarding road usage)

> It is expected that there will be 33 turbine sites located on private property. To construct these turbines, approximately 400 oversized heavy haul truck loads will

be required to transport the turbine components to these sites. In addition to the turbine components, construction vehicles and materials will be transported on flat bed trailers or bulk material carriers along the proposed transport routes. Approximately 11,000 truck loads are anticipated for transportation of equipment and materials. Counting the return trips, this equates to approximately 666 heavy loads for each turbine site.

Low Impact? I think not. I have already addressed "short term" in section 5.3.1

At ABWE2 an underground collector line will be installed within 3 m of the amphibian breeding habitat. All work will be completed in the roadway or the municipal road allowance. At this location, the boundaries of the amphibian breeding habitat should be delineated and flagged / staked in the field by a qualified ecologist. Erosion and siltation controls will be installed. These potential impacts and mitigation measures are summarized in **Table 14B, Appendix B**.

5.3.3.6 Marsh Breeding Bird Habitat

A single significant woodland marsh breeding bird habitat was identified within 120 m of the Project Location: MBB1 (**Figure 5.5, Appendix A**).

MBB1 (Wetland 21) is approximately 350 ha in size with a variety of wetland habitats including shallow marsh. No project components are proposed to overlap with this habitat. Project components within 120 m of this habitat feature are a wind turbine located 115 m, temporary construction area located at 119 m, and an access road located at 78 m from this feature.

Comment: As previously mentioned, the earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.

By the end of July, any shallow marshes would have dried up, the Stantec team missed quite a bit of Marsh Breeding Bird Habitat due to the date the surveys were begun. How then was MBB1 decided upon as the only example of Marsh Breeding Bird Habitat on Amherst Island?

There will be no direct loss of marsh breeding bird habitat. Indirect impacts during construction could include disturbance or disruption to breeding birds. Disturbance from construction activities, such as increased traffic, noise, or dust, may result in avoidance of habitats by birds. These effects may be greatest if disturbance occurs during critical life stages such as courtship or nesting (NWCC 2002).

Comment: As stated above, disturbance from construction activities could result in avoidance of habitat. The paragraph above provides no suggestions as to how to ensure that this disruption does not occur. Impacts will be ongoing throughout the operational phase of this project. Drewitt and Langston (2006)[2] postulated that some wind facilities may cause birds to alter local or migratory flight paths, including coastal areas, thereby increasing energy expenditures and disrupting important ecological linkages among feeding, roosting, molting, and breeding areas. These consequences could lead to population declines.

[2] Drewitt, A. L. and R. H. W. Langston. 2006. Assessing the impacts of wind farms on birds. Ibis 148: 29-42.

Potential impacts and mitigation measures are summarized in **Table 14B, Appendix B**.

5.3.3.7 Woodland Area-Sensitive Breeding Bird Habitat

A single significant woodland area-sensitive breeding bird habitat was identified in and within 120 m of the Project Location: ABB1 (**Figure 5.4, Appendix A**).

Comment: SWH Ecoregion 6E Criterion Schedule lists the flowing ELC Ecosite as Candidate SWH, FOC, FOM, FOD, SWC, SWM and SWD. As woodland 36 meets the ha criterion as well as the FOC criterion, it must be searched.

ABB1 (Woodland 4) is approximately 215 ha in size with >4 ha of interior forest habitat and is comprised of deciduous forest and swamp. An underground collector line is proposed to cross through ABB1; however, it will be installed within an existing farm trail, so no tree removal is proposed. An access road is proposed within 3 m of the edge of a relatively small portion of the feature. Five turbines occur within 120 m of ABB1, the closest of which is 48 m away from turbine blade sweep.

There will be no direct loss of woodland area-sensitive breeding bird habitat. Indirect impacts during construction could include disturbance or disruption to breeding birds. Disturbance from construction activities, such as increased traffic, noise, or dust, may result in avoidance of adjacent habitats by birds. These effects may be greatest if disturbance occurs during critical life stages such as courtship or nesting (NWCC 2002).

Comment: Agreed, what is the proposed solution to the issue raised above?

Potential impacts and mitigation measures are summarized in **Table 14B, Appendix B**.

5.3.3.8 Open Country Breeding Bird Habitat and Short-eared Owl Habitat

Amherst Island contains abundant grassland habitat, predominantly hay and pasture. For the purpose of the NHA, the Study Area on the island has been divided into 9 large grassland blocks (OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8 and OCB9), each of which has been evaluated as significant habitat for open country breeding birds and Short-eared Owl breeding habitat.

As the majority of the island is comprised of grassland habitat, avoidance of this habitat type was not possible; most project components are sited in the significant open country breeding bird habitat and Short-eared Owl breeding habitat. As such, construction will result in direct loss of a relatively small amount of habitat. In total, approximately 67.8 ha of open country breeding bird habitat will be temporarily removed and approximately 17.2 ha of open country breeding bird habitat will be removed for the life of the project; this respectively represents 2.1% and 0.6% of the total identified significant open country habitat of 3113 ha. The implementation of mitigation measures such as avoiding activities that could disturb or destroy nests during key periods or protecting active nests with buffer zones reduces potential impacts to nests.

Comment: As discussed in section 5.2, the above rationale fails to take into account the 90 acres of air space that will be covered by the turbine blades as they spin. The speed at the tip of the blade can reach up to 275 Km per hour. Further, turbine wake is a real concern. Current research indicates that the optimum spacing between wind turbines is

at least equal to 15 to 20 rotor blades. This is the distance estimated to be required to ensure that the wind turbulence generated by one turbine does not impact the wind available to another turbines. Many of the turbines on Amherst Island are within 5 to 9 rotor blades apart. Clearly the entire island will be impact by wind turbulence.

Fragmentation of the grassland habitat is a potential impact from the installation of the Project. The Study Area generally provides contiguous grassland habitat, with some breaks created by woodlands or field in cultivation (e.g. corn, wheat, soya). Given the contiguous nature of the grassland habitat within the Study Area, the majority of the habitat is suitable for area sensitive species. Construction of the project will result in removal of a very minimal amount of the grassland habitat, predominately in long, linear strip for the access roads. The access roads, at 4-6 m in width, are not likely to create a significant break in the grassland habitat, resulting in fragmentation. As such, the Project is unlikely to impact the suitability of the grassland habitat for area sensitive species.

Comment: While the roads themselves may not create a significant break in grassland habitat, the 36 months of construction traffic surely will ensure that a significant break in grassland habitat is established. Per Sandilands (21001) Fragmentation of grasslands is a significant as direct habitat loss. The Short-eared Owl is unlikely to inhabit patches much smaller than 100 ha, so conservation of smaller areas of grassland is unlikely to be effective in maintaining populations.

There are four of the open country habitats with contain proposed access roads that cross entirely through the habitat, potentially creating smaller contiguous habitat patches. None of these created habitat patches are less than 30 ha, which is the minimum patch size required for open country breeding birds as described in the Significant Wildlife Habitat Ecoregion 6E Criterion Schedule (MNR 2012). However, the creation of roads has the potential to increase the edge habitat that may increase nest parasitism and predation, changes in food availability and habitat characteristics, and an increase in vehicle traffic and human disturbance (Northern EnviroSearch Ltd., 2008). Several studies of avoidance to roads by grassland breeding birds are available; generally, the level of disturbance has been associated with road traffic volume and subsequently noise (U.S. Department of Transportation 2004, Reijnen et al., 1987). Forman et al., 2002 found that increasing traffic was related to increasing avoidance from grassland birds, with no significant effect observed on roads with traffic volume of 3000-8000 vehicles/day or less. Traffic along proposed access roads during operation of the project is likely to be in the range of a few vehicles a week and therefore is not likely to result in a significant avoidance effect.

Comment: "Several studies of avoidance to roads by grassland breeding birds are available; generally the level of disturbance has been associated with road traffic volume and subsequently noise" – an interesting quote, but what level of disturbance, what level of noise, what level of traffic volume? All of these need to be addressed prior to this statement having any focus. Further, while the information above regarding traffic is very interesting it is not applicable to an island that likely does not see 8,000 vehicle trips per year.

Leddy (1996)[3] as reported by Ewert, found reduced avian use of Conservation Reserve Program (CRP) grasslands near turbines was attributed to avoidance of turbine noise and maintenance activities, or reduced habitat effectiveness because of the presence of access roads and large gravel pads surrounding turbines. It is important to note that all of these features, access roads, large gravel pads and regular disturbance, will be an unavoidable feature of the Amherst Island Wind Project if it goes ahead.

To address any possible fragmentation effects of building access roads in this grassland habitat and an increase in traffic, the following measures will be implemented during operation or after decommissioning:

- Minimize maintenance vehicle traffic and human presence on access roads during grassland breeding bird season (May 1st to July 31st)
- Rehabilitation of access roads back to grassland after decommissioning, in consultation with the landowners

Comment: According to Weir (2008)[4] Egg dates for 4 nests rage from 4 April to 24 May.

The placement of the access roads was considered with respect to REA setback requirements and existing activity on private properties. For example, existing public infrastructure was used where possible to limit the installation of an access road, access roads were placed along fence or tree lines to avoid removing vegetation in significant woodlands as well as not disrupting interior grassland habitat, and surface water considerations were used when placing roads and culverts in order to reduce surface water run-off into significant habitat areas. Other constraints factored into the placement of roads as well such as regulatory constraints on unopened road allowances, landowner consultation, significant wetlands, and cost.

Construction activities have the potential to result in disturbance or disruption to breeding birds. Disturbance from construction activity, such as increased traffic, noise, or dust, may result in avoidance of habitats by birds. These effects may be greatest if disturbance occurs during critical life stages such as courtship or nesting (NWCC 2002).

Comment: The above statement continues to remain just that, a statement with no suggestion as to how to effectively deal with the issues raised.

Grassland raptors, such as Northern Harrier or Short-eared Owl, may be more vulnerable to disturbance effects during construction. Females disturbed at the early stages of nest building have been reported to abandon the site and nest a short distance away. However, Sandilands (2010) reported that human disturbance is not likely to be a major factor for nesting Short-eared Owls.

Comment: I fact the entire quote for Sandilands is as below:

Human disturbance is not a major factor because nests are so difficult to find. Females disturbed at nest scrapes are likely to abandon the nest and nest a short

[3] Leddy, K. L. 1996. Effects of wind turbines on nongame birds in Conservation Reserve Program Grasslands in Soutwestern Minnesota. M.S. Thesis, South Dakota State University, Brookings.

[4] Ron D. Weir: Birds of the Kingston Region, 2008 pp. 231

distance away. …. Nesting success is fairly low due to the Short-eared Owl's ground nesting habit.

Virtually the entire island is slated for some level of construction / operation related noise / dust / hoe ramming (and according to the construction report potentially blasting) disturbance.

With limited breeding habitat available and since nests a very difficult to find, no construction should be allowed from mid-March to end of July, because in some years nesting might be delayed and occasionally re-nesting occurs, if the first brood fails. Furthermore, Bobolink and Eastern Meadowlarks breed in the same significant wildlife habitat and have habitat protection under the Endangered Species Act.

Mitigation will include identification of Short-eared Owl breeding territories and curtailment of construction activities within the breeding territories from mid-March through to end of July. Curtailment would include avoidance of the use of heavy equipment in a potential breeding territory during the early nesting stage, from mid-March through end of May. Following this period, nesting Short-eared Owls are likely to be less susceptible to disturbance. However, construction activities will be avoided at dawn and dusk, to mitigate potential avoidance impacts to hunting owls.

Comment: The author provides no scientific back up for the statement "Following this period (mid March – end of May) nesting Short-eared Owls are likely to be less susceptible to disturbance."

In fact, it has been established that it will be very difficult to identify all breeding territories since some pairs are very secretive and, depending on food supply, might hunt only during the dark. Therefore any activities from surveying to the use of heavy equipment would likely disturb the birds. This is not acceptable.

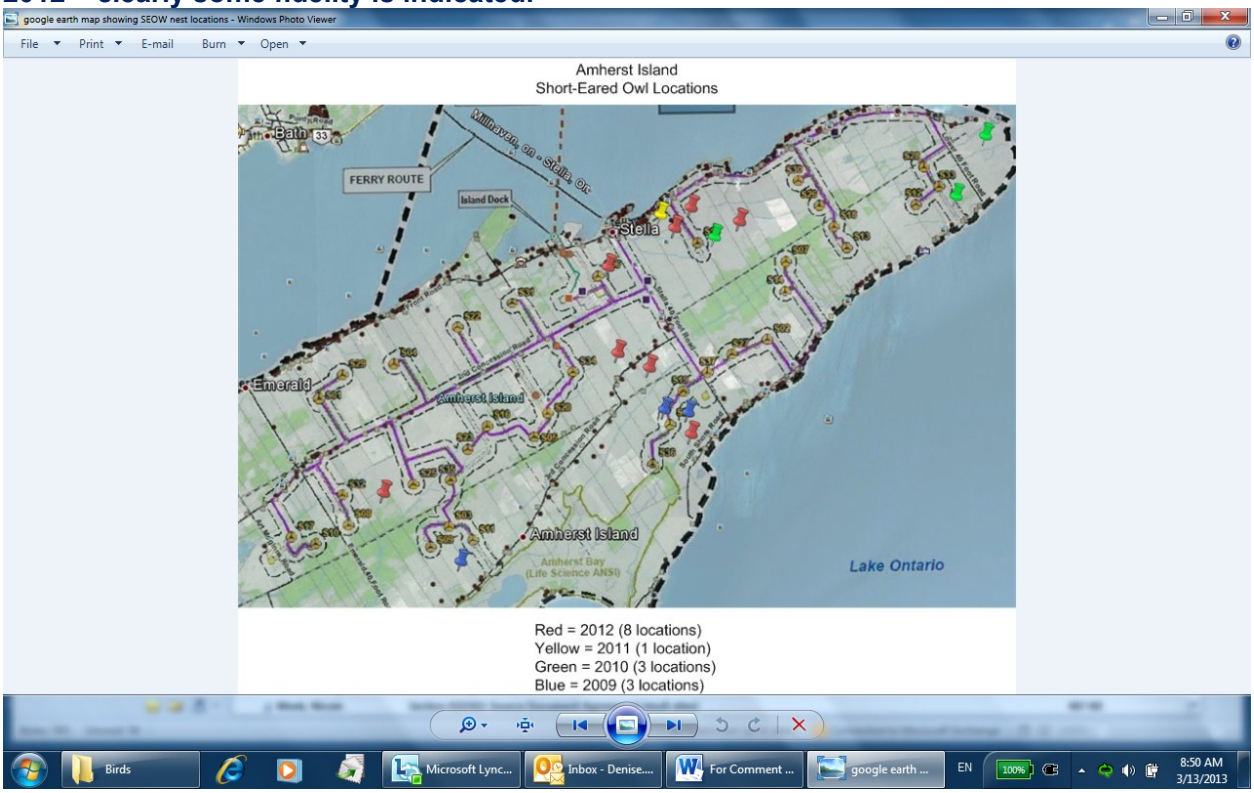
Appendix 3 lists short-eared owl nesting sites from 2009 through 2012, the nests are spread throughout the island.

Wiggins et al. (2006) reports that nests from previous years may occasionally be reused. However, Short-eared Owl research on Amherst Island in 2009 and 2010 (Keyes 2011) found low site fidelity between years. As such, breeding territories from previous years may not be a good indicator of territory location during construction. Therefore, a qualified biologist will conduct targeted Short-eared Owl surveys in proximity to project components to identify potential nesting territories. Where territories have been identified in the same year as construction, weekly monitoring will be undertaken to measure potential avoidance behavior by Short-eared Owls, with weekly reports of the findings to MNR. If deemed necessary, additional adaptive management will be implemented in consultation with MNR.

Comment: The Kirsten Keyes 2 year study of site fidelity has limited application due to its short timeline. KFN past records and current surveys indicate that SEOW breeding habitat is very specialized and is present in limited quantities on Amherst Island. These breeding habitat are re- used frequently, although not necessarily annually. Due to its limited quantity, if this breeding habitat is destroyed, this is will negatively impact the Short-eared Owl population's ability to breed.

While the presence of a qualified biologist conducting targeted SEOW surveys is to be encouraged, it is of concern that previous suveys by Windlectic / Stantec qualified biologists were unable to confirm nesting SEOW despite being provided extensive information on nesting locations by local birders.

Below is a map indicating the location of Short-eared Owl nesting sites located 2009 through 2012 – clearly some fidelity is indicated.



Potential impacts and mitigation measures are summarized in **Table 14B, Appendix B**.

5.3.3.9 Shrub/Early Successional Bird Breeding Habitat

Four significant shrub/early successional breeding bird habitat features were identified within 120 m of the Project Location: SSB1, SSB3, SSB4 and SSB5 (**Figures 5.1-5.5, Appendix A**). No Project components are in this type of significant wildlife habitat

Comment: As previously mentioned, the earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B. All Breeding Bird Surveys and Point Counts occurred between May 2011 and 11 July 2011. (Table 4B does not provided specific references to Shrub/Early Successional Bird Breeding Habitat, I am therefore assuming that this is rolled into the Breeding Bird Surveys and Point Counts)

Considering above, how were the 4 habitat listed below selected, and why are there only four?

SSB1 consists of approximately 14 ha of green ash cultural woodlands and is contained within Woodland Feature 3. The Project Location is not sited within this feature. The closest project

component is an access road 16 m away. The access road is situated on the other side of an existing municipal road. No turbines are located within 120 m of the feature.

SSB3 consists of approximately 12 ha of grey dogwood cultural thicket. It is located adjacent to Woodland Feature 23 and is part of Owl Woods. The Project Location is not sited within this feature. The closest project component is an access road 90 m away. No turbines are located within 120 m of the feature.

SSB4 consists of approximately 74.8 ha of grey dogwood cultural thicket and is not associated with a woodland feature. The Project Location is not sited within this feature. The closest project component is a wind turbine blade tip, 65 m away.

SSB5 consists of approximately 35.7 ha of grey dogwood cultural thicket interspersed with Fresh-Moist Ash Lowland Deciduous Forest and is contained within Woodland Feature 21. The Project Location is not sited within this feature. The closest project component is a temporary construction area, 34 m away. A wind turbine is proposed for 35 m away. There will be no direct loss of habitat or function to the significant shrub/successional breeding bird features. Indirect impacts during construction could include disturbance or disruption to breeding birds. Disturbance from construction activities, such as increased traffic, noise, or dust, may result in avoidance of habitats by birds. These effects may be greatest if disturbance occurs during critical life stages such as courtship or nesting (NWCC 2002).

Comment: It is not enough to simply state the "there will be no direct loss of habitat or function to the significant shrub/successional breeding bird features". The turbine 35 meters away, needs to be explained – how will this turbine not have an impact?

Again, the author of this report states, "Indirect impacts during construction could include disturbance or disruption to breeding birds. Disturbance from construction activities, such as increased traffic, noise, or dust, may result in avoidance of habitats by birds. These effects may be greatest if disturbance occurs during critical life stages such as courtship or nesting (NWCC 2002)" **but provides no plan on how to deal with the issue**.

Potential impacts and mitigation measures are summarized in **Table 14B, Appendix B**.

5.3.4 Generalized Significant Wildlife Habitats – No Comment

5.3.5 Areas of Natural and Scientific Interest (ANSI) – No Comment

5.4 OTHER GENERAL CONSTRUCTION MITIGATION

To fully identify all mitigation measures that are recommended for this development, the following section provides best management practices and other measures intended to minimize or mitigate potential adverse impacts on adjacent significant natural features. These measures will be implemented, where required and reasonable, during the construction and decommissioning of the various turbines, access roads and collector lines.

Comment: Who decides when it is reasonable? Is there any recourse if Amherst Island residents differ on the proponents opinion of reasonable?

5.4.1 Vegetation Removal

Natural features where habitat will be removed include grasslands, wetlands and scattered trees. Where vegetation removal is proposed, the following mitigation measures will be applied:

- As appropriate, and prior to construction, the limits of vegetation clearing will be staked in the field. The Construction Contractor will ensure that no construction disturbance occurs beyond the staked limits and that edges of sensitive areas adjacent to the work areas are not disturbed. Regular monitoring of the limits of clearing will be implemented to ensure the objective of minimal disturbance. Should monitoring reveal that clearing occurred beyond defined limits, mitigation action will be taken that could include rehabilitation of the disturbed area to pre-disturbance conditions at the direction of a qualified ecologist (with enhancement of any disturbed areas).

Comment: Who decides what is "appropriate" and is there any dispute resolution mechanism in place if the community does not feel that a decision is "appropriate". "Mitigation action will be taken that could include", could is the key word here – please describe the mitigation action that will occur should monitoring reveal that clearing occurred beyond defined limits. Please define regular monitoring, "regular" can occur daily, weekly, monthly or annually – which is it?

- To the extent practical, tree and/or brush clearing and grassland removal will be completed prior to, or after, the core nesting season for breeding birds (May 1 to July 31). Should clearing be required during the breeding bird season, prior to construction, surveys will be undertaken by a qualified biologist to identify the presence/absence of nesting birds or breeding habitat. If a nest is located, a designated buffer will be marked off within which no construction activity will be allowed while the nest is active. The radius of the buffer will range from 5 - 60 m, depending on the species. Buffer widths are based on the species' sensitivity and on buffer width recommendations that have been reviewed and approved by Environment Canada.

Comment: Who decides what is "practical" and is there any dispute resolution mechanism in place if a community member does not feel that a decision undertaken is "practical"? Further, under what circumstances could clearing be required during breeding bird season?

- Prior to the start of construction activity, the topsoil/seedbank will be stripped and preserved; material will be reapplied in suitable rehabilitation areas post construction.

Comment: Who decides what is "suitable" and is there any dispute resolution mechanism in place if a community member feels that an area is "suitable and the proponent feels it is not.

- Excavated soil from crane pads will be re-used on site, as feasible. If not feasible, the soil will be disposed of at an approved off-site facility. Temporary laydown areas will be returned to pre-construction conditions.

Comment: Will the pre-construction conditions be documented, if yes, by whom? How will the 20 to 30 year old shrubs that line many of the roads re-established? Will the trees that must be removed be replaced with trees of similar size and age?

- Following construction, topsoil in areas of temporary disturbance will be

replaced/restored. Disturbed areas in agricultural fields will be reseeded with a hay mix. Disturbed areas in wetlands 6 and 7 will be reseeded with a native wetland grass mix. Reseeded areas will be monitored for one year to ensure regeneration success.

Comment: What happens if there is no regeneration after one year?

5.4.2 Sediment and Erosion Control Measures

In order to minimize erosion and the introduction of sediment into significant natural features during grading and construction activities, erosion and sediment (E&S) control measures will be implemented prior to the initiation of any construction.

The proximity of adjacent significant natural features increases the risk of sedimentation within a construction area. As such, all significant natural features identified within 30 m of any proposed construction area are at higher risk of sediment transfer and erosion from grading and topsoil removal.

E&S control measures will be in installed to minimize erosion impacts adjacent to significant natural features, as appropriate. The following measures/guidelines will be implemented, as required, during the construction of the Amherst Island Wind Project components:

Comment: Who decides what is "appropriate" and is there any dispute resolution mechanism in place if the community does not feel that a decision is "appropriate".

- Sediment control measures, which may include perimeter silt fencing, mud mats (access roads), check dams (rock or straw bales), and sediment bags (dewatering);

Comment: Sediment control measures which may include", may is the key word here – please describe sediment control measures that will occur.

- Silt barriers (e.g., fencing) will be erected along wetland and woodland community edges located within 30 m of construction areas (including staging areas and laydown areas) to minimize potential sediment transport to the significant natural features. These barriers will be regularly monitored and properly maintained during and following construction until soils in the construction area are re-stabilized with vegetation; and

- Where culverts are proposed within 30 m of a significant natural feature, enhanced sediment and erosion control measure (i.e. straw bales, double rows of sediment fencing, check dams) will be installed as added protection to filter runoff and further minimize potential sedimentation within the downstream features (wetland, woodland). This added protection is proposed to reduce environmental risk.

Comment: Please confirm that all of the "enhances sediment and erosion control measures" listed above (straw bales, double rows of sediment fencing, check dams) will be utilized at every culvert within 30m of a significant natural feature.

Specific E&S control measures will be selected, located and sized by an engineer during the detailed design stage to ensure proper functioning of these measures. All E&S controls will be installed prior to construction and will be maintained during and following construction to ensure their effectiveness at protecting the adjacent significant natural features.

5.4.3 Dewatering

Site specific geotechnical investigations to be completed prior to construction activities will provide further details related to geologic conditions. Dewatering requirements will be reassessed as part of the geotechnical investigations.

Comment: As this is supposed to be the communities opportunity to comment on draft reports prior to their being submitted to the MOE – how can we comment on information that is not available. This information should be provided for the proper 60 day review.

If groundwater is encountered during excavations, good construction practices will be used, such as minimizing the length of time that the excavation is open and monitoring seepage into the excavation. Should pumping be required to dewater excavated areas, water will be directed into the nearest drain or spread across the buildable area and appropriate energy dissipation techniques will be used to reduce the potential for erosion and scouring. Discharge piping will be free of leaks and will be properly anchored to prevent bouncing and snaking during surging. The rate of discharge will be monitored to ensure no erosion or flooding occurs. If energy dissipation measures are found to be inadequate, the rate of dewatering will be reduced or ceased until satisfactory mitigation measures are in place.

Comment: This island is a slab of rock and many of the inland homes have well water issues. They, run dry. While the above information details what will occur on the construction site, what plans are in place should excavations disturb the water source of a neighboring well?

In order to mitigate any impacts to significant natural features during dewatering activities, the following measures will be implemented, as required and necessary:

Comment: Again, who decides what is required and what is the dispute resolution mechanism?

- The area to be used for dewatering will be clearly marked with flagging and/or snowfencing prior to work commencing;

- During site preparation, silt fencing will be included to retain sediments on site so they do not enter any significant natural feature. All sediment control structures will be inspected regularly, and repaired/maintained as necessary;

Comment: Again, what is regular and who decides what is necessary? Is there a dispute resolution mechanism in place?

- All water pumped during dewatering activities will be directed away from significant natural features and not directly into wetlands;

- The use of sediments bags (or filter rings) will be used as appropriate to filter out suspended sediment prior to discharge. Any sediment bags or filter rings will be monitored during pumping to ensure their efficacy, with any clogging or failures to be rectified immediately; and

Comment: Who decides what is appropriate, how frequently will the monitoring occur and is there a dispute resolution mechanism in place?

• After the staging area and dewatering work area is no longer required, any remaining disturbed soils will be returned to pre-disturbance conditions and/or reseeded.
Further dewatering recommendations will be reviewed upon the completion of the detailed engineering design. Additional detail is provided in the Amherst Island Construction Plan Report (separate cover, Stantec 2012b).

Table 5.1 summarizes the general mitigation measures which will be implemented during construction, including the mitigation objective and specific location where each mitigation measure should be applied.

Table 5.1: Summary of Construction Phase Mitigation Measures Recommended

Mitigation Measure	Objective(s)	Location(s)
Any vegetation removal required along roadside collector lines should be minimized, and occur entirely within the road right-of-way. **Comment: What will occur to the 20 / 30 year old hedgerows that line many of the island roads? How will that be minizimed?**	Minimize vegetation removal and impacts on wildlife habitats	Underground Collector Lines/ or overhead collector lines
Any accidentally damaged trees should be pruned through the implementation of proper arboricultural techniques. **Comment: Will an arborist be on-staff at all times in order to ensure above? If not, how will above be properly monitored / implemented?**	Protect tree species from permanent damage	Entire Project
Suspend work if high runoff volume is noted or excessive sediment discharge occurs.	Minimize erosion impacts on features when construction activities are proposed within 30 m of significant natural features	Within 30 m of any significant feature, including significant woodlands and wetlands and significant wildlife habitat*
No vehicle traffic on exposed soils, and no heavy machinery traffic on slopes	Limit unnecessary risk of increased erosion, turbidity or sedimentation	Entire Project
Re-vegetate temporary access roads or crane paths to pre-construction conditions as soon as possible **Comment: How will the pre-construction conditions be documented? Please define as soon as possible – that statement provides no real time frame.**	Limit the potential for erosion or sedimentation due to exposed soil conditions	Entire Project
Maintain existing vegetation buffers around water bodies **Comment: Clearly the Proponent will maintain existing vegetation**	Minimize the potential for erosion, and protect wildlife habitat, within riparian areas	Entire Project

buffers around water bodies where construction will not occur, what will be implemented in areas where construction buts up to water bodies. Does "water bodies" include wetlands? What size of buffer?		
Any stockpiled material will be stored more than 30 m from a significant wetland, woodland, or water body	Limit the potential for increased erosion within 30 m of significant natural features	Entire Project
All maintenance activities, vehicle refueling or washing, and chemical storage will be located more than 30 m from any significant feature. **Comment: As the entire project area is considered SWH for OCB and RWA will all activities listed above occur off-island?**	Minimize the risk of contamination of chemical spill around significant natural features	Entire Project
Develop a spill response plan, train staff on appropriate procedures, and keep emergency spill kits on site. **Comment: As this is supposed to be a "final draft" prior to submission for REA review, why has the spill response plan not yet been developed? How can I review something that is not included?**	Minimize potential long-term effects or significant contaminations in the event an accidental spill occurs	Entire Project
Dispose of waste material by authorized and approved offsite vendors	Limit the potential for contamination of significant natural features	Entire Project
Implement infiltration techniques to the maximum extent possible. **Comment: Please define "maximum extent possible" and who decides what that is?**	Minimize potential impacts to soil moisture regime and groundwater stores	Entire Project
Design roads to promote infiltration.	Minimize potential impacts to soil moisture regime and groundwater stores	Entire Project
No herbicides will be used within significant features or wildlife habitats	Avoid impacts to natural vegetation species, significant features, and wildlife habitats	Significant woodlands and wetlands, and significant wildlife habitat*
Minimize grading activities to maintain existing drainage patterns, to the fullest extent **possible**. **Comment: Who decides what is "possible"? What is the dispute resolution mechanism?**	Maintain existing surface water drainage patterns	Entire Project
Control rate and timing of water pumping, and restrict taking of water during periods of extreme low flow	Limit potential impacts on water temperature, surface water storage, and wildlife habitat	Entire Project

Implementation of storm water discharge best management practices. **Comment: What are the best practices?**	Avoid potential contamination of water sources	Entire Project
Collect drill cuttings as they are generated and placed in a soil bin or bag for off-site disposal	Limit the potential for soil or water contamination	Horizontal Directional Drilling
Restore and re-vegetate entry/exit pits to pre-construction conditions as soon as possible after construction **Comment: How will the pre-construction conditions be documented? Please define as soon as possible – that statement provides no real time frame**	Minimize the presence of exposed soil to reduce the potential for erosion	Horizontal Directional Drilling

** Only if these habitats evaluated as significant in this report or are determined to be significant through preconstruction surveys described in **Section 5.6.3.3***

5.4.5 Eastern Milksnake Mitigation Measures

Due to the generalist nature of this species, it is possible to encounter this species in almost any habitat available on Amherst Island. Because of this, special mitigation measures are provided in **Table 5.2** below for this species.

Table 5.2 Mitigation Measures for Eastern Milksnake

Mitigation Measure	Objective(s)	Location(s
In cultural meadows, clearly delineate work area using silt fencing or similar barrier **Comment: Of greater concern is the truck traffic that will rumble down Amherst Island's roads, where the snakes frequently sun. How will the roads be monitored?**	Minimize Eastern Milksnake movement into work areas	In cultural meadow areas
Provide those on site with descriptions and photos of Eastern Milksnakes	Increase awareness of those on site of this species	Entire Project
If an Eastern Milksnake is encountered, work in the area must stop until the animal leaves the area on its own accord **Comment: Who will monitor this?**	Minimize harm to Eastern Milksnakes encountered	Entire Project
All Eastern Milksnakes encountered must be recorded, with UTMs and photographs where possible, to be presented to the MNR	Provide data to the MNR regarding this species on Amherst Island	Entire Project

Peterborough district Who will monitor this?		

5.5 NEGATIVE ENVIRONMENTAL EFFECTS AND MITIGATION MEASURES ASSOCIATED WITH THE OPERATIONAL PHASE OF THE PROJECT

5.5.1 Significant Woodlands - See Comments in Section 5.3.1

5.5.2 Significant Wetlands – See Comments in Section 5.3.2

5.5.3 Significant Wildlife Habitat

5.5.3.1 Raptor Wintering Areas

Fragmentation and disturbance of habitat as a result of wind energy projects were identified as a potential indirect effect to wintering raptors (Kingsley and Whittam 2007). Noise levels during operation might also impact hunting raptors, in particular owl species which primarily hunt by sound. Potential results of these disturbances could range from behavioural changes, such as local avoidance of turbines, to abandonment of the wind power project area. Nevertheless, much of the data collected from wind power developments in Canada and elsewhere indicates that wind turbines have limited effects on raptor activity or abundance in the wind power area.

Madders and Whitfield (2006) examined raptor sensitivity to displacement by wind turbines based on data from 8 studies and personal communications with three researchers. They conclude that most raptor species have low sensitivity to displacement (ie. no evidence reported in studies), including six species observed at Amherst Island: Turkey Vulture, Red-tailed Hawk, Broad-winged Hawk, Sharp-shinned Hawk, American Kestrel, and Peregrine Falcon.

Comment: It would appear the author is using the Madders and Whitfield (2006) study to support the statement "much of the data collected from wind power developments in Canada and elsewhere indicates the wind turbes have limited effects on raptor activity or abundance in the wind power areas**". In 2006 turbines were approximately ¼ to 1/3 the size they now are.**

Stewart et al. (2007) conducted a meta-analysis of the effect of wind turbines on bird abundance at 19 globally-distributed wind farms, and concluded that raptors (Falconiformes and Accipitriformes) demonstrated minimal declines in abundance relative to waterfowl and wading birds. Their study methods were unable to determine whether declines noted for any species were due to decline in population size or local avoidance of the wind turbines.

Comment: In fact, based on a meta-analysis of the literature, Stewart et al. (2007)[5] concluded that the number of turbines had little or no effect on bird abundance, but time since initial operation significantly affected bird abundance. "The fact that longer operating times result in significantly greater declines in abundance than shorter operating times suggests that birds do not become habituated to the presence of

[5] Stewart, G. B., A. S. Pullin, and C. F. Coles. 2007. Poor evidence-base for assessment of windfarm impacts on birds. Environmental Conservation 34:1-11.

windfarms as previously thought likely (Gill et al. 1996[6]; Langston & Pullan 2003[7]), or that local population density declines in spite of habituation. It also indicates that short-term monitoring (2-5 years) is not appropriate for the detection of declines in bird abundance. Furthermore, if this relationship persists, then windfarms could cause larger declines in bird abundance over future decades" (Stewart et al. 2007).

A comparison of breeding bird diversity and abundance between a wind turbine area in Northeastern Wisconsin and a nearby reference area revealed a reduced abundance of open-county raptors in the turbine area (Howe et al. 2002), however the authors suggest that differences may be due to habitat differences between the two areas and statistical significance was not noted. Red-tailed hawks were the 28th most abundance bird species in the reference area, and the 25th most abundant species in the turbine area (Howe et al. 2002).

A study of breeding bird population effects in the UK demonstrated local avoidance of operating wind turbines by up to 500m for Buzzard (*Buteo buteo*) and 1,000 m for Hen Harrier (*Circus cyaneus*) relative to control areas (Pearce-Higgins et al 2009). In contrast, North American raptors do not typically demonstrate local avoidance of wind turbines. In the Altamont Pass Wind Resource Area, California, Red-tailed Hawks were frequently observed flying and foraging around active wind turbines in fall (31.5 sightings per observation session) and regularly in winter (9.8 sightings/session; Hoover and Morrison 2005). Red-tailed Hawks were also observed on more than 1,000 occasions within the one-year study period perching on operating turbines (Hoover and Morrison 2005). As the species is thought to primarily hunt from a perch, this result strongly suggests that active wind turbines do not deter the species from foraging. Wintering raptors were infrequently observed at the Buffalo Ridge Wind Resource Area, comprising less than 2% of all observations (Osborn et al. 1998), nevertheless both Red-tailed Hawks and American Kestrels were observed hunting near active wind turbines. More than half of observed Kestrels flew within 15 m of wind turbines, whereas Red-tailed Hawks rarely flew within 30 m of turbines (Osborn et al. 1998).

Comment: The Golden Gate Audubon Society has the following to say about Altamont Pass and the fact that the raptors there are not demonstrating local avoidance of wind turbines.

> **Every year, an estimated 75 to 100 Golden Eagles are killed by the wind turbines in the Altamont Pass Wind Resource Area (APWRA). Some lose their wings, others are decapitates, and still others are cut in half. The lethal turbines, numbering roughly 6,000, are arrayed across 50,000 acres of rolling hills in northeastern Alameda and southeastern Contra Costa counties. The APWRA, built in the 1980s was one of the first wind energy sites in the US. At the time, no one knew how deadly the turbines could be for birds. Few would now deny, however, that Altamont Pass is probably the worst site ever chosen for a wind energy project. According to a 2004 California Energy Commission (CEC) report, as many as 380 Burrowing Owls (also a state designated species of special**

[6] Gill, J. P., M. Townsley, and G. P. Mudge. 1996. Review of the impacts of wind farms and other aerial structures on birds. Scottish Natural Heritage Review 21, Scottish Natural Heritage, Edinburgh, United Kingdom.

[7] Langston, R. H. W. and J. D. Pullan. 2003. Windfarms and birds: an analysis of windfarms on birds, and guidance on environmental assessment criteria and site selection issues. Royal Society for Protection of Birds/Report by BirdLife International to the Council of Europe (Bern Convention), Council of Europe Report T-PVS/Inf (2003) 12.

concern), 300 Red-tailed Hawks, and 333 American Kestrels are killed every year. In all, as many as 4,700 birds die annually as a result of the wind turbines.
http://www.goldengateaudubon.org/conservation/birds-at-risk/avian-mortality-at-altamont-pass/

The 300 Red-tailed Hawks killed annually by the turbines at Altamont Pass are doubtless the Hawks observed flying and foraging around active turbines as mentioned in the paragraph above.

Diurnal raptors at the Erie Shores Wind Farm were observed only during summer and fall (James 2008), however flight and foraging behaviour around active wind turbines can be assumed to correlate to flight and foraging behaviour of wintering raptors. The majority of raptor species flew regularly within 200 m of, but not less than 50 m from, active turbines. Sharpshinned Hawks were the exception, with approximately 50% of individuals flying within 100 m of turbines. Both Cooper's Hawk and Red-tailed Hawk were observed actively hunting within 50 m of turbines.

Comment: According to the Erie Shores Fact Sheet http://erieshores.ca/ErieShoresrev2011.pdf, "each turbine is about as tall as a 25 story building". The turbines proposed for Amherst Island are double that size, standing over 500 feet tall with a wind-swept area (the area covered by the blades as they spin up to 275 Km per hour) of almost 2.5 acres per turbine. The blade length of the Erie Shore Turbines is not provided in the fact sheet, it would nonetheless be reasonable to assume that the swept area is commensurate to their size, approximately ½ of what is proposed for Amherst Island.

The three years of post-construction disturbance monitoring of wintering raptors completed at the Wolfe Island Wind Plant provides good insight into potential disturbance impacts of the Amherst Island Wind Project. Both islands are similar in ecology and support large concentration of raptors during the winter months, including species such as Short-eared Owl.

The post-construction studies have demonstrated that wintering raptors continue to use the Wolfe Island Wind Plant project area in high numbers (Stantec 2010b, 2011b and 2012a). The studies have found some localized avoidance around operational wind turbines; for example, Short-eared Owls have rarely been observed foraging within 200 m of turbines with spinning blades. However, the impact of localized avoidance does not appear to have limited the number of raptors supported by the project area. Short-eared Owls have been recorded in significantly higher numbers during post-construction surveys than during pre-construction surveys.

Comment: "Birds of the Kingston Region" by Ron Weir KFN states " Short-eared Owl occurrence on these islands is highly depended on the vole population that fluctuates widely on a 4 or 5 year cycle and which may not be coincident on each island." The pre-construction surveys of Wolfe Island occurred in the 2006/2007 season. This season is NOT identified in the table entitled "Summary of invasion years of Short-eared Owls on Wolfe and Amherst Island 1954-2007" as an invasion year. Following the cycle, the 2011/ 2012 is a year of greater abundance of Short eared Owl on Wolfe Island. It is important to note that the ongoing 2012 / 2013 KFN Short Eared Owl standardized survey established the lowest number of Short Eared Owls on both Wolfe and Amherst Islands since the survey was established in 2009/ 2010.

Careful review of the documentation indicates that the 2011/2012 Wolfe Island Short eared Owl sightings occurred on the shoreline of the North-west corner of Wolfe Island where the

owls are seen in the evenings as they fly to Simcoe Island for hunting. This behavior is documented in the KFN Short eared Owl survey.

This movement off of Wolfe Island to Simcoe Island confirms the avoidance / displacement from the areas where the highest density of wind turbines are located. Of note, good numbers of Short eared Owl were documented during the 2011 / 2012 season along the central and eastern sections of Wolfe Island, where very few turbines are located. The owls have been displaced by the turbines to the remaining 40% of suitable habitat which still exists on Wolfe Island. This habitat includes Simcoe Island. In contrast, due to the smaller size of Amherst Island, as well as the turbine distribution throughout the island, 85% to 90% of the suitable Short eared Owl habitat will be negatively impacted by the proposed turbines.

Generally, the abundance of raptors on Wolfe Island is closely associated with the abundance of prey. Disturbance from wind turbines to relatively small amount of available habitat in which they forage does not appear to be impacting the prey base or the ability of raptors to find and capture this prey. Similar results would be expected on Amherst Island, with the Project Area continuing to support high concentrations of raptors during operation of the Project.

Comment: Please see paragraph in blue above.

Potential disturbance to roosting raptors from operational wind turbines is less likely to be of concern than disturbance to foraging birds in active flight. Availability of deciduous woodlands for roosting American Kestrels, Red-tailed Hawks and Rough-legged Hawks is unlikely to be affected by the operation of the project. Wind turbines have been set back from areas of coniferous forest in the northwestern portion of the island and around the Owl Woods, which supports roosting Saw-whet Owls and Long-eared Owls.

Comment: As avoidance is listed as the primary mitigation strategy, and almost ½ of the significant woodlands on the island will be within 120 meters of the project location (project within three significant woodland), there was in fact no effective mitigation strategy put in place to protect Amherst Island's significant woodlands from the potential damaging effects of this installation. This is a clear indication that Amherst Island is not a suitable site for Industrial Wind Turbines

The Owl Woods is a well-known birding attraction with established trials which attracts birders and photographers from across North America. Historically, the level of disturbance within the Owl Woods from visitors has been relatively high. However, regardless of this level of disturbance, use of the woods by roosting owls has remained very high. Swengel (1987, in Sandilands 2010) found the Northern Saw-whet Owls were tolerant of moderate to heavy human activity while roosting, as long as they were not detected; detection may result in changing roosts. Often disturbance to roosting raptors comes from sudden disruptions that startle the birds (e.g. sudden noises or movement), or as Swengel (1987) found as a result of being detected by a human, such as by visitors to the Owl Woods. It is unlikely that the constant presence of wind turbines, would startle, or result in disturbance to raptors roosting in the Owl Woods. Overall, the operation of the Project is unlikely to result in disturbance to roosting raptors and owls in the Owl Woods, or other woodland features.

Comment: Section 5.5.3.1 states:

> The post-construction studies have demonstrated that wintering raptors continue to use the Wolfe Island Wind Plant project area in high numbers (Stantec 2010b, 2011b and

2012a). The studies have found some localized avoidance around operational wind turbines; for example, Short-eared Owls have rarely been observed foraging within 200 m of turbines with spinning blades.

The present Project configuration has sited turbines within 200m, of the pasture directly adjacent on the west side of Owl Woods. This pasture is heavily used by numerous owl species to hunt. Losing an important hunting area could have significant impact on Owl survival, since during times of food shortage, larger areas for hunting are necessary.

As previously stated, it is likely that impacts on Amherst Island will mirror those on Wolfe Island. The avoidance of areas with operating turbines will not be possible on the much smaller Amherst Island

Compared to forest roosting species, there may be higher potential for disturbance to ground roosting species such as Northern Harriers or Short-eared Owls as the Project Location is within potential roosting habitat. Raptors may avoid roosting on the ground in close proximity to operating wind turbines. Project related traffic may also disturb ground nesting birds in proximity to access roads, although traffic is likely to be minimal during operation of the project. During the first three years of operations, regular human presence at some turbines for mortality monitoring may also disturb ground nesting raptors. The potential disturbance in proximity to project components may result in some localized shifting of ground roosting sites. However, results of the field studies conducted for the Evaluation of Significance suggest shifting of roost sites occurs regularly during pre-construction, with Short-eared Owls generally moving between roosts or within a larger roost site on different surveys. Overall, the availability of ground roosting sites does not appear to be a limiting factor within the Study Area and a minimal amount of disturbance that may occur from the operation of the project is unlikely to impact ground roosting raptors.

Comment: As previously noted, during the winter of 2011 / 2012 some of the Short-eared Owl roosting sites where heavily disturbed due to windelectric surveying staff presence near the roosting sites. Of greater concern, contractors plowed over some of the larger roosting sites for the purpose of the archeological study required by the REA. One of the larger roosing sites is well documented to have been in use for several years.

While carrying out Short eared Owl survey from the roadside, Kurt Hennige (KFN) observed /documented working Windlectric / Stantec staff flushing 11 SEOW from their roosting sites, this occurred just south of Front Road and 1 km east of Stella 40 road. This area was plowed within the next two weeks and the group of around 20 birds vacated the habitat to settle near the Emerald 40 Foot Road for the next two months. This suggests that Windlectic / Stantec recording of regular movements of SEOW between roosting sites was most likely the result of Windlectric / Stantec's disturbance and destructions of their roosting sites .

Amherst Island is anticipated to continue to support large concentration of wintering raptor during operation of the Project. Post-construction monitoring for disturbance will be conducted in all significant raptor wintering areas (RWA1, RWA2, RWA3, RWA4, RWA5, RWA6, RWA7 and RWA8) for a period of three years, to ensure disturbance to wintering raptors is not higher than expected. The Environmental Effects Monitoring Plan (included in the Amherst Island Wind Project Design and Operations Report) describes a response and contingency plan that will be implemented if performance objectives cannot be met.

While the author may anticipate Amherst Island continuing to support a large concentration of wintering raptors, the preponderance of evidence mentioned above, indicates otherwise.

5.5.3.2 Turtle Overwintering Habitat

Turtle overwintering habitat (TO1) was not evaluated prior to the creation of this report and is required to be evaluated prior to construction. If it is determined to be not significant, the following mitigation measures will not be required. Evaluation methods for turtle overwintering habitat are as follows:

Comment: Again, as this is supposed to be a final draft, and my opportunity to review the process as presented by Stantec, how can I do so with missing documentation. This evaluation should occur, be documented and presented in report form for review prior to the submission of the draft report for REA approval.

Please see Section 5.3.3.2 for concerns regarding the selection of TO1.

5.5.3.3 Migratory Landbird Stopover Area

Four significant migratory landbird stopover and staging areas have been identified within 120 m of the Project Location: ML1, ML2, ML3, ML4 and ML5 (**Figures 5.1-5.5, Appendix A**). No Project components are in this type of significant wildlife habitat.

Comment: Section 10 "How much Habitat to Protect" of the Ontario Ministry of Natural Resources *Significant Wildlife Habitat Technical Guide* has the following information on page 121, Table 10-5. Primary locations of seasonal concentrations of wildlife, under Key Requirements for Landbird Migratory Stopover Area: Great Lakes shorelines and adjacent lands within 5 km (especially Lake Erie & Lake Ontario) are very important.

Therefore the entire project location can be considered as a Landbird Migratory Stopover Area.

Information regarding indirect effects of wind turbines on migrating passerines is limited. Of four bird taxa reviewed in 19 separate studies, passerine birds showed the least population response to wind turbines when compared with waterfowl, wading birds and raptors (Stewart et al. 2007). Passerines were also noted not to be vulnerable to displacement (Langston and Pullan 2003, cited in Stewart et al. 2005). However, in a study of six wind energy facilities in Alberta, EchoTrack (2005) found evidence of localized avoidance as birds increased their flight height and slowed their flight speed when they approached wind turbines. This avoidance response may result in increased energy expenditure to migratory birds. The extent to which an avoidance is considered an impact depends on the species, size of wind project, spatial arrangement of the turbines, type of movements (i.e. local movements or annual migrations) and the incurred energetic cost (Masden et al. 2009). Masden et al. (2010) concluded that the energetic cost expended to avoid a wind project was undetectable and insignificant compared with other factors such as strong or unfavourable winds.

Comment: Ewert (2011) notes that angle and rates of ascent and descent from stopover sites have received little attention in the scientific literature, but that this information is

"is critical information needed to define buffer zones".[8] The Ostrander Point Acadia Radar study[9] did show that birds move through the air at the height of the turbine blades in large numbers and exhibit behavior that would expose them to a higher risk than if they simply dropped out of the sky, or ascended rapidly.

Ewert's (2011) recommendations with regard to Great Lakes features like Amherst Island are unequivocal:

> **"Wind turbine development should avoid areas where large numbers of migrating birds concentrate (e.g. Important Bird Areas), including agricultural fields traditionally used by large numbers of migrating/wintering birds, or where large numbers of migrating birds are predicted to occur (Ewert et al. 2005). Placing wind turbines, or other tall structures, in areas where relatively large numbers of birds occur increases the risk of collision with the structure and may have both local and cumulative consequences for bird populations."[10]**

Most of the turbines proposed for Amherst Island would be built within one kilometre of Lake. This is directly in the path of bird migration and movements.

In light of the overwhelming body of evidence about the significance of Great Lakes coastline, Ewert recommends that "wind energy development be avoided within 5 miles (8km) of the nearest coast or shoreline, either mainland or island."[11]

In reviewing data on migrating birds, both songbirds and raptors, the only conclusion one can reach is that there is high confidence in suggesting that erecting industrial wind turbines on Amherst Island will have significant impacts on birds, and that the potential for the site having catastrophic impact is high.

The potential for turbines to act as a barrier to movement has also been identified as a potential impact. Reviews of available literature suggest the barrier effect has not been proven to significantly impact bird populations (Drewitt and Langston 2006) however the effect of wind farms as barriers to migratory bird movement is not yet fully understood and has not been well studied (Telleria 2009; Masden et al. 2009). Lateral displacement of migratory flight paths was observed for numerous bird species at two offshore wind farms in Denmark. Peterson et al. (2006) found that 50% fewer migratory bird flocks flew directly over offshore wind turbines, although the decline was much less for daytime migrants compared with nocturnal migrants. Most species changed their flight path orientation at 200 m to 500 m away from the active turbines. No evidence of habituation to the turbines was observed over time (Peterson et al. 2006). Using acoustic surveys, Howe et al. (2002) also observed that nocturnal migrant birds were less abundant over turbine areas when compared with reference sites.

Comment: Ewert(2011) has the following to say regarding barrier effect.[12]

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[8] Ewert, D.N., J.B. Cole, and E. Grman. 2011. Wind energy: Great Lakes Regional Guidelines, The Nature Conservancy, Lansing Michigan pp.11

[9] Stantec Consulting. February, 2009. Ostrander Point Wind Energy Park. Draft Environmental Review Report Appendix C. Bird Report and Acadia Radar Study

[10] Ibid. pg. 13.

[11] Ewert, D.N., J.B. Cole, and E. Grman. 2011. Wind energy: Great Lakes Regional Guidelines, The Nature Conservancy, Lansing Michigan pp. 28

[12] Ibid. pg 21

Birds may also be affected by short- and long-term habitat loss, fragmentation, and behavioral responses such as avoidance. Although avoidance and displacement may reduce direct mortality risk, these behaviors indicate that wind energy facilities can cause habitat loss and cause barriers to migration. Such losses should be assessed in terms of the potential feeding habitat affected, relative to areas outside of the wind energy facility. For instance, if turbines are built in offshore western Lake Erie, their construction and operation could force island nesting waterbirds to adjust routes to coastal feeding areas during the breeding season and impose a barrier during migration. Although avoidance of turbines may diminish risk for direct mortality, how will adjusted migratory routes and flight paths to/from critical foraging areas, or the potential to lose high quality foraging sites, and the potential bio-energetic demands for such extended modifications, impact population viability? Measurement of these cumulative effects is a high priority when considering the future effects of developments along an avian flyway. Some research has been done to determine mortality rates for long distance migrants throughout their life cycle (see Sillett and Holmes 2002), but the relative contributions of collisions, predation, barrier effects, or habitat loss to mortality rates remain unknown. Petersen et al. (2006) monitored birds during 1999-2005, related to the construction of the world's first large offshore wind energy facilities at Horns Rev and Nysted in Denmark. Results showed that birds generally avoided both developments, although responses were highly species specific. Some species (e.g., loons and gannets) were almost never seen flying between turbines, others rarely (e.g., Whitewinged Scoter), while still others showed little to no avoidance behavior (e.g. cormorants and gulls). However, at Horns Rev, 71-86% of all bird flocks heading for the wind energy facility at 0.9-1.2 miles (1.5-2 km) distance avoided entering the area. Further, the numbers of Common Eider entering the Nysted wind energy facility decreased by 63-83% post construction, and that proportions of birds crossing the wind energy facility area have decreased relative to the pre-construction baseline (see Fox et al. 2006). Radar studies provided evidence that many bird species showed avoidance responses at distances of up to 3.7 miles (5 km) from the turbines, and within a range of 0.6-1.2 miles (1-2 km), that more than 50% of birds heading for the wind energy facility avoided passing within it (Petersen et al. 2006). No bird species demonstrated enhanced use of the waters (Petersen et al. 2006).

Overall, turbine within the Amherst Island Wind Energy Project have been sited outside of significant migratory landbird stopover areas and are relatively well spaced. As such, disturbance to stopover habitat, or potential barrier effects, are not anticipated to be significant. Post-construction monitoring for disturbance will be conducted in all significant migratory landbird stopover areas (ML1, ML2, ML3ML4 and ML5) for a period of three years, to ensure potential disturbance to migratory landbirds is not higher than expected. The Environmental Effects Monitoring Plan (included in the Amherst Island Wind Project Design and Operations Report) describes a response and contingency plan that will be implemented if performance objectives cannot be met.

Comment: Section 4.1.3 details how turbines S15, S30, S26, S18, S13, S17, S10, S32, S08, SS25 and S35 will be directly in the path of southbound migrants headed to ML5, ML4 and ML1. How this can be considered "relatively well spaced" is beyond me.

5.5.3.4 Old Growth Forest – Please see section 5.3.3.4

5.5.3.5 Amphibian Breeding (Woodland and Wetland) – Please see section 5.3.3.5

5.5.3.6 Marsh Breeding Bird Habitat

Comment: As previously mentioned, the earliest ELC site investigations documented to occur date from 26 July 2011, per table 4B.

By the end of July, any shallow marshes would have dried up, the Stantec team missed quite a bit of Marsh Breeding Bird Habitat due to the date the surveys were begun. How then was MBB1 decided upon as the only example of Marsh Breeding Bird Habitat on Amherst Island?

Marsh breeding birds are among the more sensitive bird species with respect to disturbance from wind power development. In their meta-analysis of the effect of wind turbines on bird abundance at 19 globally-distributed wind farms, Stewart et al. (2007) concluded that wading birds were the second-most likely bird taxon to demonstrate declines in abundance. Pearce-Higgins et al (2012) found construction disturbance was the primary cause of bird population declines at wind farms (Pearce-Higgins et al 2012). For some species, populations rebounded once construction ceased and turbines became operational, however the apparently more disturbance-sensitive Snipe and Curlew did not return to their pre-construction abundance (Pearce-Higgins et al 2012).

However, as noted for raptors, above, differences in avoidance behaviour have been noted at North American wind development projects when compared with European studies. The single wind turbine at Pickering Nuclear Generating Station, adjacent to the Hydro Marsh, has not proved to be a deterrent to local marsh breeding birds. Black-crowned Night Herons (*Nycticorax nycticorax*) and Common Terns (*Sterna hirundo*) were observed flying within 50 m of the active turbine and regularly visited the Hydro Marsh (James 2002). At the Erie Shores Wind Farm, Great Blue Heron were relatively scarce due to limited habitat; however, half of the 19 individuals observed in 2006 and 2007 flew within 100 m of operating turbines (James 2008).

Comment: The single wind turbine at the Pickering Nuclear Generating Station consists of a 78 meter steel tower with 39 meter blades and totals 117 metres, about the height of a 30-storey office building.(http://www.opg.com/pdf/pickwind.pdf).

The turbines proposed for Amherst Island are taller than a 50 story office building, are crowded together, sometimes less than 6 blade lengths apart, and consist of an installation of 36 turbines. To suggest there is any comparison to the Pickering turbine is ridiculous.

The Erie Shores turbines are even smaller. According to the Erie Shores Fact Sheet http://erieshores.ca/ErieShoresrev2011.pdf, "each turbine is about as tall as a 25 story building". There is no basis for comparison.

Post-construction studies at the Wolfe Island Wind Plant did not find any significant declines in species diversity or abundance in the large coastal wetlands adjacent to operational wind turbines; no declines were observed in the common marsh species such as Swamp Sparrow, Marsh Wren and Common Yellowthroat. More sensitive species, such as Least Bittern, were also recorded breeding on Wolfe Island in proximity to operational wind turbines.

At Amherst Island, wind turbines have been sited away from marsh breeding bird habitat; the closest turbine to MBB1 is 119 m away from blade sweep. The closest proposed access road is 78 m away from this habitat. During operation, potential disturbance impacts of Project-related traffic are expected to be minimal and less frequent than day to day use of the road system. Municipal roads are closer to MBB1 than Project access roads. Resident breeding birds nesting along the road edge of this community have likely habituated to the presence of noise and human activity. As such, disturbance impacts from operational wind turbines to breeding birds in MBB1 are expected to be negligible.

5.5.3.7 Woodland Area-Sensitive Breeding Bird Habitat

Potential threats to woodland area-sensitive breeding birds as a result of wind energy projects include fragmentation and disturbance of habitat (Kingsley and Whittam 2007).

At other wind power developments in Ontario, post-construction monitoring studies report no significant negative effects on woodland area-sensitive breeding birds, although in each case turbines were located away from wooded areas. James (2008) found no indication of disturbance or displacement of, woodland birds by operating wind turbines at the Erie Shores Wind Farm. Both number of species and number of individual birds increased from 2006 surveys to 2007. Area-sensitive species, including Yellow-bellied Sapsucker and Hairy Woodpecker were noted on several occasions foraging within 50m of operating turbine towers (James 2008). At the Melancthon I Wind Plant, in central Ontario, post-construction monitoring results revealed no significant difference in woodland bird species densities between points located within 150 m of a turbine and points located further away (Stantec 2007).

Comment: As "in each case the turbines were located away from wooded areas" and the turbines on Amherst Island will be located near wooded areas, the above paragraph provides no basis for comparison. I have already addressed the Erie Shores issue twice.

Post-construction monitoring of the Wolfe Island Wind Plant included disturbance studies to breeding birds in woodland habitat adjacent to operating wind turbines. The post-construction surveys recorded 51 species, six of which were woodland area sensitive species, which was slightly higher species diversity from pre-construction surveys. During pre-construction 45 species, two of which were area-sensitive, were recorded in the same woodlands using the same survey methods (Stantec 2012c).

During operation, potential disturbance impacts of Project-related traffic are expected to be minimal. There may be occasional impacts during maintenance of access roads or collector lines. Maintenance of the access road and/or collector line adjacent to ABB1 could results in woodland degradation by dust, siltation, erosion or accidental spill. If maintenance activities are required in proximity to ABB1, mitigation measures used during construction (**Table 14B, Appendix B**) should be implemented.

Overall, turbines within the Amherst Island Wind Energy Project have been sited outside of woodland area-sensitive breeding bird habitat with the closest turbine sited 48 m away from blade sweep. As such, disturbance for forest breeding birds is not anticipated to be a significant impact. Post-construction monitoring for disturbance will be conducted in ABB1 for a period of three years, to ensure potential disturbance to forest breeding birds is not higher than expected. The Environmental Effects Monitoring Plan (included in the Amherst Island Wind Project Design and Operations Report) describes a response and contingency plan that will be implemented if performance objectives are not met.

Comment: "48m away from blade sweep" is not something to boast about and nothing in the above paragraphs supports the statement that "disturbance is not anticipated to be a significant impact".

5.5.3.8 Open Country Breeding Bird Habitat and Short-eared Owl Habitat

Disturbance of open country and ground-nesting breeding bird habitat as a result of wind energy projects were identified as potential threats (Kingsley and Whittam 2007). Avoidance by breeding birds of operational turbines would result in indirect loss of habitat and fragmentation.

Studies specific to the wind industry indicate that abundance of breeding birds is not negatively affected at many wind facilities (Kingsley and Whittam 2007).

Comment: As a page reference is not provided for the above statement and a review of the paper does not bring me to a similar conclusion, below please find the section of the Kingsley and Whittam 2007 paper entitled "Breeding Birds:

> In general, it has been found that birds breeding in the area of wind turbines have lower collision rates than non-residents. In part, this is probably because local birds become familiar with the turbines and know how to avoid them, whereas individuals passing through the area would not have that familiarity, and due to poor weather conditions such as fog, may be unable to detect the turbines before a collision occurs. Most available literature regarding the effects of wind energy on birds deals with numbers of birds killed and reasons for their collisions. However, the greatest impacts that wind energy facilities may have on breeding birds include habitat loss, destruction of active nests, obstruction of regular flight paths, disturbance caused by turbines or human activities around breeding sites, and obstruction of important feeding areas (particularly important for offshore or coastal areas).
>
> Avian productivity (i.e., nesting success) does not appear to be negatively affected at many wind facilities, although it has not been the subject of many studies. At one 66-turbine site, mean productivity of breeding birds was the same as in surrounding areas (Guyonne and Clave 2000). However, reduced breeding bird populations have been noted at a few wind farms where breeding habitat was destroyed by the installation of the turbines, and where people and vehicles were continuously present in the area (Percival *et al.* 1999). It has also been found that grassland birds avoid nesting within 100m to 200m of turbines (Leddy *et al.* 1999). It should be emphasised that results of productivity studies in relation to turbines likely vary a great deal from site to site.

Mountain Plover (*Charadrius montanus*) abundance decreased during construction of a wind power facility, but showed evidence of returning to near pre-construction levels during the operations phase despite a widespread decline in species abundance within the region (Young et al. 2006). Nest locations in this study were noted to be unaffected by distance, with nests as close as 35 m to a turbine base. Most studies to date which document avoidance, disturbance or displacement effects have focused mainly on grassland or open country birds. Studies of bird densities in grassland habitats have documented localized avoidance behavior in some species (Leddy et al. 1999; Johnson et al. 2000; Erickson 2004), from 50 m to 180 m from turbine bases. Mean density of breeding birds in Conservation Reserve Program Grasslands in Minnesota was four times higher at 180 m from the base of a turbine than at 40 m (Leddy et al. 1999). Other

studies have shown no avoidance of wind turbines (Shaffer and Johnson 2008; James 2008) while still othersshow species nesting in higher abundances near turbines (de Lucas et al. 2004).

Comment: As there seems to exist some level of uncertainty with regards to the impact of wind turbines, it would seem prudent to suggest that additional studies should be undertaken prior to any siting decisions being made for turbine installations in Ontario.

Post-construction monitoring on Wolfe Island in 2010 and 2011 (Stantec 2011a and 2011c) aimed to compare abundance of grassland breeding birds to pre-construction conditions. The results of the studies found that grassland breeding birds remained very abundant within the project area and within 100m of operational wind turbines. To date, a review of existing research at operating facilities suggests that wind facilities have little impact on the nesting of birds (Strickland et al. 2011). As operational wind turbines are not anticipated to result in significant displacement of open country breeding birds, it is unlikely the turbines will result in fragmentation of the large contiguous open country breeding bird habitat within the Study Area.

Comment: The Strickland document mentioned above was prepared for the National Wind Coordinating Co-operative, the purpose and scope of the document is as follows:

> This document is intended as a guide to persons involved in designing, conducting, or requiring wind energy/wildlife interaction studies. The document follows a general framework for progressing through the decision process for a proposed wind project and a guide to methods and metrics for use in the necessary studies.

As there is no page noted with the above (Strickland et al 2011) a review of the 289 page document was undertaken. Strickland provides the following on page 17 which I am assuming is the provenance for the above statement " To date a review of the existing research at operating facilities suggests that wind facilities have little impact on the nesting of birds". It would seem in fact that the quote comes from much earlier papers. (Howell and Noone 1992, Johnson et al. 2000b, 2003)

> Most studies suggest that wind facilities have little impact on the nesting of birds (Howell and Noone 1992, Johnson et al. 2000b, 2003). The only report of avoidance of wind facilities by raptors occurred at Buffalo Ridge wind facility, Minnesota, where raptor nest density on 261 km^2 of land surrounding the facility was 5.94/100 km^2, yet no nests were present in the 32 km^2 facility, even though habitat was similar (Usgaard et al. 1997).

However, on page 117, in a section entitled "On-Site Reduction of Risk" we find the following:

> There are two major possibilities for reducing the risk to birds on a developing site. First, risk can be reduced by placing individual turbines and support facilities in areas of low avian use (micrositing); and second, the site can be made unsuitable for use by birds or a specific bird species through changes in habitat parameters (e.g., changing prey type or abundance, removing potential perches within the facility). Micrositing includes the siting of turbines away from areas where birds or bats concentrate, such as near roost, perch and nest sites, near heavily used vegetated gullies or water sources, and near known hibernacula.

As previously mentioned, a careful review of the documentation indicates that the Stantec documented 2011/2012 Wolfe Island Short eared Owl sightings occurred on the shoreline of

the North-west corner of Wolfe Island where the owls are seen in the evenings as they fly to Simcoe Island for hunting. This behavior is documented in the KFN Short eared Owl survey.

This movement off of Wolfe Island to Simcoe Island confirms the avoidance / displacement from the areas where the highest density of wind turbines are located. Of note, good numbers of Short eared Owl were documented during the 2011 / 2012 season along the central and eastern sections of Wolfe Island, where very few turbines are located. The owls have been displaced by the turbines to the remaining 40% of suitable habitat which still exists on Wolfe Island. This habitat includes Simcoe Island. In contrast, due to the smaller size of Amherst Island, as well as the turbine distribution throughout the island, 85% to 90% of the suitable Short eared Owl habitat will be negatively impacted by the proposed turbines.

In addition to potential disturbance from turbines, Project related traffic may impact grassland breeding birds, although traffic during operation is expected to be minimal. There may be occasional impacts during maintenance of access roads or collector lines that run through the significant open country habitat. If maintenance activities are required in close proximity, mitigation measures used during construction (**Table 14B, Appendix B**) should be implemented. During the first three years of operations, regular human presence at some turbines for mortality monitoring may also disturb ground nesting birds.

Noise levels from operational wind turbines might result in disturbance effects to breeding birds. Habib et al. (2007) found that noise from compressor stations (which produce sound at 75 to 90 dB(A) at the source) reduced pairing success of Ovenbirds (a forest songbird) by 15%. Levels of noise that may be experienced by open country breeding birds from operation of the wind turbines is influenced by a number of factors such as distance from receptor, direction of the receptor (i.e. up or down wind) or weather effects (wind speed and direction). For example, noise from wind turbines are more likely to have the least effect on wildlife at high wind speeds, as the sound from the turbines can be masked by the sound of the wind. Reijnen et al. (1996) suggest that noise levels that are below 47 dB(A) will not have significant effects on breeding birds. Barber et. al. (2010) suggest that physiological responses to noise exposure in animals may begin to appear at exposure levels of 55- 60 dB(A). Studies also indicate that birds adjust their songs to compensate for environmental background noises (Burmm 2004; Barber et al. 2010) and that many species of wildlife easily habituate to regular noise (Penna et al. 2005).

Short-eared Owls may be more vulnerable to disturbance effects than other open country breeding birds and may avoid nesting in close proximity to operational wind turbines. As observed during post-construction winter raptor surveys on Wolfe Island, Short-eared Owls may avoid hunting in close proximity to operational wind turbines. However, the Wolfe Island results suggest this relatively limited habitat disturbance did not impact raptor abundance, suggesting Short-eared Owls and other raptors were not significantly impacted in their ability to find and capture prey.

Comment: While the Stantec reports do indeed state that Short-eared Owls are not observed hunting within 200m of working turbines, it would be interesting to hear if they are observed hunting within 300, 400, 500, meters of the working turbines. Ongoing research indicates that with the exception of Snowy Owls, raptor abundance in 2012/13 is the lowest recorded in many years on both Amherst and Wolfe Islands. There are many factors responsible for the number of wintering raptors on the Island, which does include the availability of Meadow Voles and could include the presence of wind turbines.

In 2010, Keyes (2011) recorded an active breeding pair of Short-eared Owl within the 86-turbine Wolfe Island Wind Plant. Although this nest was unsuccessful due to damage from farm machinery, it demonstrates Short-eared Owls are able to establish and maintain breeding territories within active wind farms in southern Ontario.

Comment: As mentioned in section 5.3.3.1, a review of the Keyes report provides the following UTM coordinates on Wolfe Island for the 1 Short-eared Owl nest she located on Wolfe Island, 385960 E 4889663 N. Google maps indicates that this nest is approximately 100 meters from the access road, and the nearest turbine is located at a distance of over 550 meters. Therefore, locating one nest at some distance from a wind turbine simply indicates that a nest was established, we have no way of knowing if the nest was abandoned prior to being destroyed. There is no evidence of a breeding territory being maintained within an active wind farm in southern Ontario.

Furthermore, while the Keyes 2011 report documents 1 breeding pair within the 86 turbine Wolfe Island wind Plant, what is missing is information pertaining to previous years breeding pair. Without this information it is impossible to ascertain if the 1 breeding pair demonstrates a precipitous drop in population.

Project components, including wind turbines, have been sited in areas where Short-eared Owls have been observed breeding by Keyes (2011) in 2009 and 2010 and by Stantec in 2011. However, Keyes (2011) found low site fidelity between years on Amherst Island, indicating that breeding territories from previous years are not necessarily good indicators of locations of future territories. As result, siting turbines away from nesting territories recorded in previous years was not necessarily considered effective mitigation to avoid impacts to Short-eared Owls.

Comment: The Kirsten Keyes 2 year study of site fidelity has limited application due to its short timeline. KFN past records and current surveys indicate that Short-eared Owl breeding habitat is very specialized and is present in limited quantities on Amherst Island. These breeding habitat are re- used frequently, although not necessarily annually. Due to its limited quantity, if this breeding habitat is destroyed, this is will negatively impact the Short-eared Owl ability to breed

Sandilands(2011)[13] states; The Short-eared Owl may be nomadic in response to prey abundance, or may not breed in local area when voles or lemmings are scarce. Despite this, some nest fidelity has been documented. The same nest may be used in subsequent years if the prey base remains adequately high. There is limited information on natal fidelity , but data suggest that some does occur.

Overall, considering the distribution of proposed wind turbines on Amherst Island and the apparent shifting of Short-eared Owls breeding territories from year to year, it is likely that breeding territories will often overlap with wind turbine locations. Given the relatively small amount of Short-eared Owl breeding habitat that could be potentially disturbed by the Project, it is anticipated the ability of breeding pairs to establish suitable breeding territories on Amherst Island will not be impacted.

Comment: The distribution of proposed wind turbines on Amherst Island is to cover the island form one end to the other. A glance at any map in Appendix A makes this abundantly clear. There is scientific basis for suggesting that breeding territories will

[13] Sandilands pp230

overlap with turbine locations and even less for the statement that "is anticipated the ability of breeding pairs to establish suitable breeding territories on Amherst Island will not be impacted".

What is being documented on Wolfe Island is evidence of displacement due to the industrial wind turbines. Following is a quote from the summary of a report detailing the results of a multiple year study of Short-eared Owls on Amherst and Wolfe Islands.

> The results of standardized Short-eared Owl surveys during two winters on Amherst and Wolfe Islands, including all raptor observations, serve as a framework upon which to develop an understanding of current raptor abundance and distribution. Although preliminary, our results are evidence of the potential displacement effects of a large-scale wind-farm located in the area of the Wolfe Island Northwest Route, reflected in low numbers of Short-eared Owls and Red-tailed Hawks compared to other routes and historical records for the area.

Blue Bill Volume 5 No 3 September 2011 (p 63) http://kingstonfieldnaturalists.org/bluebill/bb-sep11.pdf

Overall, operation of the Project, with access and wind turbine sited in grassland habitat, is not anticipated to result in significant disturbance or fragmentation to open country breeding bird habitat. Breeding Short-eared Owls may show some localized avoidance to nesting or hunting in close proximity to operations wind turbines. However, considering the relatively minimal amount of habitat that may be impacted, the presence of wind turbines is not expected to impact the breeding density or success of Short-eared Owls on Amherst Island.

Comment: Why does the author of this report assert that the installation of 36 industrial wind turbines along with their ancillary structures and access roads will not result in fragmentation of open country breeding bird habitat when a single glance at any map in Appendix A provides a far different picture?

Under normal circumstances a minimal amount of habitat loss would result in the Short-eared Owls moving to another location on the island. However, looking at any of the maps provided in Appendix A it is apparent that the spread of turbines encompasses the entire island, as opposed to Wolfe Island where the turbines are situated on the west end of the island for the most part. The relative sizes of the islands is at issue, Wolfe Island at 271.97 kilometer squared and Amherst Island a mere 110.53 kilometer squared. Displaced Short-eared Owls will simply be forced to leave Amherst Island.

Post-construction monitoring for disturbance will be conducted in all significant open country breeding habitat (OCB1, OCB2, OCB3, OCB4, OCB5, OCB6, OCB7, OCB8 and OCB9) for a period of three years. The monitoring will aim to measure and quantify potential disturbance impacts to open county breeds, including Short-eared Owls, to ensure potential disturbance is not higher than expected. The Environmental Effects Monitoring Plan (included in the Amherst Island Wind Project Design and Operations Report) describes a response and contingency plan that will be implemented if performance objectives cannot be met.

5.5.3.9 Shrub/Early Successional Bird Breeding Habitat – Please see section 5.3.3.0 for comments.

5.5.4 Areas of Natural and Scientific Interest (ANSI) – No Comment

5.6 MONITORING PLAN

5.6.1 Overview of Direct Impacts

Various studies have been conducted throughout North America to document bird collisions at wind facilities, to determine why collisions may be occurring, and to understand the extent to which they occur. Results of these studies on different groups of birds utilizing significant wildlife habitat on Amherst Island are provided below.

Raptors and Owls

Due to the concentration of raptors on Amherst Island during the winter, there is some risk of mortality. Some of the species present are known to hover while hunting, or fly erratically at dusk, potentially making them susceptible to collisions with the wind turbines. Because raptors have relatively low reproductive rates, population recovery from mortality effects can be slow (Kingsley and Whittam 2007). Post-construction mortality studies at the Wolfe Island Wind Plant have been extended through the winter, to monitor potential fatalities to wintering raptors. Results from the 3 years of post-construction monitoring have found relatively few raptor fatalities during the winter months, despite the high concentration of raptors in the project area. Overall, based on these results, direct mortality is not likely to have a significant impact on the wintering raptor population on Amherst Island.

Comment: Wolfe Island reports the highest bird kills count in Canada.

According to the Wind Energy Bird and Bat Monitoring Database (Environment Canada et al. 2012), no Short-eared Owl or other owl fatalities has been recorded at Ontario windfarms to date. The monitoring database shows that owl mortality across all wind farms in Canada has been very low. This is likely due to their low flying nature and potentially the keen hearing of owls that alert them to the presence of wind turbines. It can be expected the risk of mortality from turbine collision to wintering and breeding owls on Amherst Island would be low.

Comment: An alternative explanation to above, would be that the majority of the Owls simply leave the area in the vicinity of the wind turbines. Something that is not possible on Amherst Island given the distribution pattern of the turbines and the small size of the island.

Migratory Landbirds

Based on a review of available literature, it appears that most collisions are of nocturnal migratory songbirds (Kingsley and Whittam 2007), at least partly because they are the most abundant species at wind energy facilities (National Academy of Sciences 2007). In addition, most fatalities at operational facilities in Canada have been found from May through October, with the fall migration period (August to October) experiencing 51% of all fatalities (Environment Canada et al. 2012).

Comment: Is the author suggesting that the Amherst Island Wind Project will not be operational May through October?

Landbirds typically migrate in broad fronts (Drewitt and Langston 2008; Diehl et al. 2003; Ewert et al. 2006). Studies suggest that most passerines migrate at altitudes above the height of wind

turbines (Zimmerman 1998); however, when ascending or descending as they cross the lake, or when traveling in low cloud or fog conditions, birds may be at increased risk of collision with man-made structures.

Recent research examining the relationship between risk factors and recorded bird mortality did not find a relationship between the abundance of migratory birds and the number of bird collisions per turbine, indicating that bird use does not necessarily equate to high mortality rates (Ferrer et al. 2011). Rather, Ferrer et al. (2011) found that the probability of collisions depends on species behaviours and topographical factors. Individuals whose behaviour does not place it within the rotor swept zone are considered to be at lower risk of collisions with turbines (USFWS 2012). Additionally, under many conditions, some birds have demonstrated the ability to detect and alter flight paths to avoid collision (EchoTrack Inc. 2005; Plissner et al. 2008; USFWS 2012).

Comment: <u>Probability of Collisions:</u>

In fact, the entire quote from Ferrer et al. 2011 reads:

> **We contend that there is some weakness in the common methodology used in risk assessment studies because they wrongly assume a linear relationship between the frequency of observed birds and fatalities of birds (Langston & Pullan 2003; Smallwood & Theander 2004; Telleria 2009). There is clear evidence that the probability of bird collisions with turbines depends critically on species behavior and topographical factors, and not only on local abundance (Barrios & Rodriguez 2004; de Lucas et al. 2008). This challenges the main assumption of wind farm assessment studies; birds do not move over the area at random, but follow main wind currents, which are affected by topography. Consequently, certain locations of wind turbines could be very dangerous for birds even where there is a relatively low density of birds crossing the area whereas other locations would be relative risk free even with higher densities of birds.**

Unfortunately, Ferrer et al. do not provided information as to what topographical factors would be key. One could speculate that an island landfall sitting squarely in the Atlantic Migratory Flyway, could be considered a topographical factor that would result in a location "very dangerous for birds".

With regards to species behavior, Birds such as the Short-eared Owl, Common Nighthawk, Wilson's Snipe and American Woodcock would be at great risk as their mating display can take them directly into the path of the spinning blades. Barn Swallows and Tree Swallows and the Common Night Hawk would be at even greater risk, as they are aerial insectivores, and hunt at various heights depending upon air pressure and prey height. This, combined with evidence that wind turbines attract insects[14] predisposes swallows to the risk of collision with turbine blades.

Finally, the above paragraph states that "some birds have demonstrated the ability to detect and alter flight paths to avoid collision" providing the U.S. Fish and Wildlife Service (USFWS). 2012. U.S. Fish and Wildlife Service Land-Based WindEnergy Guidelines. March, 2012. 71 pp. as one of the references. In fact page 71 is an Appendix

[14] **(C. V. Long & J. A. Flint & P. A. Lepper, Insect attraction to wind turbines: does colour play a role? European Journal of Wildlife Research Volume 57 Number 2 (2011) 57:323-331)**

listing sources of information and a careful reading of the Guidelines cannot locate any suggestion that the USFWS states that "some birds have demonstrated the ability to detect and alter flight paths to avoid collision".

Unfortunately as neither the EchoTrack Inc. 2005; Plissner et al. 2008 publications are readily available, therefore review was not possible. That being said, as previously mentioned, turbines dating from 3005 and 2008 would not be comparable to the 50 story tall turbines proposed for Amherst Island.

"Nearshore" turbines (defined as those within 250 m of the lakeshore) were shown to be responsible for a disproportionate amount of bird and bat mortality at the Erie Shores Wind Project, which is also located at a shoreline location in a raptor migration corridor (but in an agricultural landscape found along Lake Erie) (James 2008). James (2008) estimated that bat mortality could be reduced by 50% and bird mortality by 80% at the Erie Shores Wind Project if turbines were not placed in the "nearshore" area. Research has also shown that migrants select forested areas in close proximity to water and may be particularly concentrated in riparian woodlands located within 400 m of the lakeshore (Bonter et al. 2008; Ewert et al, 2006). No nearshore turbines – defined as those within 250 m of the lakeshore – have been proposed on Amherst Island.

Comment: Definition of nearshore turbine:

With regards to the James (2008) reference above, according to the Erie Shores Fact Sheet http://erieshores.ca/ErieShoresrev2011.pdf, "each turbine is about as tall as a 25 story building". The turbines proposed for Amherst Island are double that size, standing over 500 feet tall with a wind-swept area (the area covered by the blades as they spin up to 275 Km per hour) of almost 2.5 acres per turbine. The blade length of the Erie Shore Turbines is not provided in the fact sheet, it would nonetheless be reasonable to assume that the swept area is commensurate to their size, approximately ½ of what is proposed for Amherst Island. It would appear that the definition of a nearshore turbine (within 250 m of the lakeshore) chosen by Stantec rests upon the James (2008) publication, and is clearly not suited to be applied to the Amherst Island situation.

Further, the paragraph above reports on work dated from 2008 (Bonter et al.) and 2006 (Ewert et al) stating that migrants select forested areas in close proximity to water and may be particularly concentrated in riparian woodland located within 400 m of the lakeshore.

Since his 2006 publication David Ewert, co-authored a 2011 report for the Nature Conservancy entitled "Wind Energy: Great Lakes Regional Guideline" summarizes many recent studies that describe and document the disproportionate importance of shoreline and near-shoreline areas, both aquatic and terrestrial for migrating birds. (Ewert, D.N., J.B. Cole, and E. Grman. 2011. Wind energy: Great Lakes Regional Guidelines. The Nature Conservancy, Lansing, Michigan.)

According to this 2011 publication, many of the recent studies along Great Lakes shorelines describe what he calls "shoreline effect" or areas along and in from the shore where landbirds concentrate during their migration. This distance varies between study and researcher from 0.4 km to 2-3 km form the shoreline (p.24 – 25)

Clearly the selection of 250 meters from the shoreline as the definition of a nearshore turbine is not based in any scientific fact.

Monitoring results to date from operational facilities indicate that wind turbines are not a major concern with respect to the sustainability of migratory bird populations in Ontario (Friesen 2011; MNR 2011c) and are a small contributor to overall bird mortality when compared to other anthropogenic structures (e.g. collisions with building and communications towers or mortality from agricultural practices) (Arnett et al. 2007; Kingsley and Whittam 2007; National Academy of Sciences 2007; Kerlinger et al. 2011).

Breeding Birds

Collision risk is partly a function of the rate of exposure of birds to the turbine blade sweep and types of behaviour that occur within this range. In general, resident breeding birds tend to have lower collision rates than non-residents, at least partly because they become familiar with the turbines and avoid them (Kingsley and Whittam 2007). Although some behaviors of resident birds, such as aerial displays (e.g. Killdeer or Upland Sandpiper) or actively hunt within the blade sweep area (e.g. Tree Swallow) may put them at higher risk.

Mortality rates are available for several operating wind projects, including Wolfe Island Wind Plant, located approximately 10 km east of Amherst Island. Amherst Island is very similar to Wolfe Island with regard to habitat and geography. Like Wolfe Island, Amherst Island supports the high densities of grassland breeding birds and late summer staging swallows and therefore may experience similar rates of avian mortality.

The taller tower height on Amherst Island may result in reduced mortality to grassland birds. The bottom of the blade swept of the proposed Amherst Island turbines will be at 45 m high, 10 m higher than the turbines on Wolfe Island. As such, fewer aerial displaying breeding birds are likely to attain the height of the blade sweep and therefore at risk of collision. **However, the** long blade length, and thus the large blade sweep area, may result in a higher number of birds at risk of collision.

Comment: The Short-eared Owls, Northern Harrier, Wilson Snipe and American Woodcock all engage in areal display which take them directly into the path of the turning blades proposed for Amherst Island.

Generally, forest breeding birds are at lower risk than some grassland and shrubland species, as forest breeding birds do not conduct high-risk behaviours such as aerial displays. During the first three years of the Wolfe Island Wind Plant post-construction monitoring, only one forest breeding bird fatality, a Wood Thrush, has been recorded during the breeding bird season (Stantec 2010a, 2010b, 2011a, 2011b and 2011c).

The marsh breeding bird species found breeding on Amherst Island in proximity to the Project Location include American Bittern, Virginia Rail, Marsh Wren, Common Loon, Great Blue Heron, and Green Heron. These species are not expected to engage in high risk behaviours during breeding season; life cycle activities for these species (mating, foraging, and rearing of young) typically occur at heights that are below the blade sweep zone. While Wilson's Snipe are not specifically identified as marsh species, they were recorded in the marsh habitats within the Project Area. These species conduct aerial mating displays and may be at higher risk to collisions with turbines.

Comment: Common Loons are present in great numbers in the water surrounding Amherst Island. Over 100 loons have been seen on several occasions. The above paragraphs fails to mention that these birds fly over the island in the mornings at heights which put them in danger of collision with the turbine blades.

The shrub/successional breeding bird species found on Amherst Island in proximity to the Project Location include Brown Thrasher, Field Sparrow, Eastern Towhee, Willow Flycatcher and Black-billed Cuckoo. These species are not expected to engage in high risk behaviours during breeding season and typically occur at heights that are below the blade sweep zone. While Wilson's Snipe and American Woodcock are not specifically identified as shrub/successional species, they were recorded in the shrub/successional habitats within the Project Area. These species conduct aerial mating displays and may be at higher risk to collisions with turbines.

Overall, the annual fatality rate for all birds on Wolfe Island is likely a reasonable indicator of fatality rate on Amherst Island. This rate has been higher than average for wind power facilities; 13.4 birds/turbine/year during the first year of operation (2009/2010) and 10 birds/turbine/year during the second year of operation (2010-2011). The higher mortality rates on Wolfe Island can be attributed partially to the high density of grassland breeding birds and the large number of late summer staging swallows; similar risk factors occur on Amherst Island. Monitoring results to date from operational facilities indicate that wind turbines are not a major concern with respect to the sustainability of migratory bird populations in Ontario (Friesen 2011; MNR 2011c) and are a small contributor to overall bird mortality when compared to other anthropogenic influences (e.g. farming practices and house cats) (Arnett et al. 2007; Kingsley and Whittam 2007; National Academy of Sciences 2007; Kerlinger et al. 2011). Friesen (2011) concludes the mortality rates at Wolfe Island are likely not significant with respect to local or regional populations of species, in part because the mortality is spread among at least 58 species.

Comment: Following are the parameters of the carcass searches conducted on Wolfe Island.

Carcass searches are conducted at half the WTGs twice per week and at the other half once per week; the two groups shall be rotated so that one week the subset of WTGs receives the less intensive treatment, and the next week the more intensive treatment.

To reduce some imprecision arising from the alternating carcass search schedule, one recommendation of Monitoring Report No. 2 (Stantec Consulting Ltd., May 2010) was to change to a search schedule in which one half the WTGs are searched twice weekly (3.5 day search interval) and the other half are searched once weekly (7 day search interval) without rotation. With agreement from the agencies, the latter approach was adopted starting at the beginning of May 2010.

Due to the very low levels of scavenger removal and mortality observed over the winter months, one recommendation of Monitoring Report No. 3 was to reduce the frequency of the winter carcass searches in December, January and February. With agreement from the agencies, in the Reporting Period, all WTGs were searched once weekly (7 day search interval) from December 19-31, 2011.

The carcass searches consisted of one surveyor searching clear or minimally-vegetated portions (as recommended by Environment Canada [2007b]) of a 50 m radius area under each WTG, walking concentric transects spaced at approximately 7 m intervals starting at 2 m from

the WTG base.

It is concerning that the Wolfe Island carcass searches occur bi-weekly at best and that the radius searched is 50 meters, a distance decided upon in 2007 when turbines were substantially smaller and the corresponding rotor sweep also much smaller.

5.7 SUMMARY OF IMPACTS AND MITIGATION

The Project will result in the erection of up to 36 wind turbines as well as the installation of supporting infrastructure, such as access roads, electrical cabling, and a substation. Through a comprehensive review of background material in conjunction with site-specific investigations and Evaluation of Significance surveys, several significant, or presumed significant, natural features and wildlife habitats have been identified in or within 120 m of the Project Location.

As part of this Environmental Impact Study, a series of monitoring commitments and mitigation measures have been recommended to be implemented as part of the development of this Project. These recommendations have been developed in association with the specific significant natural features and wildlife habitats that have been identified within the Study Area. The application of these protective, mitigation, and compensation measures are expected to address any negative environmental effects of construction, operation and decommissioning of the Project on the natural heritage features in the Study Area and their associated ecological functions.

6.0 Closure

This NHA and Environmental Impact Study for the Windlectric Inc. Amherst Island Wind Energy Project has been prepared in accordance with O.Reg 359/09, s. 24-28 and 37-38.

The application of these protective, mitigation, and compensation measures are expected to address any negative environmental effects of construction, operation and decommissioning of the Project on the natural heritage features in the Study Area and their associated ecological functions. An environmental effects monitoring plan that includes a post-construction monitoring program will be developed to confirm the accuracy of predicted effects as well as to monitor the effects to other natural elements. Mortality monitoring, as required and described by the MOE, is described in the environmental effects monitoring plan, and will be conducted for three years following construction.

Stantec Consulting Ltd. prepared this NHA and Environmental Impact Study for Windlectric Inc. for the Amherst Island Wind Energy Project. Windlectric Inc. is committed to implementing the appropriate protection and mitigation measures as they apply to the construction and operation of the proposed Project.

Appendix 1

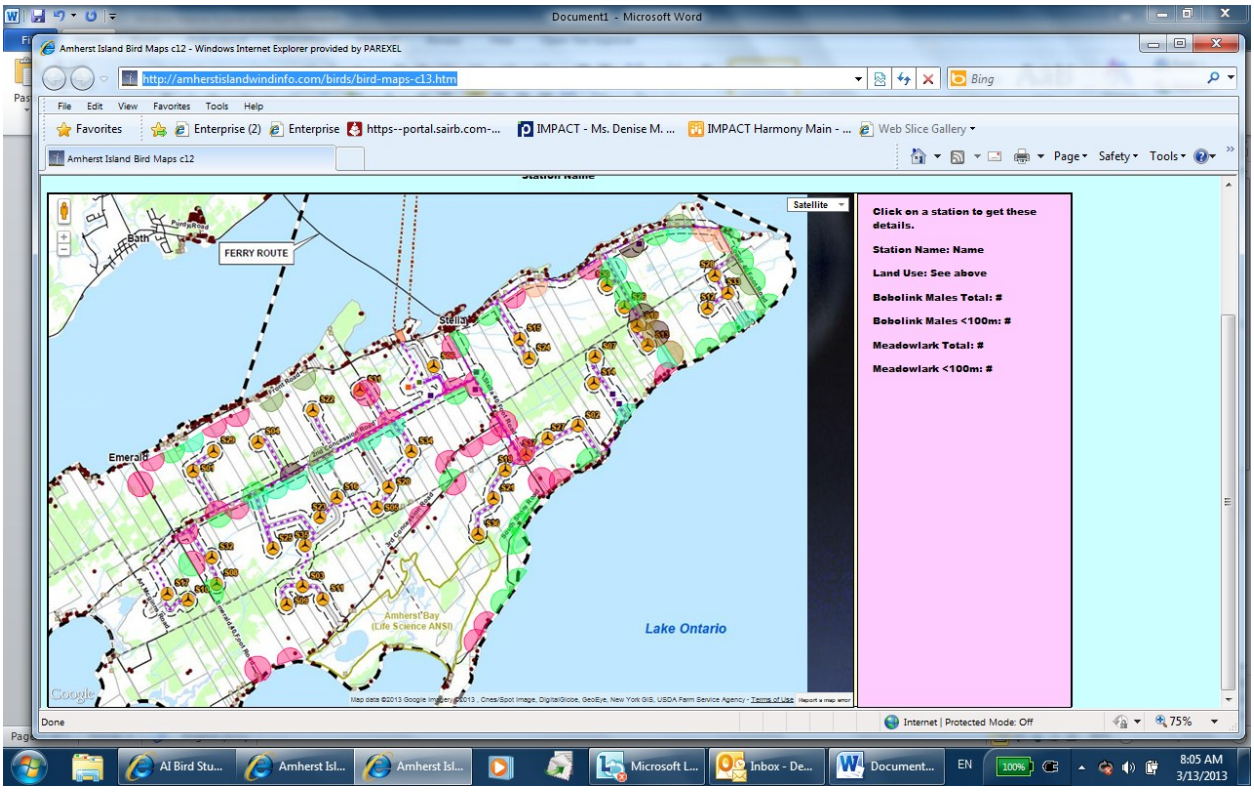
Kurt Hennige performed a survey of several threatened bird species on Amherst Island. During June 2012 Kurt traveled four routes (East, Centre, Northwest and Southwest) observing and recording the presence of these species from a total of 64 stopping points spread along public roads. He made three trips along each of the routes, observing for five minutes at each station.

Of these 64 stopping points, 27 had suitable habitat on both sides of the road. In this case two "stations" were defined at that point and separate observations were made on each side of the road. At the other 37 points with suitable habitat on one side of the road so only one station was defined. Each stopping point was given a number and the one or two stations at that point were given a direction, depending on the orientation of the road. Thus the station on the east side of the fifth stopping point of the East route would be named EA 5-E. There were a total of 91 stations (27*2 + 37 = 91).

Kurt concentrated on the Bobolink and Meadowlark as both species are presently listed as threatened in Ontario. His observations show that Amherst Island supports large numbers of both species. During his trips he observed a high-water mark of 561 Bobolinks (of which 316 were within 100m) and 158 Meadowlarks (of which 91 were within 100m).

Additional information and an interactive map are available at the following.

http://amherstislandwindinfo.com/birds/



Appendix 2

GRASSLAND SAR SURVEY 2012 /AMHERST ISLAND EAST - ABRIDGED

Table below is abridged - additional information including weather conditions, land use, vegetation height, presence of grazer, location use class and observations distance up to 400m available. All observations in June of 2012 by Kurt Hennige - 5 minute point counts. Map of point count loaction is Appendix A / All GPS locations removed as this is a public doucment / All additional information available upon request to dmpwfw@gmail.com.

Common Name	OBS. DAY	OBSERVATION DETAILS	Distrance < 100 meters	Distance > 100 meters	LOCATION	Start Time	LANDUSE
Bobolink	7	3 male - chasing 1 female - chased 1 male - singing	5		AI - Station 1	5:15	Hayfield - 15% Early Shrub Succession - 85%
Bobolink	7	2 male - singing		2	AI - Station 1	5:15	Hayfield - 15% Early Shrub Succession - 85%
Bobolink	19	1 male	1		AI - Station 1	5:06	Hayfield - 15% Early Shrub Succession - 85%
Bobolink	19	1 female 4 male - singing		5	AI - Station 1	5:06	Hayfield - 15% Early Shrub Succession - 85%
Eastern Meadow Lark	19	1 bird calling		1	AI - Station 1	5:06	Hayfield - 15% Early Shrub Succession - 85%
Bobolink	28	1 bird	1		AI - Station 1	5:20	Hayfield - 15% Early Shrub Succession - 85%
Bobolink	28	1 male - singing		1	AI - Station 1	5:20	Hayfield - 15% Early Shrub Succession - 85%
Eastern Meadow Lark	28	4 - family group 1 bird calling		5	AI - Station 1	5:20	Hayfield - 15% Early Shrub Succession - 85%
Barn Swallow	28	6 - flying	6		AI - Station 1	5:20	Hayfield - 15% Early Shrub Succession - 85%
Bobolink	7	1 male singing	1		AI - Station 2	5:02	Sheep Pasture - light grazing
Eastern Meadow Lark	7	1 bird calling	1		AI - Station 2	5:02	Sheep Pasture - light grazing
Barn Swallow	7	3 - flying		3	AI - Station 2	5:02	Sheep Pasture - light grazing
Bobolink	19	1 male singing	1		AI - Station 2	5:14	Sheep Pasture - light grazing
Bobolink	19	3 male - singing		3	AI - Station 2	5:14	Sheep Pasture - light grazing
Bobolink	19	2 - flying 1 male		3	AI - Station 2	5:14	Sheep Pasture - light grazing
Eastern Meadow Lark	19	1 bird	1		AI - Station 2	5:14	Sheep Pasture - light grazing
Eastern Meadow Lark	28	1 flying	1		AI - Station 2	5:30	Sheep Pasture - light grazing
Barn Swallow	28	3 - flying		3	AI - Station 2	5:30	Sheep Pasture - light grazing

Bobolink	7	1 male singing	1		AI - Station 3	5:34	Sheep Pasture - heavy grazing
Barn Swallow	7	2 flying	2		AI - Station 3	5:34	Sheep Pasture - heavy grazing
Bobolink	7	4 male singing 1 female flying		5	AI - Station 3	5:34	Abandoned Pasture / Tree Plantation

Bobolink	19	2 flying	2		AI - Station 3	5:23	Sheep Pasture - heavy grazing
Barn Swallow	19	3 flying		3	AI - Station 3	5:23	Sheep Pasture - heavy grazing
Bobolink	19	2 male - singing 1 male 1 female (feeding)		4	AI - Station 3	5:23	Abandoned Pasture / Tree Plantation
Bobolink	19	1 bird		1	AI - Station 3	5:23	Abandoned Pasture / Tree Plantation

Bobolink	28	1 male flying	1		AI - Station 3	5:40	Sheep Pasture - heavy grazing
Barn Swallow	28	4 birs	4		AI - Station 3	5:40	Sheep Pasture - heavy grazing
Bobolink	28	3 male flying 1 female flying		4	AI - Station 3	5:40	Abandoned Pasture / Tree Plantation

Bobolink	7	1 male - singing	1		AI - Station 4	5:48	80% abandoned field 20% Sheep Pasture - heavy grazing
Bobolink	7	2 male - singing		2	AI - Station 4	5:48	80% abandoned field 20% Sheep Pasture - heavy grazing
Eastern Meadow Lark	7	1 bird flying		1	AI - Station 4	5:48	80% abandoned field 20% Sheep Pasture - heavy grazing

Bobolink	19	2 birds		2	AI - Station 4	5:37	80% abandoned field 20% Sheep Pasture - heavy grazing
Eastern Meadow Lark	19	1 bird		1	AI - Station 4	5:37	80% abandoned field 20% Sheep Pasture - heavy grazing
Barn Swallow	19	3 - flying		3	AI - Station 4	5:37	80% abandoned field 20% Sheep Pasture - heavy grazing

Bobolink	28	2 male - singing		2	AI - Station 4	5:58	80% abandoned field 20% Sheep Pasture - heavy grazing
Barn Swallow	28	3 flying	3		AI - Station 4	5:58	80% abandoned field 20% Sheep Pasture - heavy grazing
Barn Swallow	28	2 flying		2	AI - Station 4	5:58	80% abandoned field 20% Sheep Pasture - heavy grazing

Bobolink	7	2 males - singing	2		AI - Station 5	5:56	Pasture / horses - light grazing

Bobolink	7	4 males - chasing 1 female - chased		5	AI - Station 5	5:56	Pasture / horses - light grazing
Eastern Meadow Lark	7	1 bird flying 1 bird calling	2		AI - Station 5	5:56	Pasture / horses - light grazing
Bobolink	7	3 male - chasing 2 female - chased 2 male - singing		7	AI - Station 5	5:56	Hay field - abandoned

Bobolink	19	2 male - flying 1 female - flying 2 male - singing		5	AI - Station 5	5:45	Pasture / horses - light grazing
Bobolink	19	3 male - singing		3	AI - Station 5	5:45	Pasture / horses - light grazing
Eastern Meadow Lark	19	1 bird		1	AI - Station 5	5:45	Pasture / horses - light grazing
Bobolink	19	3 birds		3	AI - Station 5	5:45	Hay field - abandoned
Eastern Meadow Lark	19	1 bird		1	AI - Station 5	5:45	Hay field - abandoned

Bobolink	28	1 male - flying 2 male		3	AI - Station 5	6:10	Pasture / horses - light grazing
Eastern Meadow Lark	28	2 bird calling		2	AI - Station 5	6:10	Pasture / horses - light grazing
Bobolink	28	2 male calling	2		AI - Station 5	6:10	Hay field - abandoned
Bobolink	28	1 female - flying 1 male - flying (possibly feeding group) 1 female - flying (possibly feeding group		3	AI - Station 5	6:10	Hay field - abandoned

Bobolink	7	3 male - chasing 1 female - chased	4		AI - Station 6	6:09	Pasture / cows - light grazing
Bobolink	7	2 male - singing		2	AI - Station 6	6:09	Pasture / cows - light grazing
Bobolink	7	1 male - singing	1		AI - Station 6	6:09	70% tree plantation 30% abandoned pasture
Bobolink	7	1 male - singing 3 male - chasing 2 female - chased		6	AI - Station 6	6:09	70% tree plantation 30% abandoned pasture
Barn Swallow	7	2 - flying		2	AI - Station 6	6:09	70% tree plantation 30% abandoned pasture
Bobolink	19	1 female - flying 1 male - singing	2		AI - Station 6	6:00	Pasture / cows - light grazing
Bobolink	19	5 male - singing		5	AI - Station 6	6:00	Pasture / cows - light grazing
Eastern Meadow Lark	19	1 bird calling		1	AI - Station 6	6:00	Pasture / cows - light grazing
Bobolink	19	2 male - singing	2		AI - Station 6	6:00	70% tree plantation 30% abandoned pasture
Bobolink	19	1 male - singing		1	AI - Station 6	6:00	70% tree plantation 30% abandoned pasture

Bobolink	28	1 male - flying	1		AI - Station 6	6:26	Pasture / cows - light grazing
Bobolink	28	2 male - singing	1		AI - Station 6	6:26	70% tree plantation 30% abandoned pasture
Barn Swallow	28	3 flying		3	AI - Station 6	6:26	70% tree plantation 30% abandoned pasture

Bobolink	7	2 male -chasing 1 female - chased	3		AI - Station 7	6:25	Pasture / cows - light grazing
Bobolink	7	1 male singing		1	AI - Station 7	6:25	Pasture / cows - light grazing
Eastern Meadow Lark	7	1 bird flying		1	AI - Station 7	6:25	Pasture / cows - light grazing
Bobolink	7	3 male -chasing 1 female - chased	4		AI - Station 7	6:25	70% tree plantation 30% abandoned pasture
Bobolink	7	2 male - singing		2	AI - Station 7	6:25	70% tree plantation 30% abandoned pasture

Bobolink	19	1 male - singing	1		AI - Station 7	6:13	Pasture / cows - light grazing
Bobolink	19	2 male - singing 1 bird		3	AI - Station 7	6:13	Pasture / cows - light grazing
Barn Swallow	19	2 flying		2	AI - Station 7	6:13	Pasture / cows - light grazing
Bobolink	19	3 male - singing		3	AI - Station 7	6:13	70% tree plantation 30% abandoned pasture
Eastern Meadow Lark	19	2 bird - calling		2	AI - Station 7	6:13	70% tree plantation 30% abandoned pasture

Bobolink	27	1 male - flying 1 female - flying	2		AI - Station 7	6:43	Pasture / cows - light grazing

Bobolink	7	1 male - singing 3 male - chasing 1 female - chased		5	AI - Station 8	6:44	40% Pasture / cows - light grazing 60% abandoned pasture
Barn Swallow	7	2 flying		2	AI - Station 8	6:44	40% Pasture / cows - light grazing 60% abandoned pasture

Bobolink	19	2 male - singing		2	AI - Station 8	6:26	40% Pasture / cows - light grazing 60% abandoned pasture
Eastern Meadow Lark	19	1 bird calling		1	AI - Station 8	6:26	40% Pasture / cows - light grazing 60% abandoned pasture

Bobolink	28	1 male - flying		1	AI - Station 8	6:26	40% Pasture / cows - light grazing 60% abandoned pasture
Barn Swallow	28	4 birds	4		AI - Station 8	6:26	40% Pasture / cows - light grazing 60% abandoned pasture

Eastern Meadow Lark	7	2 birds calling		2	AI - Station 9	7:01	Sheep pasture - heavy grazing

Barn Swallow	7	3 birds flying	3		AI - Station 9	7:01	Sheep pasture - heavy grazing

Eastern Meadow Lark	19	1 bird		1	AI - Station 9	6:35	Sheep pasture - heavy grazing
Barn Swallow	19	5 birds flying	5		AI - Station 9	6:35	Sheep pasture - heavy grazing

Bobolink	7	4 male - chasing 2 female - chased		6	AI - Station 10	7:11	Sheep pasture - heavy grazing
Eastern Meadow Lark	7	1 bird calling		1	AI - Station 10	7:11	Sheep pasture - heavy grazing

Bobolink	19	5 male - singing 1 female		6	AI - Station 10	6:43	Sheep pasture - heavy grazing
Eastern Meadow Lark	19	2 - flying		2	AI - Station 10	6:43	Sheep pasture - heavy grazing

Bobolink	27	14 male - flying	14		AI - Station 10	7:11	Sheep pasture - heavy grazing

Bobolink	7	3 male chasing 2 female - chased	5		AI - Station 11	7:23	Pasture - no grazing
Eastern Meadow Lark	7	1 bird calling		1	AI - Station 11	7:23	Pasture - no grazing
Barn Swallow	7	2 flying		2	AI - Station 11	7:23	Pasture - no grazing

Bobolink	19	1 male singing	1		AI - Station 11	6:52	Pasture - no grazing
Eastern Meadow Lark	19	1 bird calling	1		AI - Station 11	6:52	Pasture - no grazing
Barn Swallow	19	8 - flying	8		AI - Station 11	6:52	Pasture - no grazing

Eastern Meadow Lark	28	1 bird calling 4 - family group	5		AI - Station 11	7:31	Pasture - no grazing

GRASSLAND SAR SURVEY 2012 AMHERST ISLAND CENTRE - ABRIDGED

Table below is abridged - additional information including weather conditions, land use, vegetation height, presence of grazer, location use class and observations distance up to 400m available. All observations in June of 2012 by Kurt Hennige - 5 minute point counts. Map of point count loaction is Appendix A / All GPS locations removed as this is a public doucment / All additional information available upon request to dmpwfw@gmail.com.

Common Name	OBS. DAY	OBSERVATION DETAILS	Bobolink <100m	Meadowlark <100m	station location	LOCATION	Start Time
Bobolink	9	3 male - chasing 1 femal - chased	4	1	south-side	AI - Station 1	5:11
Bobolink	16	1 male singing				AI - Station 1	5:40
Eastern Meadow Lark	16	1 male singing				AI - Station 1	5:40
Bobolink	27	1 female - flying to nest 1 male				AI - Station 1	5:25
Bobolink	9	1 male singing	3	1	south-side	AI - Station 2	5:19
Bobolink	9	2 male - chasing 1 female - chased				AI - Station 2	5:19
Eastern Meadow Lark	9	1 bird calling				AI - Station 2	5:19
Bobolink	16	1 female flying				AI - Station 2	5:50
Bobolink	16	3 male - calling				AI - Station 2	5:50
Bobolink	16	3 male - calling				AI - Station 2	5:50
Eastern Meadow Lark	16	1 bird flying				AI - Station 2	5:50
Barn Swallow	16	7 - flying				AI - Station 2	5:50
Bobolink	27	1 male - flying				AI - Station 2	5:35
Eastern Meadow Lark	27	1 bird calling				AI - Station 2	5:35
Bobolink	9	5 male - chasing 2 female - chased 2 male - singing	2	2	south-side	AI - Station 3	5:28
Eastern Meadow Lark	9	bird calling				AI - Station 3	5:28
Bobolink	16	5 male singing				AI - Station 3	6:00
Eastern Meadow Lark	16	2 male singing				AI - Station 3	6:00
Short-eared Owl	16	2 birds hunting				AI - Station 3	6:00
Bobolink	27	1 male - flying 1 female - flying				AI - Station 3	5:44
Bobolink	9	3 male - flying 1 femlae - flying	4	5	south-side	AI - Station 4	5:37
Bobolink	9	1 male singing				AI - Station 4	5:37

Eastern Meadow Lark	9	1 bird calling				AI - Station 4	5:37
Barn Swallow	9	2 - flying				AI - Station 4	5:37
Short-eared Owl	9	1 male sitting in tree				AI - Station 4	5:37

Bobolink	16	1 male singing				AI - Station 4	6:13
Bobolink	16	2 male singing 1 female				AI - Station 4	6:13
Eastern Meadow Lark	16	2 male singing				AI - Station 4	6:13
Barn Swallow	16	2 flying				AI - Station 4	6:13

Bobolink	27	2 male singing 1 male				AI - Station 4	5:54
Eastern Meadow Lark	27	5 - family group				AI - Station 4	5:54
Barn Swallow	27	5 flying				AI - Station 4	5:54

Bobolink	9	1 male - singing 2 male - chasing 1 female - chased	4	1	east-side	AI - Station 5	5:47
Eastern Meadow Lark	9	1 bird calling				AI - Station 5	5:47
Bobolink	9	6 male - chasing 2 female - chased	4	1	west-side	AI - Station 5	5:47

Bobolink	16	2 birds - calling				AI - Station 5	6:22
Eastern Meadow Lark	16	1 male singing				AI - Station 5	6:22
Bobolink	16	1 female - flying				AI - Station 5	6:22
Bobolink	16	2 male singing				AI - Station 5	6:22
Bobolink	16	3 male - singing 5 male - singing				AI - Station 5	6:22
Eastern Meadow Lark	16	1 male singing				AI - Station 5	6:22

Bobolink	27	1 male - sitting				AI - Station 5	6:03
Eastern Meadow Lark	27	4 - family group				AI - Station 5	6:03
Bobolink	27	1 male - singing 2 male				AI - Station 5	6:03
Bobolink	27	2 male				AI - Station 5	6:03
Eastern Meadow Lark	27	1 bird calling				AI - Station 5	6:03

Bobolink	9	1 male - singing	1	1	east-side	AI - Station 6	6:02
Eastern Meadow Lark	9	1 bird calling				AI - Station 6	6:02
Bobolink	9	1 male - singing	6	2	west-side	AI - Station 6	6:02
Bobolink	9	1 male - singing 5 male chasing 2 female - chased				AI - Station 6	6:02

Bobolink	16	1 male - singing				AI - Station 6	6:37

Eastern Meadow Lark	16	1 male - singing				AI - Station 6	6:37
Bobolink	16	1 female in grass - agitated				AI - Station 6	6:37
Bobolink	16	2 male - flying 2 female - flying 3 male - singing 1 bird - calling				AI - Station 6	6:37
Bobolink	16	5 male - singing				AI - Station 6	6:37

Bobolink	27	1 male				AI - Station 6	6:16
Bobolink	27	1 male - singing 1 female - flying				AI - Station 6	6:16
Eastern Meadow Lark	27	1 - flying				AI - Station 6	6:16
Bobolink	27	1 male - possibly feeding young				AI - Station 6	6:16

Bobolink	9	2 male - singing	4	1	east-side	AI - Station 7	6:14
Bobolink	9	1 male - singing 5 male - chasing 2 female - chased	8	1	west-side	AI - Station 7	6:14
Eastern Meadow Lark	9	1 bird calling				AI - Station 7	6:14

Bobolink	9	2 birds - calling 1 male - singing				AI - Station 7	6:51
Eastern Meadow Lark	9	1 bird calling				AI - Station 7	6:51
Barn Swallow	9	4 - flying				AI - Station 7	6:51
Bobolink	9	1 femlale - flying				AI - Station 7	6:51
Bobolink	9	2 male - singing				AI - Station 7	6:51
Bobolink	9	1 male singing (cut hayfield) 1 bird calling				AI - Station 7	6:51

Bobolink	27	1 male - flying 2 male - chasing 1 female - chased				AI - Station 7	6:29
Eastern Meadow Lark	27	1 bird calling - cut hayfield				AI - Station 7	6:29
Barn Swallow	27	6 - flying				AI - Station 7	6:29

Bobolink	9	4 male - chasing 2 female - chased	6	0	East-side	AI - Station 8	6:26
Barn Swallow	9	4 flying				AI - Station 8	6:26
Bobolink	9	3 male - chasing 1 female - chased	4	4	West-side	AI - Station 8	6:26
Eastern Meadow Lark	9	1 bird calling				AI - Station 8	6:26
Barn Swallow	9	3 flying				AI - Station 8	6:26
Bobolink	16	2 birds - calling				AI - Station 8	6:26
Bobolink	16	3 birds - calling 1 male - flying 1 male - singing				AI - Station 8	6:26

Bobolink	27	3 male - flying				AI - Station 8	6:42
Bobolink	27	1 bird calling				AI - Station 8	6:42
Eastern Meadow Lark	27	4 - family group				AI - Station 8	6:42

Bobolink	9	3 male - chasing 1 female - chased	4	0	East-side	AI - Station 9	6:39
Bobolink	9	1 male - singing				AI - Station 9	6:39
Bobolink	9	1 male - singing 4 male - chasing 2 female - chased	7	0	West-side	AI - Station 9	6:44
Bobolink	9	1 male - singing				AI - Station 9	6:44
Barn Swallow	9	3 flying				AI - Station 9	6:44

Bobolink	16	1 male - singing				AI - Station 9	7:20
Bobolink	16	4 male - singing				AI - Station 9	7:20
Barn Swallow	16	3 flying				AI - Station 9	7:20
Bobolink	16	2 - flying - pair				AI - Station 9	7:20
Bobolink	16	4 male - singing 1 bird - calling				AI - Station 9	7:20
Bobolink	16	1 male - flying				AI - Station 9	7:20

Bobolink	27	1 female - flying down to nest				AI - Station 9	6:55
Bobolink	27	2 male - flying				AI - Station 9	6:55
Barn Swallow	27	2 flying				AI - Station 9	6:55
Bobolink	27	2 male - flying				AI - Station 9	6:55
Eastern Meadow Lark	27	6 - family group				AI - Station 9	6:55
Barn Swallow	27	5 - flying				AI - Station 9	6:55

Bobolink	9	4 male - chasing 1 female -chased	4	0	North-side	AI - Station 10	6:54

Bobolink	16	4 male - singing				AI - Station 10	7:33
Bobolink	16	1 bird calling				AI - Station 10	7:33
Eastern Meadow Lark	16	1 male - singing				AI - Station 10	7:33

Bobolink	27	1 male singing				AI - Station 10	7:08
Bobolink	27	4 - drop to ground - possible family group 1 male - flying 1 female - flying				AI - Station 10	7:08

Bobolink	9	3 male - chasing 1 female - chased 1 male - singing	1	1	North-side	AI - Station 11	7:05
Eastern Meadow Lark	9	1 bird calling				AI - Station 11	7:05
Barn Swallow	9	5 flying				AI - Station 11	7:05

Bobolink	16	3 male - sining				AI - Station 11	7:40
Bobolink	16	1 bird				AI - Station 11	7:40
Eastern Meadow Lark	16	1 male singing				AI - Station 11	7:40
Bobolink	27	1 male - flying				AI - Station 11	7:15
Bobolink	27	5 - family group				AI - Station 11	7:15
Bobolink	27	3 flying				AI - Station 11	7:15
Bobolink	9	3 male - chasing 1 female - chased	4	1	North-side	AI - Station 12	7:15
Eastern Meadow Lark	9	1 bird calling				AI - Station 12	7:15
Barn Swallow	9	3 flying				AI - Station 12	7:15
Eastern Meadow Lark	16	1 male - singing				AI - Station 12	7:48
Barn Swallow	16	5 - flying				AI - Station 12	7:48
Bobolink	27	3 male - flying				AI - Station 12	7:23
Barn Swallow	27	4 - flying				AI - Station 12	7:23
Bobolink	9	1 male - flying 1 male - singing	1	0	North-side	AI - Station 13	7:24
Barn Swallow	9	4 - flying				AI - Station 13	7:24
Bobolink	16	1 male - flying				AI - Station 13	7:24
Barn Swallow	16	3 - flying				AI - Station 13	7:24
Bobolink	27	1 male - flying				AI - Station 13	7:31
Barn Swallow	27	5 - flying				AI - Station 13	7:31
Bobolink	9	1 male - singing	1	0	East-side	AI - Station 14	7:36
Bobolink	9	5 male - chasing 2 female - chased	7	1	West-side	AI - Station 14	7:36
Eastern Meadow Lark	9	1 bird calling				AI - Station 14	7:36
Bobolink	16	2 birds				AI - Station 14	7:52
Eastern Meadow Lark	16	1 bird				AI - Station 14	7:52
Bobolink	16	1 female 1 male - singing				AI - Station 14	7:52
Bobolink	16	3 male - singing				AI - Station 14	7:52

Bobolink	16	2 male - singing				AI - Station 14	7:52
Eastern Meadow Lark	16	2 male - singing				AI - Station 14	7:52
Bobolink	27	1 male - flying (shrubs)				AI - Station 14	7:40
Bobolink	27	1 male chasing				AI - Station 14	7:40
Bobolink	27	3 male - flying 1 male - chasing 1 female - dropping into grass 1 male				AI - Station 14	7:40
Eastern Meadow Lark	27	1 bird calling				AI - Station 14	7:40
Bobolink	9	1 male - singing	1	0	East-side	AI - Station 15	7:53
Bobolink	9	5 male - chasing 3 female - chased	8	3	West-side	AI - Station 15	7:53
Eastern Meadow Lark	9	1 bird - calling				AI - Station 15	7:53
Bobolink	16	1 female				AI - Station 15	8:04
Bobolink	16	6 male - singing				AI - Station 15	8:04
Eastern Meadow Lark	16	1 bird calling				AI - Station 15	8:04
Bobolink	27	1 male				AI - Station 15	7:58
Bobolink	27	1 female - flying 3 male - singing 1 male - flying 1 male				AI - Station 15	7:58
Eastern Meadow Lark	27	3 - flying				AI - Station 15	7:58
Bobolink	9	4 male-chasing 3 female chased	7	1	South-side	AI - Station 16	8:06
Eastern Meadow Lark	9	male calling				AI - Station 16	8:06
Bobolink	16	6 male-singing 2 female 1 male				AI - Station 16	8:06
Bobolink	16	1 male singing				AI - Station 16	8:06
Eastern Meadow Lark	16	1 bird flying				AI - Station 16	8:06
Bobolink	27	1 male singing, 1 female flying				AI - Station 16	8:14
Bobolink	27	3 male chasing 1 femaile chased				AI - Station 16	8:14
Bobolink	9	2 male - singing	3	0	East-side	AI - Station 17	8:19

Eastern Meadow Lark	9	1 bird - calling				AI - Station 17	8:19
Bobolink	9	3 male - chasing 2 female - chased	6	0	West-side	AI - Station 17	8:19
Bobolink	9	1 male - singing				AI - Station 17	8:19
Eastern Meadow Lark	9	1 bird - calling				AI - Station 17	8:19

Bobolink	16	1 male - flying				AI - Station 17	8:29
Bobolink	16	1 male - flying				AI - Station 17	8:29
Bobolink	16	3 male - singing				AI - Station 17	8:29

Bobolink	27	2 male - flying				AI - Station 17	8:29
Bobolink	27	1 male - flying 1 female - flying 1 male				AI - Station 17	8:29

Bobolink	9	5 male - chasing 2 female - chased	7	1	East-side	AI - Station 18	8:35
Bobolink	9	3 male - chasing 1 female - chased				AI - Station 18	8:35
Eastern Meadow Lark	9	1 bird - flying				AI - Station 18	8:35
Bobolink	9	2 male - chasing 1 female - chased	9	1	West-side	AI - Station 18	8:35
Bobolink	9	4 male - chasing 2 female - chased 1 male - singing				AI - Station 18	8:35
Eastern Meadow Lark	9	1 bird - calling				AI - Station 18	8:35

Bobolink	16	2 male - singing				AI - Station 18	8:43
Bobolink	16	4 male - singing 1 female				AI - Station 18	8:43
Bobolink	16	1 bird - calling				AI - Station 18	8:43
Bobolink	16	1 female (with food) 1 male				AI - Station 18	8:43
Bobolink	16	4 male - singing 1 bird - calling				AI - Station 18	8:43
Bobolink	16	4 male - singing				AI - Station 18	8:43

Barn Swallow	27	4 - flying				AI - Station 18	8:43
Bobolink	27	1 female - flying (dropping to ground)				AI - Station 18	8:43
Bobolink	27	3 male - flying 1 female - flying				AI - Station 18	8:43
Eastern Meadow Lark	27	5 - family group				AI - Station 18	8:43

GRASSLAND SAR SURVEY 2012 AMHERST ISLAND NW - ABRIDGED

Table below is abridged - additional information including weather conditions, land use, vegetation height, presence of grazer, location use class and observations distance up to 400m available. All observations in June of 2012 by Kurt Hennige - 5 minute point counts. Map of point count loaction is Appendix A / All GPS locations removed as this is a public doucment / All additional information available upon request to dmpwfw@gmail.com.

Common Name	OBS. DAY	OBSERVATION DETAILS	Bobolink <100m	Meadowlark <100m	station location	LOCATION	Start Time
Bobolink	8	1 male - singing	3	0	south-side	AI - Station 1	5:08
Bobolink	8	5 male - chasing 2 female - chased 2 male - singing				AI - Station 1	5:08
Bobolink	8	1 male	3	1	North-side	AI - Station 1	5:08
Eastern Meadow Lark	8	1 bird				AI - Station 1	5:08
Eastern Meadow Lark	8	1 - flying				AI - Station 1	5:08
Bobolink	15	3 male - singing				AI - Station 1	5:15
Bobolink	15	2 male - singing				AI - Station 1	5:15
Eastern Meadow Lark	15	1 bird calling				AI - Station 1	5:15
Bobolink	25	1 male singing 1 male 1 male - flying				AI - Station 1	5:20
Eastern Meadow Lark	25	1 bird				AI - Station 1	5:20
Bobolink	8	1 male - flying	1	1	South-side	AI - Station 2	5:21
Eastern Meadow Lark	8	bird calling				AI - Station 2	5:21
Bobolink	8	4 male - chasing 2 female - chased	2	1	North-side	AI - Station 2	5:21
Bobolink	15	3 male - singing				AI - Station 2	5:32
Bobolink	15	6 bird calling				AI - Station 2	5:32
Eastern Meadow Lark	15	1 bird calling				AI - Station 2	5:32
Bobolink	15	2 male - singing				AI - Station 2	5:32
Bobolink	15	1 bird calling				AI - Station 2	5:32
Bobolink	25	1 bird				AI - Station 2	5:36
Eastern Meadow Lark	25	1 bird				AI - Station 2	5:36
Bobolink	25	2 male - singing				AI - Station 2	5:36
Bobolink	25	1 male - flying				AI - Station 2	5:36
Bobolink	8	3 male - singing	2	0	East-side	AI - Station 3	5:36
Bobolink	8	3 male - chasing 1 female - chased 1 male - singing 1 male - flying	2	5	West-side	AI - Station 3	5:36
Bobolink	15	1 male - singing				AI - Station 3	5:49
Bobolink	15	1 male - singing				AI - Station 3	5:49
Bobolink	15	2 male - singing				AI - Station 3	5:49
Eastern Meadow Lark	15	1 bird calling				AI - Station 3	5:49
Bobolink	15	2 male - singing 2 bird calling				AI - Station 3	5:49

Bobolink	26	1 bird calling 1 male - flying				AI - Station 3	5:52
Bobolink	26	1male				AI - Station 3	5:52
Bobolink	26	1 male calling				AI - Station 3	5:52
Eastern Meadow Lark	26	1 bird calling 4 bird - family group				AI - Station 3	5:52
Bobolink	8	2 male - singing 5 male - chasing 2 female - chased	4	5	south-side	AI - Station 4	5:49
Eastern Meadow Lark	8	1 male singing				AI - Station 4	5:49
Bobolink	15	2 male - singing 1 male - flying 1 female				AI - Station 4	6:04
Bobolink	15	4 male - singing				AI - Station 4	6:04
Eastern Meadow Lark	15	5 - family group				AI - Station 4	6:04
Eastern Meadow Lark	15	2 bird calling				AI - Station 4	6:04
Barn Swallow	15	4 - flying				AI - Station 4	6:04
Bobolink	26	2 male - flying				AI - Station 4	6:08
Bobolink	26	1 male - singing 2 male - flying 1 female - flying				AI - Station 4	6:08
Eastern Meadow Lark	26	5 flying				AI - Station 4	6:08
Eastern Meadow Lark	8	1 bird calling	3	6	south-side	AI - Station 5	5:59
Bobolink	8	1 male singing 2 male - chasing 1 female - chased				AI - Station 5	5:59
Barn Swallow	8	4 birds				AI - Station 5	5:59
Bobolink	15	2 male singing				AI - Station 5	6:12
Barn Swallow	15	3 - flying				AI - Station 5	6:12
Bobolink	26	2 male 1 male - flying				AI - Station 5	6:19
Eastern Meadow Lark	26	Family Group - 6				AI - Station 5	6:19

Bobolink	8	1 male - singing	4	0	south-side	AI - Station 6	6:09
Bobolink	8	2 male - singing 3 male - chasing 1 female - chased				AI - Station 6	6:09
Barn Swallow	8	3 birds				AI - Station 6	6:09

Bobolink	15	4 male - singing				AI - Station 6	6:24
Bobolink	15	2 male - sining				AI - Station 6	6:24
Eastern Meadow Lark	15	1 bird calling				AI - Station 6	6:24
Barn Swallow	15	3 flying				AI - Station 6	6:24

Bobolink	26	1 male - flying				AI - Station 6	6:28
Barn Swallow	15	9 birds				AI - Station 6	6:24

Bobolink	8	1 male singing	2	1	south-side	AI - Station 7	6:19

Bobolink	8	1 male - singing 5 male - chasing 2 female - chased	_	_	_	AI - Station 7	6:19
Eastern Meadow Lark	8	1 bird calling	_	_	_	AI - Station 7	6:19

Bobolink	15	2 male - singing	_	_	_	AI - Station 7	6:35
Bobolink	15	1 female 5 male - singing/display	_	_	_	AI - Station 7	6:35
Barn Swallow	15	3 flying	_	_	_	AI - Station 7	6:35

Bobolink	26	1 female - feeding young	_	_	_	AI - Station 7	6:38
Eastern Meadow Lark	26	1 bird calling	_	_	_	AI - Station 7	6:38
Barn Swallow	26	3 birds	_	_	_	AI - Station 7	6:38

Bobolink	8	2 male - singing	2	0	south-side	AI - Station 8	6:28
Eastern Meadow Lark	8	1 bird calling	_	_	_	AI - Station 8	6:28
Barn Swallow	8	5 birds	_	_	_	AI - Station 8	6:28

Bobolink	15	3 male - singing	_	_	_	AI - Station 8	6:44
Barn Swallow	15	8 - flying	_	_	_	AI - Station 8	6:44

Bobolink	26	1 male - flying 1 female - flying	_	_	_	AI - Station 8	6:42
Barn Swallow	26	3 birds	_	_	_	AI - Station 8	6:42

Bobolink	8	2 bird calling	2	2	south-side	AI - Station 9	6:38
Eastern Meadow Lark	8	1 bird calling	_	_	_	AI - Station 9	6:38
Barn Swallow	8	4 birds	_	_	_	AI - Station 9	6:38

Bobolink	15	2 male - singing 1 bird calling	_	_	_	AI - Station 9	6:54
Eastern Meadow Lark	15	1 bird calling	_	_	_	AI - Station 9	6:54
Eastern Meadow Lark	15	1 bird calling	_	_	_	AI - Station 9	6:54

Bobolink	26	1 male - flying 1 female - flying	_	_	_	AI - Station 9	6:51
Eastern Meadow Lark	26	2 - flying	_	_	_	AI - Station 9	6:51
Barn Swallow	26	3 - flying	_	_	_	AI - Station 9	6:51

Bobolink	8	1 bird	2	0	south-side	AI - Station 10	6:48
Bobolink	8	1 male - singing 4 male - flying 2 female - flying	_	_	_	AI - Station 10	6:48
Barn Swallow	8	4 birds	_	_	_	AI - Station 10	6:48
Barn Swallow	8	2 birds	_	_	_	AI - Station 10	6:48

Bobolink	15	1 female	_	_	_	AI - Station 10	7:06
Bobolink	15	1 female - carying food 4 male - singing	_	_	_	AI - Station 10	7:06
Eastern Meadow Lark	15	1 bird calling	_	_	_	AI - Station	7:06

						10	
Barn Swallow	15	2 birds				AI - Station 10	7:06
Bobolink	26	1 male 1 female - flying				AI - Station 10	6:59
Barn Swallow	26	3 flying				AI - Station 10	6:59
Bobolink	8	3 males chasing 1 female	7	4	east-side	AI - Station 11	7:02
Eastern Meadow Lark	8	1 bird calling				AI - Station 11	7:02
Bobolink	8	2 males chasing 2 females	1	0	west-side	AI - Station 11	7:02
Bobolink	15					AI - Station 11	
Bobolink	26	4 male 1 female 1 male - singing				AI - Station 11	7:08
Bobolink	26	1 male				AI - Station 11	7:08
Eastern Meadow Lark	26	4 - family group				AI - Station 11	7:08
Bobolink	26	1 male				AI - Station 11	7:08
Bobolink	8	1 bird	3	1	south-side	AI - Station 12	7:14
Bobolink	8	5 male - chasing 3 female - chased				AI - Station 12	7:14
Eastern Meadow Lark	8	1 bird calling				AI - Station 12	7:14
Bobolink	19	1 male - singing				AI - Station 12	7:05
Bobolink	19	3 male - singing 1 female - flying				AI - Station 12	7:05
Bobolink	19	1 bird flying				AI - Station 12	7:05
Bobolink	19	1 bird calling				AI - Station 12	7:05
Bobolink	19	1 male 2 birds				AI - Station 12	7:05
Bobolink	8	1 male singing	2	0	south-side	AI - Station 13	7:21
Eastern Meadow Lark	8	2 bird calling				AI - Station 13	7:21
Bobolink	8	2 male - singing	2	5	north-side	AI - Station 13	7:21
Eastern Meadow Lark	8	1 bird calling				AI - Station 13	7:21
Bobolink	19	2 male - singing				AI - Station 13	7:14
Eastern Meadow Lark	19	1 bird calling 1 bird flying				AI - Station 13	7:14

Barn Swallow	26	20 - flying / feeding around cows				AI - Station 13	7:26

Bobolink	26	1 bird calling				AI - Station 13	7:26
Eastern Meadow Lark	26	5 - family group				AI - Station 13	7:26

Bobolink	8	1 male singing 5 male - chasing 1 female - chased	7	0	south-side	AI - Station 14	7:34
Bobolink	8	1 male singing				AI - Station 14	7:34
Barn Swallow	8	4 birds				AI - Station 14	7:34

Bobolink	19	1 male - flying				AI - Station 14	7:26
Bobolink	19	2 male - singing				AI - Station 14	7:26
Barn Swallow	19	2 - flying				AI - Station 14	7:26

Bobolink	26	3 male - flying 1 female				AI - Station 14	7:41
Barn Swallow	26	5 flying				AI - Station 14	7:41

Bobolink	8	1 male - singing	1	3	south-side	AI - Station 15	7:44
Eastern Meadow Lark	8	1 bird calling				AI - Station 15	7:44
Barn Swallow	8	5 flying				AI - Station 15	7:44
Bobolink	8	2 male - singing	2	0	north-side	AI - Station 15	7:44

Bobolink	19	?				AI - Station 15	7:34
Eastern Meadow Lark	19	1 bird calling				AI - Station 15	7:34
Barn Swallow	19	4 - flying				AI - Station 15	7:34
Bobolink	19	2 male - singing				AI - Station 15	7:34

Eastern Meadow Lark	26	3 birds				AI - Station 15	7:50

Barn Swallow	26	6 flying	_	_	_	AI - Station 15	7:50
Bobolink	26	1 male singing	_	_	_	AI - Station 15	7:50
Bobolink	26	1 female 1 male	_	_	_	AI - Station 15	7:50

Bobolink	8	1 male singing 4 male - chasing 2 female - chased	7	0	south-side	AI - Station 16	8:00
Eastern Meadow Lark	8	1 bird calling	_	_	_	AI - Station 16	8:00
Barn Swallow	8	7 flying	_	_	_	AI - Station 16	8:00

Bobolink	19	2 male - singing 1 male	_	_	_	AI - Station 16	7:42
Barn Swallow	19	8 flying	_	_	_	AI - Station 16	7:42

Bobolink	26	1 male - singing 1 male - flying 1 male	_	_	_	AI - Station 16	8:04
Barn Swallow	26	1 birds	_	_	_	AI - Station 16	8:04

Bobolink	8	1 male singing	4	0	south-side	AI - Station 17	8:08
Bobolink	8	1 male singing	_	_	_	AI - Station 17	8:08
Eastern Meadow Lark	8	1 bird	_	_	_	AI - Station 17	8:08
Bobolink	8	1 bird calling 2 male singing	3	0	north-side	AI - Station 17	8:08

Bobolink	19	1 male singing	_	_	_	AI - Station 17	7:56
Bobolink	19	1 male singing	_	_	_	AI - Station 17	7:56
Bobolink	19	1 male	_	_	_	AI - Station 17	7:56
Bobolink	19	1 bird calling	_	_	_	AI - Station 17	7:56

Bobolink	26	3 male 1 female - flying	_	_	_	AI - Station 17	8:14

Bobolink	8	2 male - singing	2	1	south-side	AI - Station 18	8:23
Eastern Meadow Lark	8	1 bird calling	_	_	_	AI - Station 18	8:23
Barn Swallow	8	4 flying	_	_	_	AI - Station 18	8:23
Bobolink	8	5 male 3 female	8	0	north-side	AI - Station 18	8:23

Bobolink	19	1 female	_	_	_	AI - Station 18	8:12
Bobolink	19	3 male - singing	_	_	_	AI - Station	8:12

						18	
Barn Swallow	19	5 flying	_	_	_	AI - Station 18	8:12
Bobolink	19	3 male - calling 2 mlae	_	_	_	AI - Station 18	8:12
Bobolink	19	1 male	_	_	_	AI - Station 18	8:12
Barn Swallow	19	3 birds	_	_	_	AI - Station 18	8:12

Bobolink	26	1 male - flying 1 male	_	_	_	AI - Station 18	8:23
Eastern Meadow Lark	26	1 bird	_	_	_	AI - Station 18	8:23
Barn Swallow	26	3 flying	_	_	_	AI - Station 18	8:23
Bobolink	26	2 male - singing	_	_	_	AI - Station 18	8:23
Bobolink	26	4 male - chasing 1 female - chased 1 male singing	_	_	_	AI - Station 18	8:23
Barn Swallow	26	5 flying	_	_	_	AI - Station 18	8:23

Bobolink	8	1 bird	0	1	south-side	AI - Station 19	8:39
Eastern Meadow Lark	8	1 bird calling	_	_	_	AI - Station 19	8:39
Bobolink	8	3 male chasing 2 female chased	5	0	north-side	AI - Station 19	8:39
Bobolink	8	3 male signing	_	_	_	AI - Station 19	8:39

Eastern Meadow Lark	19	5 - family group	_	_	_	AI - Station 19	8:26
Bobolink	19	1 male singing 2 male - flying 1 male	_	_	_	AI - Station 19	8:26

Eastern Meadow Lark	26	1 bird flying	_	_	_	AI - Station 19	8:37
Barn Swallow	26	4 birds	_	_	_	AI - Station 19	8:37
Bobolink	26	3 male 1 male - flying 1 female - flying	_	_	_	AI - Station 19	8:37

GRASSLAND SAR SURVEY 2012 AMHERST ISLAND SOUTH WEST - ABRIDGED

Table below is abridged - additional information including weather conditions, land use, vegetation height, presence of grazer, location use class and observations distance up to 400m available. All observations in June of 2012 by Kurt Hennige - 5 minute point counts. Map of point count loaction is Appendix A / All GPS locations removed as this is a public doucment / All additional information available upon request to dmpwfw@gmail.com.

Common Name	OBS. DAY	OBSERVATION DETAILS	Distance <100 meters	Distance > 100 meters	LOCATION	LANDUSE
Bobolink	6	3 male - flying	3		AI - Station 1	49% shrub 51% hayfield
Bobolink	6	1 male - singing		1	AI - Station 1	49% shrub 51% hayfield
Bobolink	6	2 male - singing		2	AI - Station 1	49% shrub 51% hayfield
Barn Swallow	6	3 birds flying	3		AI - Station 1	49% shrub 51% hayfield
Barn Swallow	6	3 birds flying		3	AI - Station 1	49% shrub 51% hayfield
						49% shrub 51% hayfield
Bobolink	14	FO-BOBO		1	AI - Station 1	49% shrub 51% hayfield
Bobolink	14	2 male - singing		1	AI - Station 1	49% shrub 51% hayfield
Bobolink	14	1 male - singing		1	AI - Station 1	49% shrub 51% hayfield
Barn Swallow	14	?			AI - Station 1	49% shrub 51% hayfield
						49% shrub 51% hayfield
Bobolink	22	1 male / 1 female - feeding young 1 male - singing		3	AI - Station 1	49% shrub 51% hayfield
Bobolink	22	1 male - feeding young		1	AI - Station 1	49% shrub 51% hayfield
Barn Swallow	22	5 - flying		5	AI - Station 1	49% shrub 51% hayfield
Bobolink	6	7 male - flying 1 female - flhing		8	AI - Station 2	Hayfield / some hedgerows
Eastern Meadow Lark	6	1 bird - calling		1	AI - Station 2	Hayfield / some hedgerows
						Hayfield / some hedgerows
Bobolink	14	?		5	AI - Station 2	Hayfield / some hedgerows

						Hayfield / some hedgerows
Bobolink	22	5 male - singing	5		AI - Station 2	Hayfield / some hedgerows
Bobolink	22	5 male - singing 1 female - female feeding young 1 male		7	AI - Station 2	Hayfield / some hedgerows
Eastern Meadow Lark	22	1 bird calling	1		AI - Station 2	Hayfield / some hedgerows
Eastern Meadow Lark	22	1 bird calling		1	AI - Station 2	Hayfield / some hedgerows
Barn Swallow	22	5 - flying	5		AI - Station 2	Hayfield / some hedgerows
Barn Swallow	22	4 - flying		4	AI - Station 2	Hayfield / some hedgerows
Bobolink	6	2 male - singing	2		AI - Station 3	Pasture - grazing marginal
Bobolink	6	1 female - flying		1	AI - Station 3	Pasture - grazing marginal
Bobolink	6	7 male - singing		7	AI - Station 3	Pasture - grazing marginal
Eastern Meadow Lark	6	2 male - singing		2	AI - Station 3	Pasture - grazing marginal
						Pasture - grazing marginal
Bobolink	14	4 male - singing FO- BOBO			AI - Station 3	Pasture - grazing marginal
Bobolink	14	7 male - singing		7	AI - Station 3	Pasture - grazing marginal
Eastern Meadow Lark	14	2 male - singing		2	AI - Station 3	Pasture - grazing marginal
Barn Swallow	14	?			AI - Station 3	Pasture - grazing marginal

						Pasture - grazing marginal
Bobolink	22	1 female - going to ? 3 male - singing	4		AI - Station 3	Pasture - grazing marginal
Bobolink	22	2 male - flying 3 male - sitting on hydro line		5	AI - Station 3	Pasture - grazing marginal
Bobolink	22	1 male - sitting on hydro line		1	AI - Station 3	Pasture - grazing marginal
Bobolink	22	1 male - sitting on hydro line		1	AI - Station 3	Pasture - grazing marginal
Eastern Meadow Lark	22	1 bird flying		1	AI - Station 3	Pasture - grazing marginal
Bobolink	6	5 male - chasing 2 female - chased 1 male - singing		7	AI - Station 4	Pasture - grazing marginal
Bobolink	6	1 male - flying 1 male - sitting on Hydro line		2	AI - Station 4	Pasture - grazing marginal
Eastern Meadow Lark	6	2 male - singing		2	AI - Station 4	Pasture - grazing marginal
Bobolink	14	1 female		1	AI - Station 4	Pasture - grazing marginal
Bobolink	14	1 male - singing 1 bird		1	AI - Station 4	Pasture - grazing marginal
Eastern Meadow Lark	14	1 male - singing		1	AI - Station 4	Pasture - grazing marginal
Bobolink	22	2 male - singing 1 male	3		AI - Station 4	Pasture - grazing marginal
Bobolink	22	3 male 2 mlae - flying		5	AI - Station 4	Pasture - grazing marginal
Bobolink	22	2 male sitting - hydro line		2	AI - Station 4	Pasture - grazing marginal

Eastern Meadow Lark	22	1 bird calling	1		AI - Station 4	Pasture - grazing marginal
Barn Swallow	22	3 - flying		3	AI - Station 4	Pasture - grazing marginal
Bobolink	6	4 male singing		4	AI - Station 5	Pasture - grazing marginal
Eastern Meadow Lark	6	1 bird - flying		1	AI - Station 5	Pasture - grazing marginal
Bobolink	6	2 male - singing	2		AI - Station 5	40 % pasture - grazing marginal 60% marsh

Bobolink	14	2 birds		2	AI - Station 5	Pasture - grazing marginal
Bobolink	14	2 male - singing		2	AI - Station 5	40 % pasture - grazing marginal 60% marsh
Bobolink	14	1 male - singing		1	AI - Station 5	40 % pasture - grazing marginal 60% marsh

Bobolink	22	1 bird - calling 1 male / 1 female - flying to nest		3	AI - Station 5	Pasture - grazing marginal
Barn Swallow	22	4 flying	4		AI - Station 5	Pasture - grazing marginal
Bobolink	22	1 male - singing		1	AI - Station 5	40 % pasture - grazing marginal 60% marsh
Bobolink	22	1 male		1	AI - Station 5	40 % pasture - grazing marginal 60% marsh

Bobolink	22	2 flying		2	AI - Station 5	40 % pasture - grazing marginal 60% marsh

Bobolink	6	4 male - chasing 1 female - chased		5	AI - Station 6	80% Pasture - grazing marginal 20% residential
Eastern Meadow Lark	6	1 bird calling	1		AI - Station 6	80% Pasture - grazing marginal 20% residential
Eastern Meadow Lark	6	1 bird calling		1	AI - Station 6	80% Pasture - grazing marginal 20% residential
Eastern Meadow Lark	6	1 bird calling		1	AI - Station 6	80% Pasture - grazing marginal 20% residential
Bobolink	6	3 - flying		3	AI - Station 6	80% Pasture - grazing marginal 20% residential
Bobolink	14	2 male - singing		2	AI - Station 6	80% Pasture - grazing marginal 20% residential
Bobolink	14	3 male - singing 1 female		4	AI - Station 6	80% Pasture - grazing marginal 20% residential
Bobolink	14	1 bird		1	AI - Station 6	80% Pasture - grazing marginal 20% residential

Eastern Meadow Lark	14	1 male - singing		1	AI - Station 6	80% Pasture - grazing marginal 20% residential
Eastern Meadow Lark	14	1 male - singing		1	AI - Station 6	80% Pasture - grazing marginal 20% residential

Bobolink	22	1 mlae - singing	1		AI - Station 6	80% Pasture - grazing marginal 20% residential
Bobolink	22	1 male - singing 1 male - flying 1 female - going to nest		3	AI - Station 6	80% Pasture - grazing marginal 20% residential
Eastern Meadow Lark	22	1 bird calling	1		AI - Station 6	80% Pasture - grazing marginal 20% residential
Barn Swallow	22	3 flying	3		AI - Station 6	80% Pasture - grazing marginal 20% residential
Bobolink	6	5 male - singing 1 female - flying		6	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Eastern Meadow Lark	6	1 male singing		1	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential

Barn Swallow	6	2 male - singing	2		AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Bobolink	14	4 male - singing		4	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Bobolink	14	1 female		1	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Bobolink	14	1 male - singing		1	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Eastern Meadow Lark	14	1 male - singing MELA		2	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Barn Swallow	14	4 - flying		4	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential

Bobolink	20	1 male - singing	1		AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Bobolink	20	2 male - singing 1 male / 1 female - possibly going to nest		3	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Eastern Meadow Lark	20	1 bird - calling EAME		2	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Barn Swallow	20	6 - flying		6	AI - Station 7	70% Pasture - grazing marginal 20 % pasture - no grazing 10% residential
Bobolink	6	3 male - singing	3		AI - Station 8	Hayfield
Bobolink	6	4 male - singing 1 female - flying		5	AI - Station 8	Hayfield
Barn Swallow	6	3 flying		3	AI - Station 8	Hayfield
Bobolink	14	4 male - singing		4	AI - Station 8	Hayfield
Bobolink	14	3 male - singing		3	AI - Station 8	Hayfield
Eastern Meadow Lark	14	1 male - singing		1	AI - Station 8	Hayfield
Bobolink	22	1 male	1		AI - Station 8	Hayfield
Bobolink	22	4 male 1 bird 1 male - signing		6	AI - Station 8	Hayfield

Bobolink	6	6 male - singing		6	AI - Station 9	Hayfield
Bobolink	6	1 male - flying 2 male - singing		3	AI - Station 9	Hayfield
Eastern Meadow Lark	6	1 male - singing		2	AI - Station 9	Hayfield
Barn Swallow	6	3 male - singing		3	AI - Station 9	Hayfield

Bobolink	14	4 male - singing		4	AI - Station 9	Hayfield
Bobolink	14	2 male - singing 2 female 1 male		5	AI - Station 9	Hayfield
Bobolink	14	1 male - singing 1 male 1 bird		3	AI - Station 9	Hayfield
Eastern Meadow Lark	14	MELA		1	AI - Station 9	Hayfield
Eastern Meadow Lark	14	MELA		1	AI - Station 9	Hayfield
Barn Swallow	14	BASW	1		AI - Station 9	Hayfield
Bobolink	14	2 - flying		2	AI - Station 9	Hayfield
Bobolink	22	1 male - singing	1		AI - Station 9	Hayfield
Bobolink	22	2 male - singing 3 male - flying 2 male 1 bird		8	AI - Station 9	Hayfield
Eastern Meadow Lark	22	2 bird calling 1 bird flying		3	AI - Station 9	Hayfield
Bobolink	6	5 male - singing 4 male - flying 1 female - flying		10	AI - Station 10	60% Hayfield 40% Pasture - lgrazing marginal
Bobolink	6	4 male - singing		4	AI - Station 10	60% Hayfield 40% Pasture - lgrazing marginal
Short-eared Owl	6	1 bird flying		1	AI - Station 10	60% Hayfield 40% Pasture - lgrazing marginal
Bobolink	14	2 male - singing		2	AI - Station 10	60% Hayfield 40% Pasture - lgrazing marginal
Bobolink	14	4 male - singing		4	AI - Station 10	60% Hayfield 40% Pasture - lgrazing marginal
Bobolink	14	4 male - singing 1 female		5	AI - Station 10	60% Hayfield 40% Pasture - lgrazing marginal

Eastern Meadow Lark	14	3 birds 1 male singing		4	AI - Station 10	60% Hayfield 40% Pasture - Igrazing marginal
Eastern Meadow Lark	14	1 male singing		1	AI - Station 10	60% Hayfield 40% Pasture - Igrazing marginal
Barn Swallow	14	5 birds		5	AI - Station 10	60% Hayfield 40% Pasture - Igrazing marginal
Bobolink	22	1 male - singing	1		AI - Station 10	60% Hayfield 40% Pasture - Igrazing marginal
Bobolink	22	5 male		5	AI - Station 10	60% Hayfield 40% Pasture - Igrazing marginal
Eastern Meadow Lark	22	5 - family group 1 male - singing		6	AI - Station 10	60% Hayfield 40% Pasture - Igrazing marginal
Bobolink	6	7 male - singing 1 female - flying		8	AI - Station 11	85% pasture grazing marginal 15% hayfield
Eastern Meadow Lark	6	1 bird calling		1	AI - Station 11	85% pasture grazing marginal 15% hayfield
Barn Swallow	6	4 - flying		4	AI - Station 11	85% pasture grazing marginal 15% hayfield
Bobolink	6	2 male - singing		2	AI - Station 11	Hayfield
Bobolink	6	5 male singing		5	AI - Station 11	Hayfield

Bobolink	14	2 male singing 5 birds - calling 1 female		8	AI - Station 11	85% pasture grazing marginal 15% hayfield

Bobolink	14	1 male		1	AI - Station 11	85% pasture grazing marginal 15% hayfield
Bobolink	14	1 bird calling 4 male - singing		5	AI - Station 11	85% pasture grazing marginal 15% hayfield
Eastern Meadow Lark	14	1 male - singing		1	AI - Station 11	85% pasture grazing marginal 15% hayfield
Barn Swallow	14	8 birds		8	AI - Station 11	85% pasture grazing marginal 15% hayfield
Bobolink	14	2 male - singing		2	AI - Station 11	Hayfield
Bobolink	14	3 male - singing		3	AI - Station 11	Hayfield
Bobolink	14	2 female - flying 4 male - singing		6	AI - Station 11	Hayfield
Eastern Meadow Lark	14	1 male - singing		1	AI - Station 11	Hayfield
Eastern Meadow Lark	14	2 male - singing		2	AI - Station 11	Hayfield

Bobolink	22	1 male - singing		1	AI - Station 11	85% pasture grazing marginal 15% hayfield
Bobolink	22	2 male - singing		2	AI - Station 11	85% pasture grazing marginal 15% hayfield
Eastern Meadow Lark	22	1 bird 1 bird - calling		2	AI - Station 11	85% pasture grazing marginal 15% hayfield
Barn Swallow	22	5 birds		5	AI - Station 11	85% pasture grazing marginal 15% hayfield
Bobolink	22	2 male singing 2 male	4		AI - Station 11	Hayfield
Bobolink	22	2 male		2	AI - Station 11	Hayfield
Bobolink	22	3 male		3	AI - Station 11	Hayfield
Eastern Meadow Lark	22	1 bird - calling	1		AI - Station 11	Hayfield

Bobolink	6	2 male - singing		2	AI - Station 12	Hayfield
Barn Swallow	6	2 flying		2	AI - Station 12	Hayfield
Bobolink	14	1 male - singing 1 female		2	AI - Station 12	Hayfield

Bobolink	22	1 male - singing	1		AI - Station 12	Hayfield
Bobolink	6	2 male - singing		2	AI - Station 13	50% Hayfield 50% Row crop (corn)
Eastern Meadow Lark	6	1 bird flying		1	AI - Station 13	50% Hayfield 50% Row crop (corn)
Barn Swallow	6	2 birds flying	2		AI - Station 13	50% Hayfield 50% Row crop (corn)
Bobolink	15	2 male - singing		2	AI - Station 13	50% Hayfield 50% Row crop (corn)
Eastern Meadow Lark	15	1 male - singing		1	AI - Station 13	50% Hayfield 50% Row crop (corn)
Bobolink	22	2 male - singing		2	AI - Station 13	50% Hayfield 50% Row crop (corn)
Bobolink	22	1 male		1	AI - Station 13	50% Hayfield 50% Row crop (corn)
Barn Swallow	22	2 birds		2	AI - Station 13	50% Hayfield 50% Row crop (corn)
Bobolink	6	2 male - singing		2	AI - Station 14	Hayfield
Bobolink	6	3 male - singing 1 male - flying		4	AI - Station 14	Hayfield
Bobolink	6	7 male singing 1 female - flying		8	AI - Station 14	Hayfield
Bobolink	15	2 male - singing	2		AI - Station 14	Hayfield
Bobolink	15	3 male - singing 1 female		4	AI - Station 14	Hayfield
Bobolink	15	1 male - singign	1		AI - Station 14	Hayfield
Bobolink	15	2 male - singing		2	AI - Station	Hayfield

					14	
Eastern Meadow Lark	15	1 male - singign		1	AI - Station 14	Hayfield
Bobolink	22	1 male - singing	1		AI - Station 14	Hayfield
Bobolink	22	1 male / 2 female (possibly feeding young in nest) 2 male - singing		5	AI - Station 14	Hayfield
Bobolink	6	4 male - singing 1 female - flying		3	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Eastern Meadow Lark	6	1 male - singing		1	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Bobolink	15	4 male - singing		4	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Bobolink	15	1 male - singing 1 male 1 female		3	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Eastern Meadow Lark	15	1 male - singing		1	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Bobolink	22	2 male - singing 2 male - flying	4		AI - Station 15	70% pasture - grazing marginal 30% hayfield
Bobolink	22	5 male 1 female		6	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Bobolink	22	1 bird calling		1	AI - Station 15	70% pasture - grazing marginal 30% hayfield
Bobolink	6	4 male - chasing 2 female - chased 2 male - singing		8	AI - Station 16	60% hayfield 40% Grass / Marsh

Bobolink	6	1 birds calling	2		AI - Station 16	60% hayfield 40% Grass / Marsh
Bobolink	6	3 male - singing	3		AI - Station 16	70% pasture - grazing marginal 30% high grass
Bobolink	6	7 male - singing 1 female		8	AI - Station 16	70% pasture - grazing marginal 30% high grass
Bobolink	15	4 male - singing 1 bird calling		5	AI - Station 16	60% hayfield 40% Grass / Marsh
Bobolink	15	2 male - singing 1 female 1 male		4	AI - Station 16	60% hayfield 40% Grass / Marsh
Eastern Meadow Lark	15	1 bird calling		1	AI - Station 16	60% hayfield 40% Grass / Marsh
Bobolink	15	1 male - singing		1	AI - Station 16	70% pasture - grazing marginal 30% high grass
Bobolink	15	4 male - singing 1 bird calling		5	AI - Station 16	70% pasture - grazing marginal 30% high grass
Bobolink	22	2 male - singing 1 female	3		AI - Station 16	60% hayfield 40% Grass / Marsh
Bobolink	22	1 male		1	AI - Station 16	60% hayfield 40% Grass / Marsh
Bobolink	22	1 bird	1		AI - Station 16	70% pasture - grazing marginal 30% high grass
Bobolink	22	2 male 3 male - chasing 1 female - chased 1 male - singing		7	AI - Station 16	70% pasture - grazing marginal 30% high grass

Eastern Meadow Lark	22	1 bird	1		AI - Station 16	70% pasture - grazing marginal 30% high grass
Eastern Meadow Lark	22	1 bird flying		1	AI - Station 16	70% pasture - grazing marginal 30% high grass
Barn Swallow	22	7 flying	7		AI - Station 16	70% pasture - grazing marginal 30% high grass

APPENDIX 3

Short Ear Owl Nesting Information / Northing data removed as this is a public document / Information available – please contact dmpwfw@gmail.com

ID	Common Name	OBSERVATION YEAR	ZONE	EASTING	NORTHING	DATUM
Pair #1	Short-eared Owl	2012	18	366028		NAD83
Pair #2	Short-eared Owl	2012	18	365243		NAD83
Pair #3	Short-eared Owl	2012	18	364973		NAD83
Pair #4	Short-eared Owl	2012	18	363878		NAD83
Pair #5	Short-eared Owl	2012	18	364008		NAD83
Pair #6	Short-eared Owl	2012	18	364514		NAD83
Pair #7	Short-eared Owl	2012	18	365171		NAD83
Pair #8	Short-eared Owl	2012	18	360150		NAD83
summer record seen by Janet Scott	Short-eared Owl	2011	18	364747		NAD83
Pair #1	Short-eared Owl	2010	18	370057		NAD83
Pair #2	Short-eared Owl	2010	18	369557		NAD83
Pair#3	Short-eared Owl	2010	18	365614		NAD83
Pair#1	Short-eared Owl	2009	18	361380		NAD83
Pair #2	Short-eared Owl	2009	18	364743		NAD83
Pair#3	Short-eared Owl	2009	18	365126		NAD83