



Office of the Warden

January 11, 2013

Hon. Sterling Belliveau
Nova Scotia Environment
PO Box 442
Halifax, NS
B3J 2P8

Re: Environmental Assessment Addendum No. 1, Sable Wind Project

Dear Mr. Minister,

Please find enclosed a copy of the Addendum to the Sable Wind EA Registration Document submitted to NSE on June 27, 2012. This Addendum is in response to your decision, dated August 22, 2012 wherein we were advised that the information contained in the Registration Document was insufficient to allow for a decision and that additional information was required.

The additional information required was related to impact of habitat by turbines and infrastructure of the proposed project and particularly on the impact of coastal proximity and location of proposed turbines related to wetlands and flight corridors for migratory birds and bats.

The Municipality of the District of Guysborough (MODG), along with our project partner – Nova Scotia Power Inc., are committed to providing all required information and developing protocols to address issues identified through this process.

We wish to formally register this addendum and look forward to receiving the required approvals, subject to conditions.

Regards,

Warden Lloyd Hines



January 10, 2013

Environmental Assessment Branch
Nova Scotia Environment
PO Box 442
Halifax, NS
B3J 2P8

RE: Environmental Assessment Addendum No. 1, Sable Wind Project

To Whom it May Concern:

Please find enclosed the Addendum to the Sable Wind EA Registration Document submitted to NSE on June 27, 2012. This Addendum is in response to the Minister's Decision, dated August 22, 2012 which states that the information contained in the Registration Document is insufficient to allow the Minister to make a decision and that additional information is required. Additional information is required to assess impacts on habitat by turbines and infrastructure of the proposed Project, specifically on how coastal proximity and location of proposed turbines will affect wetlands and flight corridors for migratory birds and bats.

The following information is included in this addendum:

- Results of 2012 fall bird surveys
- Historical review of 2004 and 2005 bird data from the 2006 EA Registration Document, approved in May 2006
- Results of the 2012 fall bat surveys and acoustic monitoring
- Protocol for 2013 bird surveys, including acoustic and radar monitoring
- Protocol for 2013 bat surveys, including acoustic monitoring
- Mainland Moose monitoring Protocol

The Municipality of the District of Guysborough and Nova Scotia Power Incorporated, who together comprise the Project Team, are confident that the information provided in this Addendum offers additional evidence the Project site does not present a significant

**Municipality of the District of Guysborough
Nova Scotia Power Inc.**

SableWind

risk to birds and bats. Further, the Project Team is confident that the proposed 2013 studies will provide sufficient information to inform stakeholders of the potential impacts of the Project footprint to existing bird, bat and Mainland Moose populations in the Project area.

Yours truly,



Terry Toner

1.0 Introduction

The Municipality of the District of Guysborough and Nova Scotia Power (the Project Team) are proposing to construct an approximately 13.8 MW wind generating facility entitled the Sable Wind Project (the Project) near the communities of Canso, Hazel Hill, and Little Dover in Guysborough County, Nova Scotia (NS). The Project was one of the successful bids in response to the Government of NS's Request for Proposal (RFP) for 300 GWh of Renewable Energy from Independent Power Producers. The commissioning of the Project is required before 2015. The Project is considered a Class I undertaking under the NS Environmental Assessment Regulations and as such, requires a registered Environmental Assessment (EA) as identified under Schedule A of the Regulations.

On June 27, 2012 the Project Team submitted the Sable Wind EA Registration Document to NS Environment (NSE). The registration document was completed according to the methodologies and requirements outlined in the "Proponent's Guide to Wind Power Projects: Guide for Preparing and Environmental Assessment Registration Document" (Nova Scotia Environment 2007, updated 2012) and accepted best practices for conducting EAs. The 2012 EA Document was developed with reference to the original EA registration document entitled "Canso Wind Farm Environmental Impact Statement", which was submitted to and approved by NSE in May of 2006. A map comparing the original 2006 Project footprint to the current proposed footprint can be found in Appendix A.

On August 22, 2012, the Project Team received a letter from the NS Minister of Environment, Sterling Belliveau, advising that the registration information was insufficient to allow the Minister to make a decision and that more information was required. Additional information is required to assess impacts on habitat by turbines and infrastructure of the Project. Specifically, additional information is needed to address how coastal proximity and location of proposed turbines will affect wetlands and flight corridors for migratory birds and bats.

This Addendum contains the following additional information:

- Results of the 2012 Fall bird migration surveys (Appendix A)
- Comparison of 2012 Fall survey results to bird surveys completed in 2004/05 and presented in the 2006 EA Registration Document (Appendix A)
- Protocols for 2013 bird surveys (Appendix B)
- Results of 2012 Fall assessment of bats on the Project site (Appendix C)
- Protocol for the 2013 bat assessment (Appendix D)
- Protocol for moose monitoring (Appendix E)

Protocols were developed in consultation with NSE and NS Department of Natural Resources (DNR).

The Project Team believes the results of the studies included in the Sable Wind Environmental Assessment Registration Document, the results of the 2012 studies included in this Addendum, the results of the studies included in the 2006 EA Registration Document and the proposed further

monitoring programs in 2013 will provide the Minister with sufficient information to support the development of the Sable Wind Farm.

2.0 Birds

Strum Environmental conducted bird surveys during the fall of 2012 at the Project site. The surveys demonstrated that the Project site is not a significant migration route for passerines and in general, the data does not suggest that the Project poses a high risk to the area's migrant passerine community. The surveys also demonstrated that nocturnal migrations were in a south/southwest direction from the head of Chapel Gully Park. Migrating waterfowl were observed mainly in Chapel Gully Park rather than on the Project site, and there is a low diversity of winter bird communities near the proposed turbine locations. Please refer to Appendix B for more detail on the fall 2012 bird surveys.

A good correlation exists between the 2012 fall data and the 2004/2005 data submitted as part of the 2006 EA. The overall bird community in the general area has remained relatively consistent and identified migration corridors during the 2004/2005 surveys were corroborated by the 2012 fall survey results. Similarly, both the earlier surveys and 2012 surveys indicate that important migratory routes for shorebirds do not encompass coastal areas of the Project site. Please refer to Appendix B for details on the analysis of 2004/2005 surveys and comparison to the fall 2012 data.

To add to the 2012 Fall surveys and supplement the 2004/5 assessment, John Kearney has been contracted to complete the remaining 2012/2013 surveys. A copy of his proposed protocol can be found in Appendix C. The protocol examines the seasonal movement and behavior of birds (winter 2012/13, spring and summer 2013) including habitat use during the breeding season. Acoustic monitoring will also be conducted to determine use of the area by nocturnal migrants. The pre-construction work will be compatible with post construction surveys and statistical analysis will be possible following the post construction monitoring phase of the Project.

The use of radar technology will also be included in the 2013 bird surveys. This will be used in association with acoustic monitoring to determine the number, altitude and species of birds migrating through the Project area at night. As radar technology is still in the early stages of development as a technique for bird surveys, this is seen as an opportunity for the Project Team to work closely with regulators and provide additional information on the avian community in the Canso area.

3.0 Bats

In fall 2012, Hugh Broders of St Mary's University, Halifax, conducted an acoustic bat survey using Anabat technology at the Project site. The survey results concluded that there did not appear to be significant bat movement or concentration in the Project area, and that there are no known hibernacula or documented suitable mine openings within 25 km of the Project site. During the surveys it was noted that the magnitude of activity was low compared to baseline levels for forested ecosystems and no tree bats were identified through the acoustic studies. Please refer to Appendix D for more detail on the 2012 fall bat surveys.

Hugh Borders has been contracted to carry out further studies in 2013 to confirm this information. A copy of his proposed protocol can be found in Appendix E. The protocol includes acoustic surveys in late summer/early fall 2013, maternity colony searches and trapping surveys.

4.0 Moose

As described in Section 4.6.1 of the Sable Wind EA Registration Document, concentrations of Mainland Moose in Nova Scotia occur in the Tobeatic Wilderness and the Cobequid Mountains areas, although the current range of the species extends across much of the province (Municipality of the District of Gusyborough and Nova Scotia Power Inc., 2012). According to the ACCDC database, the closest sighting of the Mainland moose was 91 + 10 km from the Property Boundaries. No indication of the species was observed during field studies and there is no direct evidence to suggest that a viable population exists in the area (Municipality of the District of Gusyborough and Nova Scotia Power Inc., 2012).

The Project Team has developed a Moose Monitoring Protocol in consultation with DNR to assess potential for Mainland Moose on the Project site. In order to assess the area for presence of moose, surveys will be carried out using existing trails and 1 km long transects to look for tracks, scat and browse evidence during the winter months. The Moose Monitoring Protocol is included in Appendix F.

5.0 Conclusions

This EA addendum provides a summary of the results of the 2012 bird and bat studies, a summary of the correlations between the 2004/05 and 2012 data and protocols for proposed bird, bat and moose monitoring studies in 2013 to further support the development of the Sable Wind Project. The 2012 fall bat surveys and acoustic studies do not suggest that the Project site has significant bat movement or concentrations. Further, the magnitude of bat activity was low compared to forested ecosystems and no tree bats were identified. The proposed 2013 bat surveys, which include acoustic and trapping surveys, will provide further detail on the existing bat community in the Project area and potential interactions with the Project footprint.

The 2012 EA Registration Document demonstrates that there is no indication of Mainland Moose in the Project area; no direct evidence of moose presence was observed during 2012 field studies. The Proposed moose monitoring studies have been designed to verify the potential for Mainland Moose to exist on the Project site using transects to identify tracks, scat and evidence of browse during the winter season.

The 2012 fall bird surveys do not suggest that the Project site is of particular significance to migrating passerines, nocturnal migrants or shorebirds. This conclusion is strengthened by the 2004/05 studies, which correlate with the overall bird population of the Project area, identified migration corridors and important migratory routes for shorebirds demonstrated in the 2012 studies. The Project Team is confident that the proposed 2013 studies, which include acoustic monitoring and radar, will provide new and innovative information that further delineates the bird community in the Project area.

The Project Team is confident that the results of the 2012 studies completed to date, which have been substantiated by the data contained in the 2006 approved EA document, provide additional evidence that the Project site does not present a significant risk to birds and bats. Further, the Project Team is confident that the proposed 2013 studies will provide sufficient information to inform stakeholders of the potential impacts of the Project footprint to the existing bird, bat and Mainland Moose populations in the Project area.

6.0 References

AMEC. (2006). **Canso Wind Farm Environmental Impact Statement**. 257 pp.

Municipality of the District of Guysborough and Nova Scotia Power Inc. (2012). **Sable Wind Environmental Assessment Registration Document**. 168 pp.

7.0 Appendices

APPENDIX A

Map of 2006 Project Footprint Compared to 2012 Project Footprint

Sable Wind Project

Compare 2006 EA & 2012 EA Turbine Locations

- Turbine-2006 EA
- Turbine-2012 EA
- Building
- School
- Hospital
- Cemetery
- Sports Field/Stan Rogers

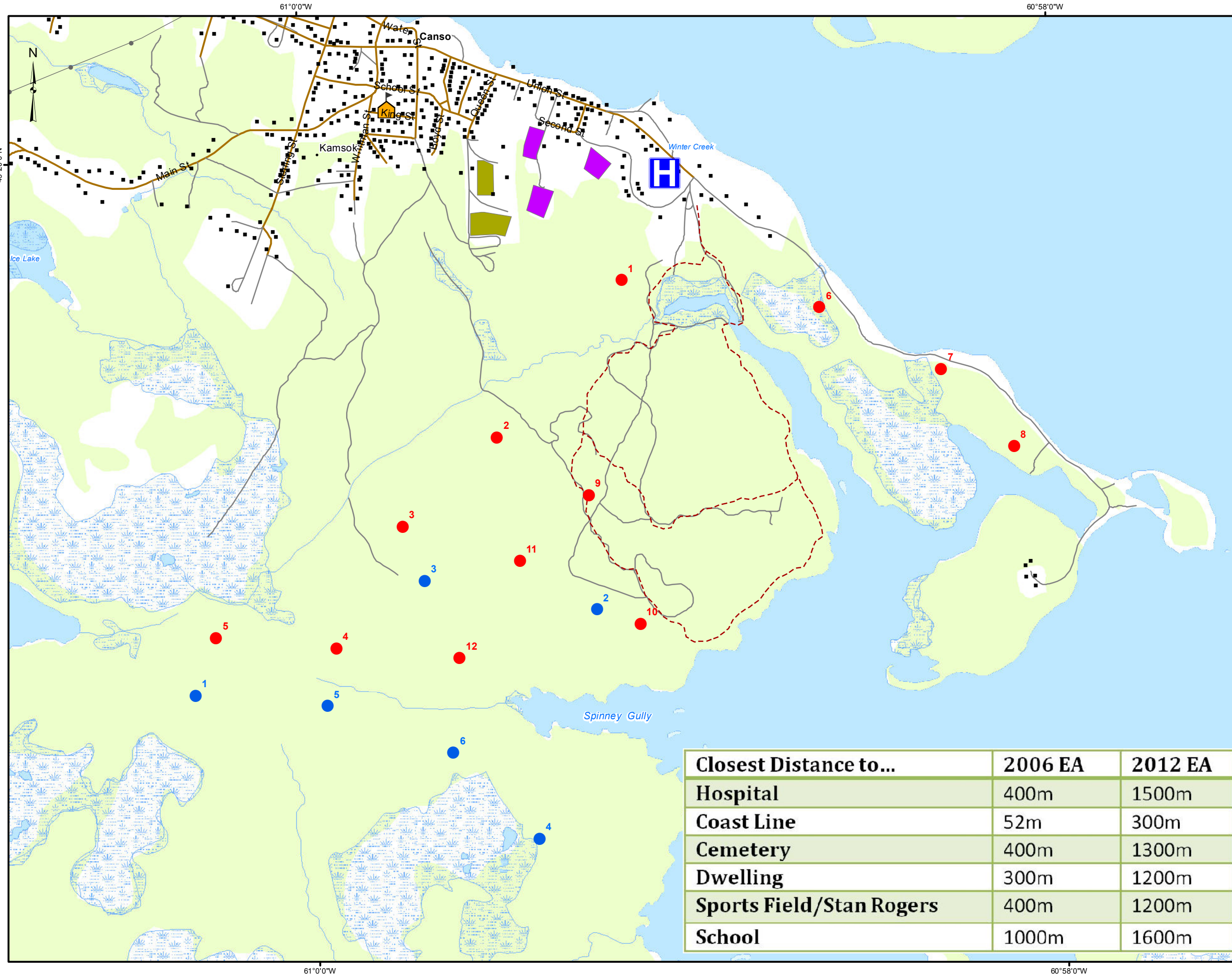
Notes:



Date: October, 2012

Scale: 1:13,000
 Projection: UTM Zone20 NAD83
 Sources: DNR, GeoBase, NSTDB 1:10,000, Canso Wind Farm EIS 2006

No guarantee is given as to the accuracy or currency of any of the data. The cadastral information portrayed has no legal value and should only be used as a guide.



Closest Distance to...	2006 EA	2012 EA
Hospital	400m	1500m
Coast Line	52m	300m
Cemetery	400m	1300m
Dwelling	300m	1200m
Sports Field/Stan Rogers	400m	1200m
School	1000m	1600m



APPENDIX B

Historical Bird Data Review and 2012 Fall Migration Surveys



**HISTORICAL BIRD DATA REVIEW AND
2012 FALL MIGRATION SURVEYS
SABLE WIND PROJECT**

November 13, 2012



Taking Charge™



November 13, 2012

Ms. Heather Holland
Nova Scotia Power Inc.
1223 Lower Water Street
Halifax, NS B3J 3S8

Dear Ms. Holland,

**Re: Historical Bird Data Review and 2012 Fall Migration Surveys
Sable Wind Project**

Attached is the Historical Bird Data Review and 2012 Fall Migration Surveys Report prepared for the Sable Wind Project.

This report documents our observations and findings.

We trust this report to be satisfactory at this time. Once you have had an opportunity to review this correspondence, please contact us to address any questions you may have.

Thank you,

A handwritten signature in blue ink, appearing to read "Garry Gregory".

Garry Gregory, MSc.
Environmental Specialist
ggregory@strum.com

A handwritten signature in blue ink, appearing to read "Carys Burgess".

Carys Burgess, MMM
Senior Environmental Specialist
cburgess@strum.com

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1.0 INTRODUCTION

In August 2012, Strum was retained to conduct pre-construction fall migration bird surveys for the proposed 13.8 MW Sable Wind Project in Guysborough County (the Project), near the communities of Canso, Hazel Hill, and Little Dover.

The Project site will encompass approximately 137 ha of municipal lands which are dominated by softwood and mixed wood stands (87%) but also support other habitat types including wetlands (bog/fen), barrens, and brush. Softwood stands feature a mixture of red (*Picea rubra*) and black spruce (*Picea mariana*), often with a minor intolerant hardwood [i.e. white birch (*Betula papyrifera*)] or balsam fir (*Abies balsamea*) component.

The objective of the assessment was to identify fall migration species and migration corridors within and around the Project site, as well as to compare the 2012 findings with the results of surveys completed in 2004/2005.

This report consists of the following sections:

- Section 2.0 presents the survey methodology.
- Section 3.0 summarizes the results of the bird monitoring program employed by AMEC as part of the 2006 Environmental Assessment (EA) (AMEC 2006) submission in support of the Sable Wind Power Project, and reviews those results in the context of the revised Project scope.
- Section 4.0 summarizes the results of the avian monitoring program implemented at the Project site in the fall of 2012.
- Section 5.0 discusses the overall conclusions of both avian monitoring programs.

The data analysis and interpretation contained herein has been developed to evaluate the potential impacts of the current Project to resident/migratory birds.

2.0 METHODOLOGY

A variety of survey protocols were implemented to collect the data required to properly evaluate the avian community at and around the Project site during both the original study (2004/2005) and the current study (2012). These included point counts (breeding birds), stopover counts (passerine migration), shorebird watches, post-dusk passerine migration surveys, and nocturnal owl surveys. Data were collected in accordance with the document “Baseline Information Requirements for Evaluation of Effects of Wind Power Facilities on Migratory Birds in Atlantic Canada” (Canadian Wildlife Service (CWS) 2003) [Note: This guidance document has since been replaced by “Recommended Protocols for Monitoring Impacts of Wind Turbines on Birds” (CWS 2007)]. In 2004/2005, the survey program was designed and implemented by an expert birder with over 25 years of experience in scientific bird observation and data collection methods. Birds were identified on the basis of visual observation, songs, and call notes. The same expert birder also led the fall

migration surveys conducted in 2012 to ensure consistency and comparability of the results between the two studies.

Data analysis and interpretation consisted of reviewing the results of the original study in the context of the current Project layout, and screening the data against new conservation status designations for individual species. An emphasis was put on graphically representing some of the key results of these surveys, including identified passerine and shorebird migration corridors and the locations of priority species.

A similar approach was taken to analyze the results of the current (2012) study. Key results of both studies were compared to determine if species abundance/diversity/movement patterns remained consistent in the interim, and to elucidate any potential changes to the bird community that may have compromised the applicability of the previous study results.

3.0 2006 DATA REVIEW

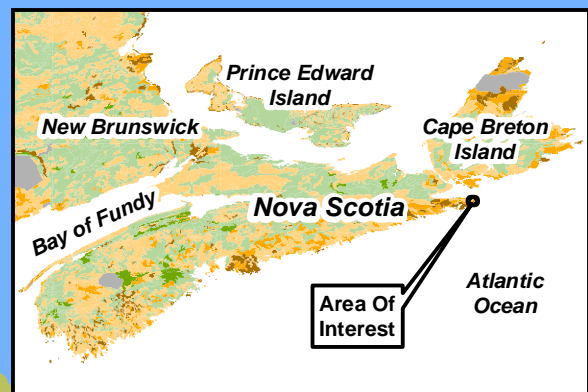
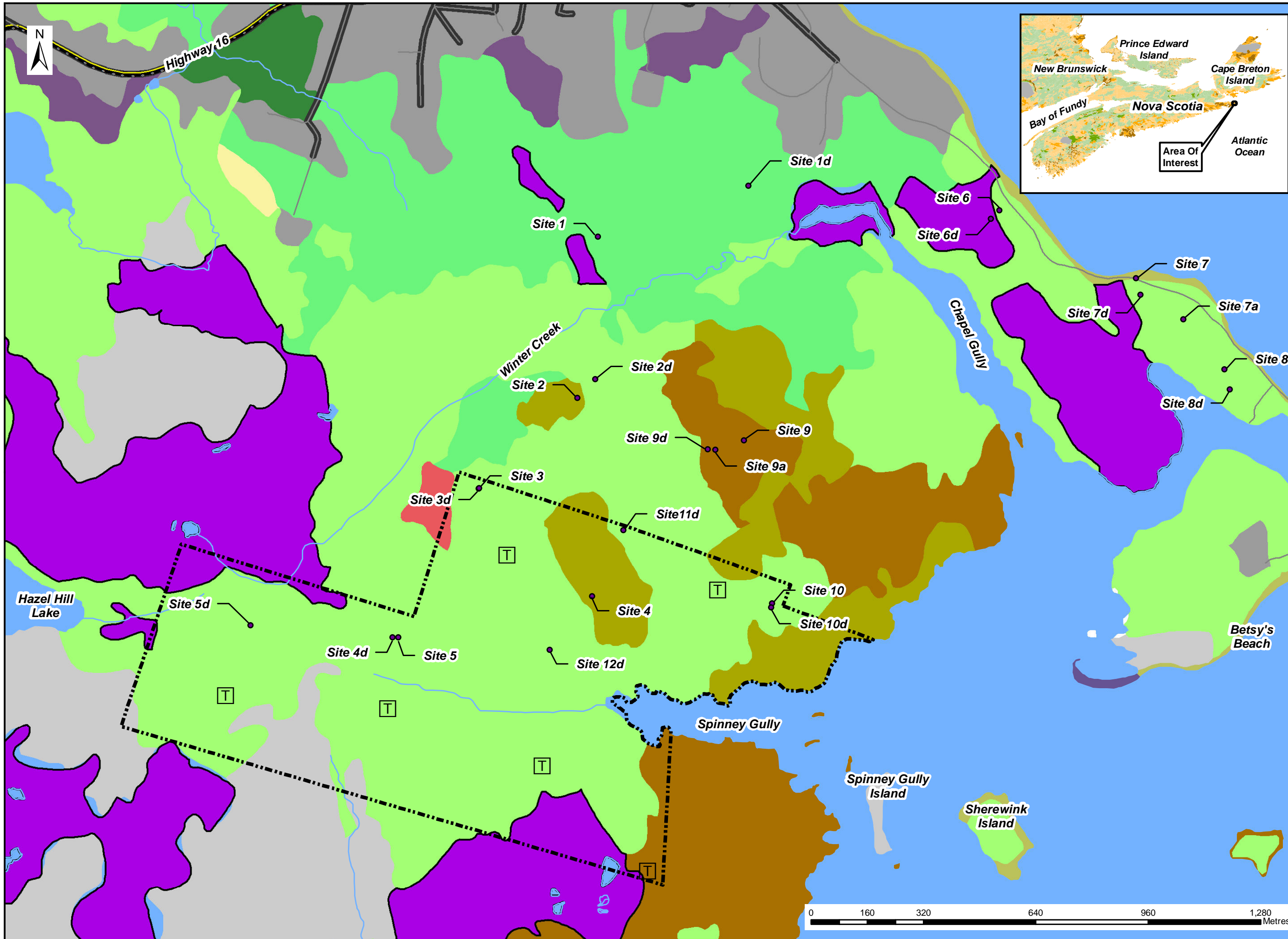
A rigorous avian survey program was implemented in 2004/2005 to determine the potential effects of the Project on avifauna. Although the current Project includes a revised wind turbine generator layout, data obtained in 2006 nonetheless corresponds closely to the current Project boundaries (Figure 1) such that the results are relevant to the current Project.

3.1 Breeding Birds

Breeding bird surveys were conducted in the Canso area during the first week of July, 2004, and in June 2005.

Surveys were conducted at both the proposed turbine locations (as of 2004/2005), as well as in the lands surrounding the Project site (extending up to a 25 km radius). Several of the locations surveyed in 2004 and 2005 fall within the current Project site boundaries and indeed are in close proximity to the current proposed Project layout. Since the habitat present at these locations has not changed significantly in the interim, results from these surveys should be indicative of the current breeding bird community at the Project site.

There were 61 species identified at the proposed turbine sites in 2004/2005 (Table 1).



Notes:

1. Reference: Site Plan Supplied by Client. Digital Topographic Mapping by Nova Scotia Geomatics Centre. Cover Type by Nova Scotia Forest Inventory.
2. Projection: NAD83(CSRS), UTM Zone 20N

- Legend**
- Current Project Site Boundary
 - Current Proposed Turbine Location
 - 2006 Proposed Turbine Locations
 - Bog or Fen
 - Water Body
 - Unclassified Forest
 - Burned Stand
 - Sugar Bush
 - Brush
 - Alders <75%
 - Coastal Habitat
 - Cliffs, Dunes, Coastal Rocks
 - Rock Barren
 - Barren
 - Agriculture
 - Urban
 - Beach
 - Road Corridor
 - Roads
 - Major Roads and Highways
 - Watercourse
 - Softwood
 - Mixedwood

2006 Proposed Turbine Sites + Current Layout



Date: Nov. 2012	Project #: 12-4469
Scale: 1:10,000	Figure #: 1
Drawn By: G. Gregory	
Checked By: M. Smith	

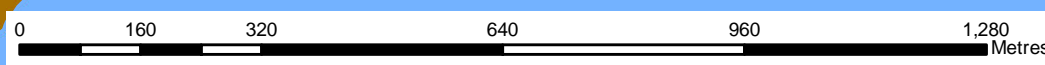


Table 1: Breeding Birds Recorded at the Project Site (July 2004 and June 2005)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Alder Flycatcher	<i>Empidonax alnorum</i>	Green	Not Listed	Not Listed	Not Listed
American Crow	<i>Corvus brachyrhynchos</i>	Green	Not Listed	Not Listed	Not Listed
American Goldfinch	<i>Spinus tristis</i>	Green	Not Listed	Not Listed	Not Listed
American Redstart	<i>Setophaga ruticilla</i>	Green	Not Listed	Not Listed	Not Listed
American Robin	<i>Turdus migratorius</i>	Green	Not Listed	Not Listed	Not Listed
Belted Kingfisher	<i>Megaceryle alcyon</i>	Green	Not Listed	Not Listed	Not Listed
Black-and-white Warbler	<i>Mniotilta varia</i>	Green	Not Listed	Not Listed	Not Listed
Black-backed Woodpecker ⁵	<i>Picoides arcticus</i>	Yellow	Not Listed	Not Listed	Not Listed
Black-capped Chickadee	<i>Poecile atricapillus</i>	Green	Not Listed	Not Listed	Not Listed
Blackpoll Warbler ⁶	<i>Dendroica striata</i>	Yellow	Not Listed	Not Listed	Not Listed
Black-throated Green Warbler	<i>Dendroica virens</i>	Green	Not Listed	Not Listed	Not Listed
Blue Jay	<i>Cyanocitta cristata</i>	Green	Not Listed	Not Listed	Not Listed
Blue-headed Vireo	<i>Vireo solitarius</i>	Green	Not Listed	Not Listed	Not Listed
Boreal Chickadee ⁶	<i>Poecile hudsonicus</i>	Yellow	Not Listed	Not Listed	Not Listed
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Green	Not Listed	Not Listed	Not Listed
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Green	Not Listed	Not Listed	Not Listed
Common Grackle	<i>Quiscalus quiscula</i>	Green	Not Listed	Not Listed	Not Listed
Common Loon ⁷	<i>Gavia immer</i>	Red	Not at Risk	Not Listed	Not Listed
Common Raven	<i>Corvus corax</i>	Green	Not Listed	Not Listed	Not Listed
Common Yellowthroat	<i>Geothlypis trichas</i>	Green	Not Listed	Not Listed	Not Listed
Dark-eyed Junco	<i>Junco hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Downy Woodpecker	<i>Picoides pubescens</i>	Green	Not Listed	Not Listed	Not Listed
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Green	Not Listed	Not Listed	Not Listed
Fox Sparrow	<i>Passerella iliaca</i>	Green	Not Listed	Not Listed	Not Listed
Golden-crowned Kinglet ⁶	<i>Regulus satrapa</i>	Yellow	Not Listed	Not Listed	Not Listed
Gray Jay ⁶	<i>Perisoreus canadensis</i>	Yellow	Not Listed	Not Listed	Not Listed
Hairy Woodpecker	<i>Picoides villosus</i>	Green	Not Listed	Not Listed	Not Listed
Hermit Thrush	<i>Catharus guttatus</i>	Green	Not Listed	Not Listed	Not Listed
Lincoln's Sparrow	<i>Melospiza lincolni</i>	Green	Not Listed	Not Listed	Not Listed
Long-eared Owl ⁵	<i>Asio otus</i>	Red	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Magnolia Warbler	<i>Dendroica magnolia</i>	Green	Not Listed	Not Listed	Not Listed
Mourning Dove	<i>Zenaida macroura</i>	Green	Not Listed	Not Listed	Not Listed
Mourning Warbler	<i>Oporornis philadelphia</i>	Green	Not Listed	Not Listed	Not Listed
Nashville Warbler	<i>Vermivora ruficapilla</i>	Green	Not Listed	Not Listed	Not Listed
Northern Flicker	<i>Colaptes auratus</i>	Green	Not Listed	Not Listed	Not Listed
Northern Parula	<i>Parula americana</i>	Green	Not Listed	Not Listed	Not Listed
Olive-sided Flycatcher ⁶	<i>Contopus cooperi</i>	Red	Threatened	Threatened	Not Listed
Osprey	<i>Pandion haliaetus</i>	Green	Not Listed	Not Listed	Not Listed
Ovenbird	<i>Seiurus aurocapilla</i>	Green	Not Listed	Not Listed	Not Listed
Palm Warbler	<i>Dendroica palmarum</i>	Green	Not Listed	Not Listed	Not Listed
Philadelphia Vireo	<i>Vireo philadelphicus</i>	Undetermined	Not Listed	Not Listed	Not Listed
Pine Siskin ⁵	<i>Spinus pinus</i>	Yellow	Not Listed	Not Listed	Not Listed
Purple Finch	<i>Carpodacus purpureus</i>	Green	Not Listed	Not Listed	Not Listed
Red-Breasted Nuthatch	<i>Sitta canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Red-eyed Vireo	<i>Vireo olivaceus</i>	Green	Not Listed	Not Listed	Not Listed
Ruby-crowned Kinglet ⁶	<i>Regulus calendula</i>	Yellow	Not Listed	Not Listed	Not Listed
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Green	Not Listed	Not Listed	Not Listed
Ruffed Grouse	<i>Bonasa umbellus</i>	Green	Not Listed	Not Listed	Not Listed
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Green	Not at Risk	Not Listed	Not Listed
Song Sparrow	<i>Melospiza melodia</i>	Green	Not Listed	Not Listed	Not Listed
Spruce Grouse	<i>Falcapennis canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Swainson's Thrush	<i>Catharus ustulatus</i>	Green	Not Listed	Not Listed	Not Listed
Tennessee Warble ⁶	<i>Vermivora peregrina</i>	Yellow	Not Listed	Not Listed	Not Listed
Veery	<i>Catharus fuscescens</i>	Green	Not Listed	Not Listed	Not Listed
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Green	Not Listed	Not Listed	Not Listed
White-winged Crossbill	<i>Loxia leucoptera</i>	Green	Not Listed	Not Listed	Not Listed
Wilson's Warbler ⁵	<i>Wilsonia pusilla</i>	Yellow	Not Listed	Not Listed	Not Listed
Winter Wren	<i>Troglodytes troglodytes</i>	Green	Not Listed	Not Listed	Not Listed
Yellow Warbler	<i>Dendroica petechia</i>	Green	Not Listed	Not Listed	Not Listed
Yellow-bellied Flycatcher ⁶	<i>Empidonax flaviventris</i>	Yellow	Not Listed	Not Listed	Not Listed
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Green	Not Listed	Not Listed	Not Listed

¹Nova Scotia Department of Natural Resources (NSDNR) 2010;

²Committee on the Status of Endangered Wildlife in Canada (COSEWIC 2012);

³Species at Risk Act (SARA) 2012;

⁴Nova Scotia Endangered Species Act (NSESA) 2007;

⁵Not observed within current Project site boundaries;

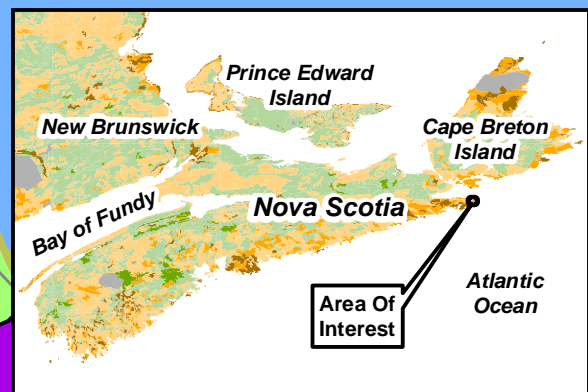
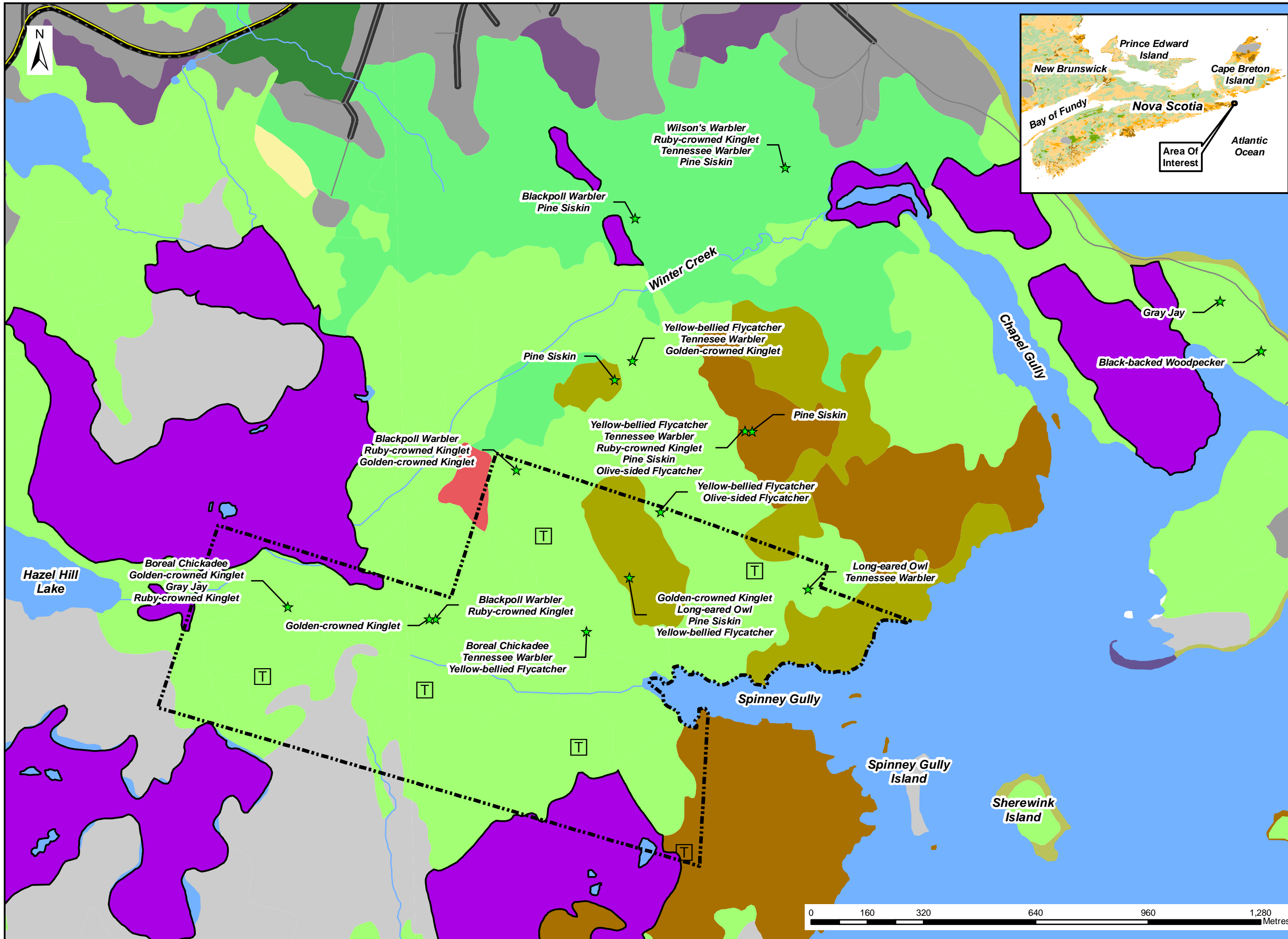
⁶Observed within current Project site boundaries;

⁷Observed flying over surveyed location

There were no SARA listed species recorded at the Project site during breeding bird surveys in 2004/2005. However, the following 13 priority species, according to the criteria outlined in the “Guide to Addressing Wildlife Species and Habitats in an EA Registration Document” (NSE 2009), were observed at the proposed turbine locations during the breeding bird surveys (Figure 2):

- Black-backed Woodpecker – “Yellow” (NSDNR 2010);
- Blackpoll Warbler – “Yellow” (NSDNR 2010);
- Boreal Chickadee – “Yellow” (NSDNR 2010);
- Common Loon – “Red” (NSDNR 2010);
- Golden-crowned Kinglet – “Yellow” (NSDNR 2010);
- Gray Jay – “Yellow” (NSDNR 2010);
- Long-eared Owl – “Red” (NSDNR 2010);
- Olive-sided Flycatcher – “Red” (NSDNR 2010), “Threatened” (COSEWIC 2012), “Threatened” (SARA 2012);
- Pine Siskin – “Yellow” (NSDNR 2010);
- Ruby-crowned Kinglet – “Yellow” (NSDNR 2010);
- Tennessee Warbler – “Yellow” (NSDNR 2010);
- Wilson's Warbler – “Yellow” (NSDNR 2010); and
- Yellow-bellied Flycatcher – “Yellow” (NSDNR 2010).

Table 2 lists the bird species that were recorded in adjacent areas but were not observed at the Project site.



Notes:

1. Reference: Survey Locations from AMEC 2006. Habitat Mapping from NS Forest Inventory (NSDNR 2011).
2. Projection: NAD83(CSRS), UTM Zone 20N

- Legend**
- Project Site Boundary
 - Current Proposed Turbine Location
 - Priority Species Location - 2006
 - Bog or Fen
 - Water Body
 - Softwood
 - Mixedwood
 - Unclassified Forest
 - Burned Stand
 - Sugar Bush
 - Brush
 - Alders <75%
 - Coastal Habitat
 - Cliffs, Dunes, Coastal Rocks
 - Rock Barren
 - Barren
 - Agriculture
 - Urban
 - Beach
 - Road Corridor
 - Watercourse
 - Roads
 - Major Roads and Highways

**Priority Species Locations
Breeding Birds 2006**



Date: Nov. 2012	Project #: 12-4469
Scale: 1:10,000	Figure #: 2
Drawn By: G. Gregory	
Checked By: M. Smith	

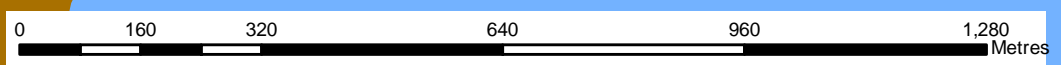


Table 2: Breeding Birds Recorded in Adjacent Areas (2004)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Arctic Tern	<i>Sterna paradisaea</i>	Red	Not Listed	Not Listed	Not Listed
Brown-headed Cowbird	<i>Molothrus ater</i>	Green	Not Listed	Not Listed	Not Listed
Canada Goose	<i>Branta canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Common Eider	<i>Somateria mollissima</i>	Green	Not Listed	Not Listed	Not Listed
Common Tern	<i>Sterna hirundo</i>	Yellow	Not at Risk	Not Listed	Not Listed
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Green	Not at Risk	Not Listed	Not Listed
European Starling	<i>Sturnus vulgaris</i>	Exotic	Not Listed	Not Listed	Not Listed
Great Black-backed Gull	<i>Larus marinus</i>	Green	Not Listed	Not Listed	Not Listed
Great Blue Heron	<i>Ardea herodias</i>	Green	Not Listed	Not Listed	Not Listed
Great Cormorant	<i>Phalacrocorax carbo</i>	Yellow	Not Listed	Not Listed	Not Listed
Great Horned Owl	<i>Bubo virginianus</i>	Green	Not Listed	Not Listed	Not Listed
Herring Gull	<i>Larus argentatus</i>	Green	Not Listed	Not Listed	Not Listed
Nelson's Sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>	Green	Not Listed	Not Listed	Not Listed
Northern Harrier	<i>Circus cyaneus</i>	Green	Not at Risk	Not Listed	Not Listed
Pine Grosbeak	<i>Pinicola enucleator</i>	Red	Not Listed	Not Listed	Not Listed
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Green	Not Listed	Not Listed	Not Listed
Roseate Tern	<i>Sterna dougallii</i>	Red	Endangered	Endangered	Endangered
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Green	Special Concern	Special Concern	Not Listed
Spotted Sandpiper	<i>Actitis macularius</i>	Yellow	Not Listed	Not Listed	Not Listed
Swamp Sparrow	<i>Melospiza georgiana</i>	Green	Not Listed	Not Listed	Not Listed
Tree Swallow	<i>Tachycineta bicolor</i>	Yellow	Not Listed	Not Listed	Not Listed
Whimbrel	<i>Numenius phaeopus</i>	Yellow	Not Listed	Not Listed	Not Listed
Willet	<i>Tringa semipalmata</i>	Red	Not Listed	Not Listed	Not Listed

¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007

It should also be noted that several of the proposed turbine locations that were surveyed in 2004 and 2005 were outside of the current Project site boundaries. With the exception of the Long-eared Owl, all species identified at the proposed turbine locations were also observed in nearby lands as well. The breeding bird community was found to be more diverse and abundant at the nearby Chapel Gully Park, likely owing to the diversity of habitat types at this location (e.g., freshwater ponds, brackish inlets, salt marsh, field, coastal waters, rocky shoreline, and urban) relative to the softwood dominated habitat of the Project site.

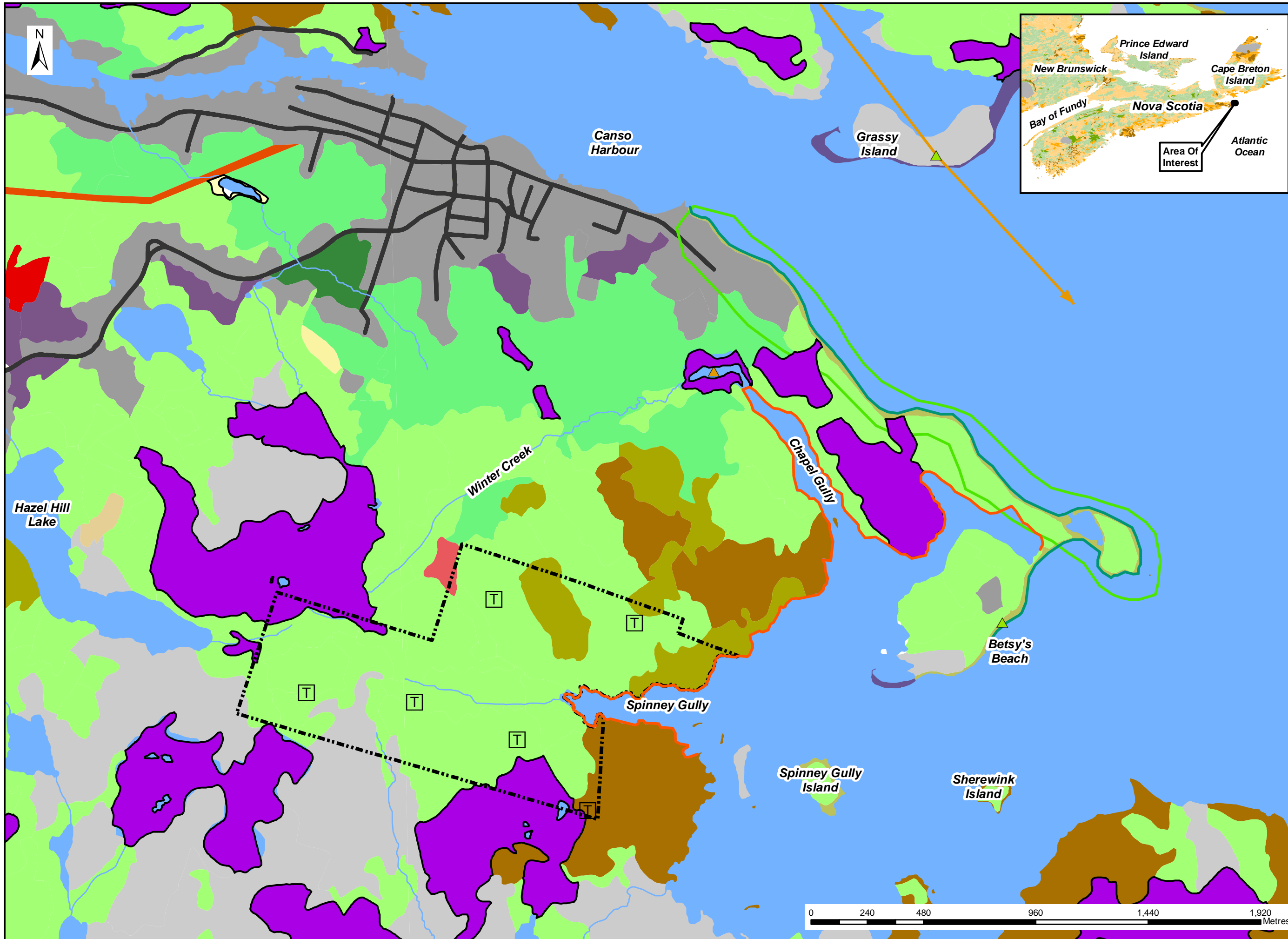
3.2 Fall Migration

Fall migration surveys targeting several key birds groups including shorebirds, waterfowl, and passerines, were conducted between July and October, 2004.

Shorebirds

Key coastal habitats in the Canso area were surveyed to characterize the migrating shorebird community, with considerations made for the effects of the tidal cycle on shorebird roosting and foraging behaviors. Areas surveyed included Canso Harbour to Betsy's Point ("The Outer Coast"), Turf Bog, Spinney Gully, and Chapel Gully and associated coastal lands ("The Inner Coast"). Locations outside of the general Project area were surveyed as well for comparison. These off-site locations included The Tittle, Durrell's Island, Dover Road, Highway 316, and Highway 16 along Chedabucto Bay.

The results of the surveys in 2004 suggest that the coastal lands in the area of the current Project site do not fall within prominent shorebird migration corridors. Relatively few migrating shorebirds were detected in the "Outer Coast" area, and less were observed in the "Inner Coast", which includes coastal sections of the current Project site (Figure 3). It is suspected that shorebirds bypass these coastal lands in favour of the numerous nearshore islands that are situated along migration routes. It was observed that Grassy Island, for example, lies within a major flyway for Whimbrel (*Numenius phaeopus*) (Figure 3). Table 3 provides a list of recorded shorebird species from the 2004 surveys.



Notes:

1. Reference: Survey Locations from AMEC 2006. Habitat Mapping from NS Forest Inventory (NSDNR 2011).
2. Projection: NAD83(CSRS), UTM Zone 20N

- Legend**
- Project Site Boundary
 - Current Proposed Turbine Location
 - Inner Coast Shorebird Surveys
 - Key Shorebird Locations
 - Staging Area for Waterfowl
 - Whimbrel Flyway
 - Little Use by Migrating Shorebirds
 - Bog or Fen
 - Marsh
 - Swamp
 - Outer Coast Shorebird Surveys
 - Water Body
 - Watercourse
 - Softwood
 - Mixedwood
 - Unclassified Forest
 - Burned Stand
 - Sugar Bush
 - Brush
 - Alders <75%
 - Clearcut
 - Coastal Habitat
 - Cliffs, Dunes, Coastal Rocks
 - Rock Barren
 - Barren
 - Agriculture
 - Urban
 - Beach
 - Powerline Corridor
 - Road Corridor
 - Roads
 - Major Roads and Highways

**2004
Shorebird Surveys**



Date: Nov. 2012	Project #: 12-4469
Scale: 1:10,000	Figure #: 3
Drawn By: G. Gregory	
Checked By: M. Smith	



Table 3: Shorebirds Recorded During Fall Migration Surveys (2004)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴	Number Observed					
						Canso and Outer Coast	Inner Coast	Grassy Island	Black Duck Cove Park	Tor Bay Provincial Park	New Harbour
Baird's Sandpiper	<i>Calidris bairdii</i>	Green	Not Listed	Not Listed	Not Listed	-	-	-	-	-	2
Black-bellied Plover	<i>Pluvialis squatarola</i>	Green	Not Listed	Not Listed	Not Listed	-	1	10	...	12	164
Common Snipe	<i>Gallinago gallinago</i>	Yellow	Not Listed	Not Listed	Not Listed	-	1	-	-	-	-
Greater Yellowlegs	<i>Tringa melanoleuca</i>	Yellow	Not Listed	Not Listed	Not Listed	1	-	10	...	1	88
Hudsonian Godwit	<i>Limosa haemastica</i>	Yellow	Not Listed	Not Listed	Not Listed	-	-	-	-	-	2
Killdeer	<i>Charadrius vociferous</i>	Yellow	Not Listed	Not Listed	Not Listed	-	-	-	-	-	-
Least Sandpiper	<i>Calidris minutilla</i>	Green	Not Listed	Not Listed	Not Listed	20	-	-	16	-	26
Lesser Yellowlegs	<i>Tringa flavipes</i>	Green	Not Listed	Not Listed	Not Listed	-	-	2	-	-	19
Long-billed Curlew	<i>Numenius americanus</i>	Accidental	Not Listed	Not Listed	Not Listed	-	-	1	-	-	-
Pectoral Sandpiper	<i>Calidris melanotos</i>	Green	Not Listed	Not Listed	Not Listed	-	-	-	-	-	1
Sanderling	<i>Calidris alba</i>	Green	Not Listed	Not Listed	Not Listed	-	-	-	-	6	20
Semipalmated Plover	<i>Charadrius semipalmatus</i>	Green	Not Listed	Not Listed	Not Listed	99	-	50	37	50	377
Semipalmated Sandpiper	<i>Calidris pusilla</i>	Yellow	Not Listed	Not Listed	Not Listed	18	-	-	8	2	257
Short-billed Dowitcher	<i>Limnodromus griseus</i>	Green	Not Listed	Not Listed	Not Listed	-	-	-	-	-	124
Spotted Sandpiper	<i>Actitis macularius</i>	Yellow	Not Listed	Not Listed	Not Listed	15	-	-	-	-	1
Whimbrel	<i>Numenius phaeopus</i>	Yellow	Not Listed	Not Listed	Not Listed	100+	1	100+	-	9	1
White-rumped Sandpiper	<i>Calidris fuscicollis</i>	Green	Not Listed	Not Listed	Not Listed	-	-	-	-	1	32
Willet	<i>Tringa semipalmata</i>	Red	Not Listed	Not Listed	Not Listed	-	-	-	-	-	12

The highest diversity of species and abundance of individual birds was observed at New Harbour, located approximately 38.4 km to the southwest of the current Project site boundary (Figure 4). The composition of the shorebird community observed at this location suggests that the main fall migration routes for some species along the Atlantic coast of Nova Scotia, bypasses the Canso area. This includes species such as Black-bellied Plover (*Peltigera rufescens*), Semipalmated Plover (*Charadrius semipalmatus*), Short-billed Dowitcher (*Limnodromus griseus*), Greater Yellowlegs (*Tringa melanoleuca*), Semipalmated Sandpiper (*Calidris pusilla*), and White-rumped Sandpiper (*Calidris fuscicollis*).

Just three species of shorebird were observed in the coastal areas immediately adjacent to the Project site, including Spinney Gully (Table 3), of which the following are considered priority species according to the criteria outlined in the “Guide to Addressing Wildlife Species and Habitats in an EA Registration Document” (NSE 2009):

- Common Snipe – “Yellow” (NSDNR 2010); and
- Whimbrel – “Yellow” (NSDNR 2010).

Waterfowl

Waterfowl were also surveyed in 2004. Small flocks of Green-winged Teal (*Anas crecca*) and American Black Ducks (*Anas rubripes*) were recorded in the small pond at the head of Chapel Gully, suggesting that this location may be used as a staging area for local waterfowl (Figure 3). No additional waterfowl species were observed during the 2004 fall migration surveys.

Passerines

There were 62 passerine species observed in the Canso area during surveys conducted in fall 2004 (Table 4). Observations from these surveys indicated areas of particular importance for migrating passerines. Most of the passerine migrant activity was observed on the lands adjacent to the current Project site; in fact, only one flock of 50 individuals was observed within the current Project site boundaries during the early fall migrant surveys (approximately 270 m from the nearest proposed turbine location). However, migrant passerines were observed flying south and southwest from an area of interest at the entrance to Chapel Gully Park, a path which may be intercepted by turbines. Nonetheless, the proposed turbine sites surveyed in 2004 were the least active areas for passerine migrants, likely because more suitable habitat is provided in adjacent areas such as Chapel Gully Park.



Notes:

1. Reference: Survey Locations from AMEC 2006. Habitat Mapping from NS Forest Inventory (NSDNR 2011).
2. Projection: NAD83(CSRS), UTM Zone 20N

Legend

- Project Site Boundary
- Key Shorebird Locations
- Roads
- Major Roads and Highways
- Water Body

2004 Key Shorebird Locations



Date:	Nov. 2012	Project #:	12-4469
Scale:	1:115,000	Figure #:	4
Drawn By:	G. Gregory		
Checked By:	M. Smith		

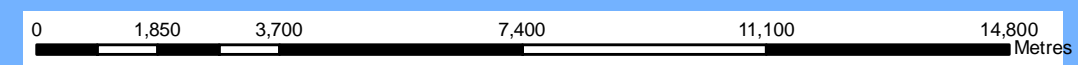


Table 4: Passerines Recorded During Fall Migration Surveys (2004)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSEA Status ⁴
Alder Flycatcher	<i>Empidonax alnorum</i>	Green	Not Listed	Not Listed	Not Listed
American Goldfinch	<i>Spinus tristis</i>	Green	Not Listed	Not Listed	Not Listed
American Pipit	<i>Anthus rubescens</i>	Green	Not Listed	Not Listed	Not Listed
American Redstart	<i>Setophaga ruticilla</i>	Green	Not Listed	Not Listed	Not Listed
American Robin	<i>Turdus migratorius</i>	Green	Not Listed	Not Listed	Not Listed
Baltimore Oriole ⁵	<i>Icterus galbula</i>	Red	Not Listed	Not Listed	Not Listed
Bay-breasted Warbler ⁵	<i>Dendroica castanea</i>	Yellow	Not Listed	Not Listed	Not Listed
Black-and-white Warbler	<i>Mniotilta varia</i>	Green	Not Listed	Not Listed	Not Listed
Blackburnian Warbler	<i>Dendroica fusca</i>	Green	Not Listed	Not Listed	Not Listed
Black-capped Chickadee	<i>Poecile atricapillus</i>	Green	Not Listed	Not Listed	Not Listed
Blackpoll Warbler ⁵	<i>Dendroica striata</i>	Yellow	Not Listed	Not Listed	Not Listed
Black-throated Green Warbler	<i>Dendroica virens</i>	Green	Not Listed	Not Listed	Not Listed
Blue Grosbeak	<i>Passerina caerulea</i>	Accidental	Not Listed	Not Listed	Not Listed
Blue-gray Gnatcatcher	<i>Polioptila caerulea</i>	Accidental	Not Listed	Not Listed	Not Listed
Blue-headed Vireo	<i>Vireo solitaries</i>	Green	Not Listed	Not Listed	Not Listed
Bobolink ⁶	<i>Dolichonyx oryzivorus</i>	Yellow	Threatened	No Status	Not Listed
Brown-headed Cowbird	<i>Molothrus ater</i>	Green	Not Listed	Not Listed	Not Listed
Canada Warbler ⁵	<i>Wilsonia canadensis</i>	Red	Threatened	Threatened	Not Listed
Cape May Warbler ⁵	<i>Dendroica tigrina</i>	Yellow	Not Listed	Not Listed	Not Listed
Carolina Wren	<i>Thryothorus ludovicianus</i>	Accidental	Not Listed	Not Listed	Not Listed
Cattle Egret	<i>Bubulcus ibis</i>	Accidental	Not Listed	Not Listed	Not Listed
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Green	Not Listed	Not Listed	Not Listed
Chipping Sparrow	<i>Spizella passerine</i>	Green	Not Listed	Not Listed	Not Listed
Common Grackle	<i>Quiscalus quiscula</i>	Green	Not Listed	Not Listed	Not Listed
Common Yellowthroat	<i>Geothlypis trichas</i>	Green	Not Listed	Not Listed	Not Listed
Dark-eyed Junco	<i>Junco hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Dickcissel	<i>Spiza Americana</i>	Accidental	Not Listed	Not Listed	Not Listed
Eastern Bluebird ⁶	<i>Sialia sialis</i>	Yellow	Not at Risk	Not Listed	Not Listed
Eastern Kingbird ⁵	<i>Tyrannus tyrannus</i>	Yellow	Not Listed	Not Listed	Not Listed
Eastern Meadowlark ⁶	<i>Sturnella magna</i>	Yellow	Threatened	No Status	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	Accidental	Not Listed	Not Listed	Not Listed
Indigo Bunting	<i>Passerina cyanea</i>	Undetermined	Not Listed	Not Listed	Not Listed
Lark Sparrow	<i>Chondestes grammacus</i>	Accidental	Not Listed	Not Listed	Not Listed
Magnolia Warbler	<i>Dendroica magnolia</i>	Green	Not Listed	Not Listed	Not Listed
Nashville Warbler	<i>Vermivora ruficapilla</i>	Green	Not Listed	Not Listed	Not Listed
Northern Flicker	<i>Colaptes auratus</i>	Green	Not Listed	Not Listed	Not Listed
Northern Mockingbird	<i>Mimus polyglottos</i>	Green	Not Listed	Not Listed	Not Listed
Northern Waterthrush	<i>Seiurus noveboracensis</i>	Green	Not Listed	Not Listed	Not Listed
Orange-crowned Warbler	<i>Vermivora celata</i>	Green	Not Listed	Not Listed	Not Listed
Ovenbird	<i>Seiurus auropcapilla</i>	Green	Not Listed	Not Listed	Not Listed
Palm Warbler	<i>Dendroica palmarum</i>	Green	Not Listed	Not Listed	Not Listed
Pine Siskin ⁵	<i>Spinus pinus</i>	Yellow	Not Listed	Not Listed	Not Listed
Pine Warbler	<i>Dendroica pinus</i>	Undetermined	Not Listed	Not Listed	Not Listed
Purple Finch	<i>Carpodacus purpureus</i>	Green	Not Listed	Not Listed	Not Listed
Red-eyed Vireo	<i>Vireo olivaceus</i>	Green	Not Listed	Not Listed	Not Listed
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	Green	Not Listed	Not Listed	Not Listed
Rose-breasted Grosbeak ⁶	<i>Pheucticus ludovicianus</i>	Yellow	Not Listed	Not Listed	Not Listed
Ruby-crowned Kinglet ⁵	<i>Regulus calendula</i>	Yellow	Not Listed	Not Listed	Not Listed
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Green	Not Listed	Not Listed	Not Listed
Snow Bunting	<i>Plectrophenax nivalis</i>	Green	Not Listed	Not Listed	Not Listed
Song Sparrow	<i>Melospiza melodia</i>	Green	Not Listed	Not Listed	Not Listed
Swamp Sparrow	<i>Melospiza georgiana</i>	Green	Not Listed	Not Listed	Not Listed
Tennessee Warbler ⁵	<i>Vermivora peregrina</i>	Yellow	Not Listed	Not Listed	Not Listed
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	Green	Not Listed	Not Listed	Not Listed
White-eyed Vireo	<i>Vireo griseus</i>	Accidental	Not Listed	Not Listed	Not Listed
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Green	Not Listed	Not Listed	Not Listed
Wilson's Warbler ⁵	<i>Wilsonia pusilla</i>	Yellow	Not Listed	Not Listed	Not Listed
Winter Wren	<i>Troglodytes troglodytes</i>	Green	Not Listed	Not Listed	Not Listed
Yellow Warbler	<i>Dendroica petechia</i>	Green	Not Listed	Not Listed	Not Listed
Yellow-billed Cuckoo	<i>Coccyzus americanus</i>	Accidental	Not Listed	Not Listed	Not Listed
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Green	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Yellow-throated Vireo	<i>Vireo flavifrons</i>	Accidental	Not Listed	Not Listed	Not Listed

¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007; ⁵Observed at unspecified 2004 turbine location, may/may not coincide with current Project site;

⁶Not observed within current Project site boundaries

Fall passerine migration corridors were observed in areas to the north, east, and west of the current Project site (Figure 5). These areas include: a valley running from northwest to southeast behind the Town of Canso; the Dover Road; a system of active feeders within the Town of Canso itself; and the narrow Canso peninsula. The Town of Canso featured the highest diversity and abundance of migrating passerines during the late fall surveys.

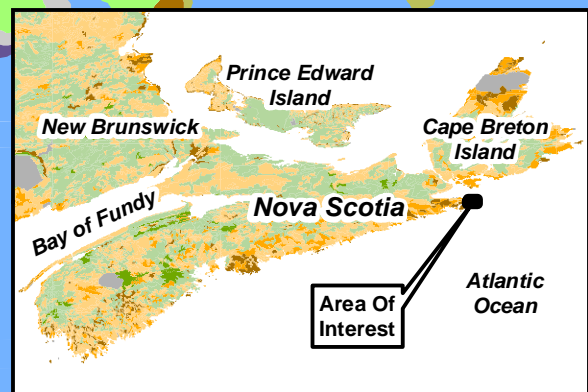
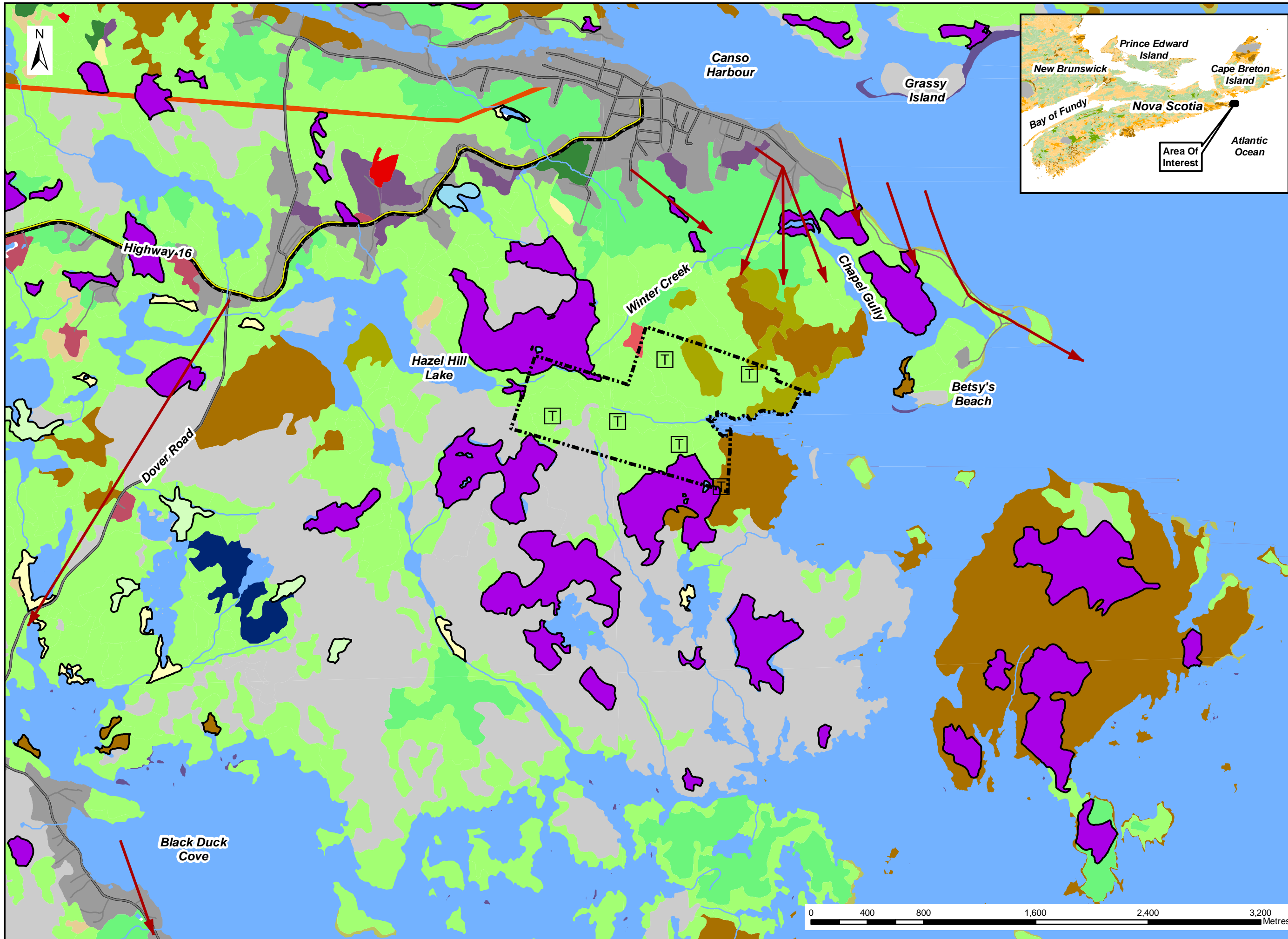
The following priority species, according to the criteria outlined in the “Guide to Addressing Wildlife Species and Habitats in an EA Registration Document” (NSE 2009), were identified from the Canso area during the fall migration surveys:

- Baltimore Oriole – “Red” (NSDNR 2010);
- Bay-breasted Warbler – “Yellow” (NSDNR 2010);
- Blackpoll Warbler – “Yellow” (NSDNR 2010);
- Bobolink– “Yellow” (NSDNR 2010), “Threatened” (COSEWIC 2012);
- Canada Warbler – “Red” (NSDNR 2010), “Threatened” (COSEWIC 2012), “Threatened” (SARA 2012);
- Cape May Warbler – “Yellow” (NSDNR 2010);
- Eastern Bluebird – “Yellow” (NSDNR 2010);
- Eastern Kingbird – “Yellow” (NSDNR 2010);
- Eastern Meadowlark – “Yellow” (NSDNR 2010), “Threatened” (COSEWIC 2012);
- Pine siskin – “Yellow” (NSDNR 2010).
- Rose-breasted Grosbeak – “Yellow” (NSDNR 2010);
- Ruby-crowned Kinglet – “Yellow” (NSDNR 2010);
- Tennessee Warbler – “Yellow” (NSDNR 2010); and
- Wilson's Warbler – “Yellow” (NSDNR 2010).

3.3 Winter Surveys

Winter bird surveys were carried out in the Canso area in the first week of January, 2005 with the purpose of collecting data on species presence, abundance, and habitat usage both by winter migrants from the far north and by over-wintering residents. This winter program included surveys at proposed turbine locations 1b to 10b as well as an extensive area surrounding the Project site, including all accessible areas within a 2 km radius, Highway 16 from Half Island Cove to the Town of Canso, Highway 316 from Port Felix to Half Island Cove, and the entirety of the Dover Road. Surveys were conducted during peak morning and late afternoon feeding periods, as well as midday to target both over-wintering species and southern strays. Species were identified on the basis of visual observation, flight patterns, and vocalizations (i.e., call notes).

There were 108 species identified during the winter surveys (Table 5), of which 15 were found at or near the proposed turbine locations (Table 6). It is expected that the low diversity of the winter bird community at the proposed turbine locations was due to exposed woodland habitat that does not provide adequate food or cover for any but the hardiest of species.



Notes:

1. Reference: Survey Locations from AMEC 2006. Habitat Mapping from NS Forest Inventory (NSDNR 2011).
2. Projection: NAD83(CSRS), UTM Zone 20N

- Legend**
- Project Site Boundary
 - Current Proposed Turbine Location
 - Passerine Migration Corridor
- NS DNR Wetland Inventory**
- Wetland Type**
- Bog or Fen
 - Fen
 - Marsh
 - Salt Marsh
 - Swamp
 - Water
 - Watercourse
 - Roads
 - Major Roads and Highways
 - Water Body
 - Softwood
 - Mixedwood
 - Unclassified Forest
 - Burned Stand
 - Sugar Bush
 - Dead Stand
 - Brush
 - Alders <75%
 - Clearcut
 - Coastal Habitat
 - Cliffs, Dunes, Coastal Rocks
 - Rock Barren
 - Barren
 - Agriculture
 - Urban
 - Beach
 - Gravel Pit
 - Powerline Corridor
 - Road Corridor

2004 Passerine Migration Corridors



Date: Nov. 2012	Project #: 12-4469
Scale: 1:25,000	Figure #: 5
Drawn By: G. Gregory	
Checked By: M. Smith	

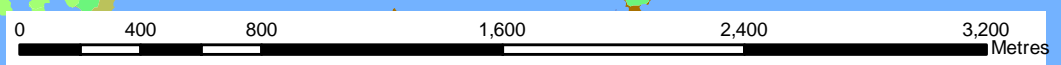


Table 5: Avifauna Observed During Winter Bird Surveys in the Canso Area (2005)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
American Black Duck	<i>Anas rubripes</i>	Green	Not Listed	Not Listed	Not Listed
American Crow	<i>Corvus brachyrhynchos</i>	Green	Not Listed	Not Listed	Not Listed
American Goldfinch	<i>Spinus tristis</i>	Green	Not Listed	Not Listed	Not Listed
American Robin	<i>Turdus migratorius</i>	Green	Not Listed	Not Listed	Not Listed
American Tree Sparrow	<i>Spizella arborea</i>	Green	Not Listed	Not Listed	Not Listed
American Woodcock	<i>Scolopax minor</i>	Green	Not Listed	Not Listed	Not Listed
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Green	Not at Risk	Not Listed	Not Listed
Barrow's Goldeneye	<i>Bucephala islandica</i>	Red	Special Concern	Special Concern	Not Listed
Black Guillemot	<i>Cephus grille</i>	Green	Not Listed	Not Listed	Not Listed
Black Scoter	<i>Melanitta nigra</i>	Green	Not Listed	Not Listed	Not Listed
Black-capped Chickadee	<i>Poecile atricapillus</i>	Green	Not Listed	Not Listed	Not Listed
Blue Jay	<i>Cyanocitta cristata</i>	Green	Not Listed	Not Listed	Not Listed
Bonaparte's Gull	<i>Chroicocephalus Philadelphia</i>	Green	Not Listed	Not Listed	Not Listed
Boreal Chickadee	<i>Poecile hudsonicus</i>	Yellow	Not Listed	Not Listed	Not Listed
Brown Creeper	<i>Certhia Americana</i>	Green	Not Listed	Not Listed	Not Listed
Bufflehead	<i>Bucephala albeola</i>	Green	Not Listed	Not Listed	Not Listed
Canada Goose	<i>Branta Canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Green	Not Listed	Not Listed	Not Listed
Common Eider	<i>Somateria mollissima</i>	Green	Not Listed	Not Listed	Not Listed
Common Goldeneye	<i>Bucephala clangula</i>	Green	Not Listed	Not Listed	Not Listed
Common Loon	<i>Gavia immer</i>	Red	Not at Risk	Not Listed	Not Listed
Common Raven	<i>Corvus corax</i>	Green	Not Listed	Not Listed	Not Listed
Common Redpoll	<i>Acanthis flammea</i>	Green	Not Listed	Not Listed	Not Listed
Dark-eyed Junco	<i>Junco hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Dickcissel	<i>Spiza Americana</i>	Accidental	Not Listed	Not Listed	Not Listed
Double-crested Cormorant	<i>Phalacrocorax auritus</i>	Green	Not at Risk	Not Listed	Not Listed
Dovekie	<i>Alle alle</i>	Green	Not Listed	Not Listed	Not Listed
Downy Woodpecker	<i>Picoides pubescens</i>	Green	Not Listed	Not Listed	Not Listed
European Starling	<i>Sturnus vulgaris</i>	Exotic	Not Listed	Not Listed	Not Listed
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Green	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Glaucous Gull	<i>Larus hyperboreus</i>	Green	Not Listed	Not Listed	Not Listed
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Yellow	Not Listed	Not Listed	Not Listed
Gray Jay	<i>Perisoreus canadensis</i>	Yellow	Not Listed	Not Listed	Not Listed
Great Black-backed Gull	<i>Larus marinus</i>	Green	Not Listed	Not Listed	Not Listed
Greater Scaup	<i>Aythya marila</i>	Green	Not Listed	Not Listed	Not Listed
Hairy Woodpecker	<i>Picoides villosus</i>	Green	Not Listed	Not Listed	Not Listed
Herring Gull	<i>Larus argentatus</i>	Green	Not Listed	Not Listed	Not Listed
Horned Grebe	<i>Podiceps auritus</i>	Green	Not Listed	Not Listed	Not Listed
House Sparrow	<i>Passer domesticus</i>	Exotic	Not Listed	Not Listed	Not Listed
Iceland Gull	<i>Larus glaucoides</i>	Green	Not Listed	Not Listed	Not Listed
Lincoln's Sparrow	<i>Melospiza lincolni</i>	Green	Not Listed	Not Listed	Not Listed
Long-tailed Duck	<i>Clangula hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Mallard	<i>Anas platyrhynchos</i>	Green	Not Listed	Not Listed	Not Listed
Merlin	<i>Falco columbarius</i>	Green	Not at Risk	Not Listed	Not Listed
Mourning Dove	<i>Zenaida macroura</i>	Green	Not Listed	Not Listed	Not Listed
Northern Gannet	<i>Morus bassanus</i>	Green	Not Listed	Not Listed	Not Listed
Northern Harrier	<i>Circus cyaneus</i>	Green	Not at Risk	Not Listed	Not Listed
Northern Mockingbird	<i>Mimus polyglottos</i>	Green	Not Listed	Not Listed	Not Listed
Palm Warbler	<i>Dendroica palmarum</i>	Green	Not Listed	Not Listed	Not Listed
Pine Grosbeak	<i>Pinicola enucleator</i>	Red	Not Listed	Not Listed	Not Listed
Pine Siskin	<i>Spinus pinus</i>	Yellow	Not Listed	Not Listed	Not Listed
Purple Finch	<i>Carpodacus purpureus</i>	Green	Not Listed	Not Listed	Not Listed
Purple Sandpiper	<i>Calidris maritime</i>	Yellow	Not Listed	Not Listed	Not Listed
Razorbill	<i>Alca torda</i>	Yellow	Not Listed	Not Listed	Not Listed
Red-breasted Merganser	<i>Mergus serrator</i>	Green	Not Listed	Not Listed	Not Listed
Red-breasted Nuthatch	<i>Sitta Canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Red-headed Woodpecker	<i>Melanerpes erythrocephalus</i>	Accidental	Not Listed	Not Listed	Not Listed
Red-necked Grebe	<i>Podiceps griseigena</i>	Green	Not at Risk	Not Listed	Not Listed
Red-throated Loon	<i>Gavia stellata</i>	Green	Not Listed	Not Listed	Not Listed
Rock Pigeon	<i>Columba livia</i>	Exotic	Not Listed	Not Listed	Not Listed
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Yellow	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Green	Not at Risk	Not Listed	Not Listed
Snow Bunting	<i>Plectrophenax nivalis</i>	Green	Not Listed	Not Listed	Not Listed
Song Sparrow	<i>Melospiza melodia</i>	Green	Not Listed	Not Listed	Not Listed
Surf Scoter	<i>Melanitta perspicillata</i>	Green	Not Listed	Not Listed	Not Listed
Swamp Sparrow	<i>Melospiza Georgiana</i>	Green	Not Listed	Not Listed	Not Listed
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Green	Not Listed	Not Listed	Not Listed
White-winged Crossbill	<i>Loxia leucoptera</i>	Green	Not Listed	Not Listed	Not Listed
White-winged Scoter	<i>Melanitta fusca</i>	Green	Not Listed	Not Listed	Not Listed

¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007

Table 6: Avifauna Observed During Winter Bird Surveys at the Proposed Turbine Locations (2005)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
American Crow	<i>Corvus brachyrhynchos</i>	Green	Not Listed	Not Listed	Not Listed
American Goldfinch	<i>Spinus tristis</i>	Green	Not Listed	Not Listed	Not Listed
American Robin	<i>Turdus migratorius</i>	Green	Not Listed	Not Listed	Not Listed
Black-capped Chickadee	<i>Poecile atricapillus</i>	Green	Not Listed	Not Listed	Not Listed
Brown Creeper	<i>Certhia Americana</i>	Green	Not Listed	Not Listed	Not Listed
Common Redpoll	<i>Acanthis flammea</i>	Green	Not Listed	Not Listed	Not Listed
Dark-eyed Junco	<i>Junco hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Evening Grosbeak	<i>Coccothraustes vespertinus</i>	Green	Not Listed	Not Listed	Not Listed
Golden-crowned Kinglet ⁵	<i>Regulus satrapa</i>	Yellow	Not Listed	Not Listed	Not Listed
Pine Siskin ⁶	<i>Spinus pinus</i>	Yellow	Not Listed	Not Listed	Not Listed
Purple Finch	<i>Carpodacus purpureus</i>	Green	Not Listed	Not Listed	Not Listed
Red-breasted Nuthatch	<i>Sitta Canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Ruffed Grouse	<i>Bonasa umbellus</i>	Green	Not Listed	Not Listed	Not Listed
Song Sparrow	<i>Melospiza melodia</i>	Green	Not Listed	Not Listed	Not Listed

¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007; ⁵Not observed within current Project site boundaries; ⁶Observed within current Project site boundaries

The following priority species were observed at the proposed turbine locations during winter bird surveys in January 2005:

- Golden-crowned Kinglet¹ – “Yellow” (NSNDR 2010); and
- Pine Siskin² – “Yellow” (NSNDR 2010).

3.4 Spring Surveys

Owls

Nocturnal owl surveys were carried out in mid-April, 2005 at sites 1d to 12d to evaluate the breeding activity of owl species at the Project site (Site 5d was not visited due to access issues during dark hours). Surveys were conducted on nights with no precipitation and winds of less than 10 km/hour. Owls were identified based upon calls elicited by audio playbacks or from response calls elicited by the surveyor.

There were 29 owls, representing five species identified during these nocturnal spring surveys, of which 20 were identified at or near the proposed turbine locations (Table 7; Figure 6).

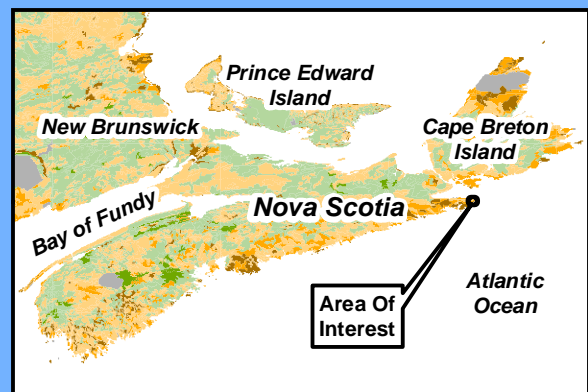
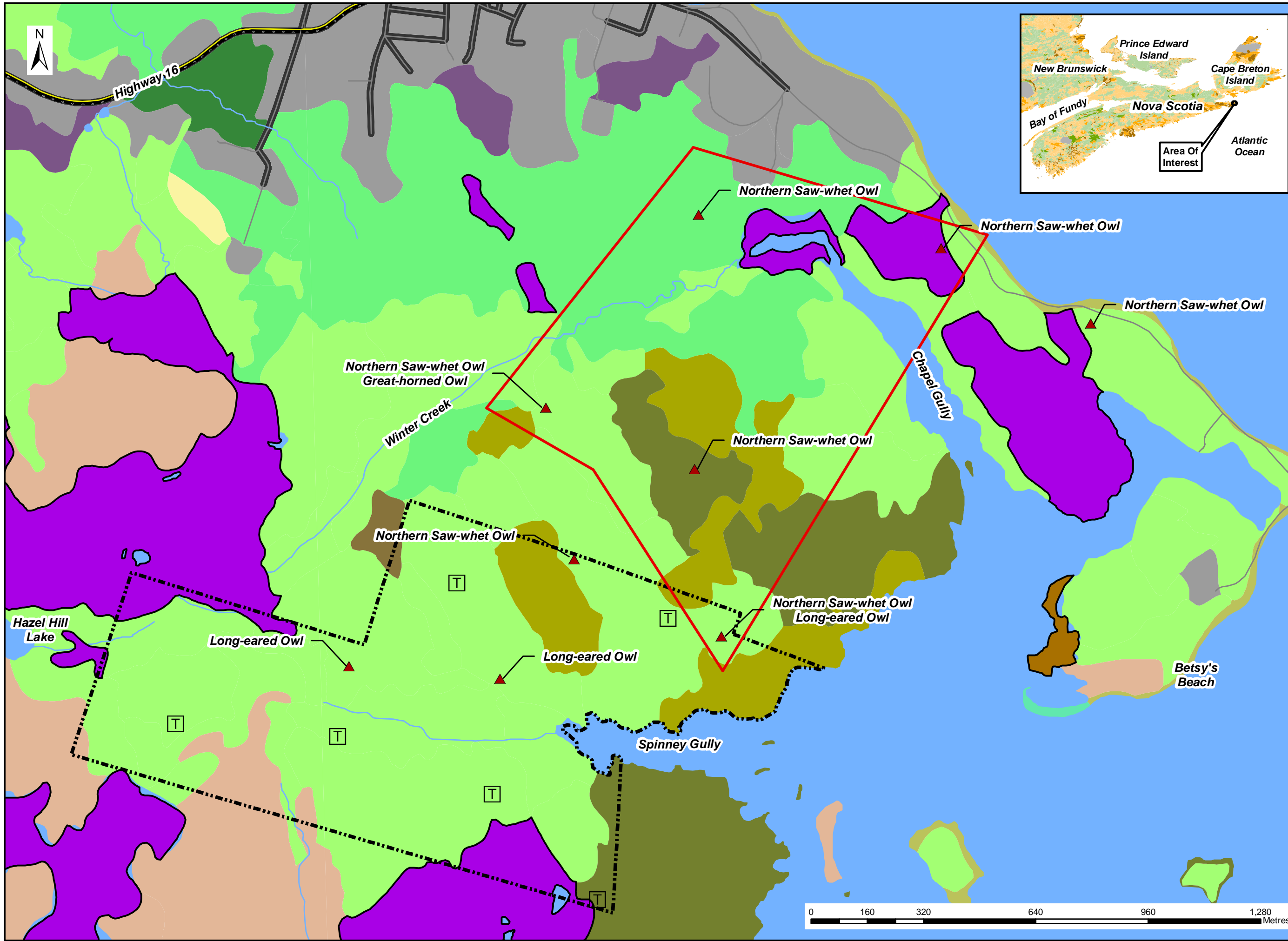
Table 7: Owls Observed At/Near Proposed Turbine Locations During Early Spring Surveys (2005)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Great Horned Owl	<i>Bubo virginianus</i>	Green	Not Listed	Not Listed	Not Listed
Northern saw-whet Owl	<i>Aegolius acadicus</i>	Green	Not Listed	Not Listed	Not Listed
Long-eared Owl	<i>Asio otus</i>	Red	Not Listed	Not Listed	Not Listed

¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007

Long-eared Owls were identified at three survey locations that fall within the current Project site boundaries. It appears that the softwood dominated habitat at the Project site offers the combination of cover and nearby feeding grounds necessary for this species to establish a breeding territory.

Although owls were detected within the current Project site boundaries, the area with the most owl activity was focused on the lands to the north (Figure 6).



Notes:

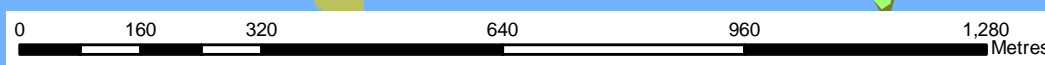
1. Reference: Survey Locations from AMEC 2006. Habitat Mapping from NS Forest Inventory (NSDNR 2011).
2. Projection: NAD83(CSRS), UTM Zone 20N

- Legend**
- Project Site Boundary
 - Current Proposed Turbine Location
 - Prominent Owl Activity Area
 - Spring Owl Locations
- NS DNR Wetland Inventory**
- Wetland Type**
- Bog or Fen
 - Fen
 - Marsh
 - Salt Marsh
 - Swamp
 - Water
 - Water Body
 - Burned Stand
 - Sugar Bush
 - Brush
 - Alders <75%
 - Coastal Habitat
 - Cliffs, Dunes, Coastal Rocks
 - Rock Barren
 - Barren
 - Agriculture
 - Urban
 - Beach
 - Road Corridor
 - Rail Corridor
 - Softwood
 - Mixedwood
 - Roads
 - Major Roads and Highways
 - Watercourse

2005 Spring Owl Locations



Date: Nov. 2012	Project #: 12-4469
Scale: 1:10,000	Figure #: 6
Drawn By: G. Gregory	
Checked By: M. Smith	



Early Migrants

Early spring migrants were surveyed in mid-April (2005) to capture early migrants (i.e., waterfowl, other waterbirds) as well as early breeding species (i.e., woodpeckers, owls). These surveys were also planned to coincide with the peak of the sea duck migration, while surveys for freshwater waterfowl species were carried out after ice melt. Surveys encompassed the area described for the 2004 Fall Shorebird surveys as well as lakes close to the Project site, including Hazel Hill Lake, Wilkin's Lake, Basin Lake, Three Mile Lake, and Little Kavanaugh Lake.

Passerine early spring migration surveys were carried out at locations 1d-12d (Figure 1) as well as the surrounding areas including Chapel Gully Park, Glasgow Head, Glasgow Camp, Betsy's Point, Hazel Hill, and the Town of Canso. Surveys were carried out threefold as follows:

- early morning hours to encompass peak feeding periods for nocturnal migrants;
- midday to encompass a second peak feeding period due to increased insect activity; and
- late afternoon to target diurnal migrants.

There were 26 bird species observed at or near the proposed turbine sites during these surveys (Table 8). The results indicated no significant migration corridors for early spring migrants in the Canso area.

Table 8: Avifauna Observed At/Near the Proposed Turbine Locations During Early Spring Migration Surveys (mid-April 2005)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
American Black Duck	<i>Anas rubripes</i>	Green	Not Listed	Not Listed	Not Listed
American Crow	<i>Corvus brachyrhynchos</i>	Green	Not Listed	Not Listed	Not Listed
American Goldfinch	<i>Spinus tristis</i>	Green	Not Listed	Not Listed	Not Listed
American Robin	<i>Turdus migratorius</i>	Green	Not Listed	Not Listed	Not Listed
Belted Kingfisher	<i>Megaceryle alcyon</i>	Green	Not Listed	Not Listed	Not Listed
Black-capped Chickadee	<i>Poecile atricapillus</i>	Green	Not Listed	Not Listed	Not Listed
Blue Jay	<i>Cyanocitta cristata</i>	Green	Not Listed	Not Listed	Not Listed
Boreal Chickadee	<i>Poecile hudsonicus</i>	Yellow	Not Listed	Not Listed	Not Listed
Brown Creeper	<i>Certhia Americana</i>	Green	Not Listed	Not Listed	Not Listed
Common Grackle	<i>Quiscalus quiscula</i>	Green	Not Listed	Not Listed	Not Listed
Common Raven	<i>Corvus corax</i>	Green	Not Listed	Not Listed	Not Listed
Dark-eyed Junco	<i>Junco hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Fox Sparrow	<i>Passerella iliaca</i>	Green	Not Listed	Not Listed	Not Listed
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Yellow	Not Listed	Not Listed	Not Listed
Great Blue Heron	<i>Ardea Herodias</i>	Green	Not Listed	Not Listed	Not Listed
Great Egret	<i>Ardea alba</i>	Accidental	Not Listed	Not Listed	Not Listed
Green-winged Teal	<i>Anas crecca</i>	Green	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Herring Gull	<i>Larus argentatus</i>	Green	Not Listed	Not Listed	Not Listed
Pine Grosbeak	<i>Pinicola enucleator</i>	Red	Not Listed	Not Listed	Not Listed
Pine Siskin	<i>Spinus pinus</i>	Yellow	Not Listed	Not Listed	Not Listed
Purple Finch	<i>Carpodacus purpureus</i>	Green	Not Listed	Not Listed	Not Listed
Red-breasted Nuthatch	<i>Sitta Canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Ruffed Grouse	<i>Bonasa umbellus</i>	Green	Not Listed	Not Listed	Not Listed
Song Sparrow	<i>Melospiza melodia</i>	Green	Not Listed	Not Listed	Not Listed
Spruce Grouse	<i>Falcapennis Canadensis</i>	Green	Not Listed	Not Listed	Not Listed
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Green	Not Listed	Not Listed	Not Listed

¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007

The following priority species were observed during these surveys:

- Boreal Chickadee – “Yellow” (NSDNR 2010);
- Golden-crowned Kinglet – “Yellow” (NSDNR 2010);
- Pine Grosbeak – “Red” (NSDNR 2010; and
- Pine Siskin – “Yellow” (NSDNR 2010).

Boreal Chickadee, Golden-crowned Kinglet, and Pine Siskin were observed at most of the proposed turbine locations, whereas Pine Grosbeak was identified at sites 4d and 5d, both of which fall within the current Project site boundary (Figure 1). Due to its hilltop location, site 5d may be important to both rare and regular spring migrants. A proposed turbine location in the current Project layout is situated just 210 m to the south, on the same hilltop. The possibility therefore exists that this proposed turbine may interfere with access to this hilltop location, creating the potential for collisions.

Main Migrants

Main migrant surveys were carried out at the Project site in May, 2005 to characterize the bird community during the peak passerine migration period. Surveys were conducted at sites 1d-12d, as well as in the lands surrounding the Project site including Chapel Gully Park, Glasgow Head, Glasgow Camp, Betsy’s Point, Hazel Hill, and the Town of Canso. Surveys were conducted within four hours of sunrise to target peak feeding times for nocturnal migrants, with shorter surveys completed later in the day to target diurnal migrants. Where possible, data were also collected on non-passerine migrant species including waterfowl, shorebirds, and birds of prey.

There were 64 bird species were identified at or near the proposed turbine locations (Table 9).

Table 9: Avifauna Observed At/Near the Proposed Turbine Locations During Peak Spring Migration Surveys (May 2005)

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Alder Flycatcher	<i>Empidonax alnorum</i>	Green	Not Listed	Not Listed	Not Listed
American Black Duck	<i>Anas rubripes</i>	Green	Not Listed	Not Listed	Not Listed
American Crow	<i>Corvus brachyrhynchos</i>	Green	Not Listed	Not Listed	Not Listed
American Goldfinch	<i>Spinus tristis</i>	Green	Not Listed	Not Listed	Not Listed
American Redstart	<i>Setophaga ruticilla</i>	Green	Not Listed	Not Listed	Not Listed
American Robin	<i>Turdus migratorius</i>	Green	Not Listed	Not Listed	Not Listed
American Woodcock	<i>Scolopax minor</i>	Green	Not Listed	Not Listed	Not Listed
Belted Kingfisher	<i>Megaceryle alcyon</i>	Green	Not Listed	Not Listed	Not Listed
Black-and-white Warbler	<i>Mniotilta varia</i>	Green	Not Listed	Not Listed	Not Listed
Black-billed Cuckoo	<i>Coccyzus erythrophthalmus</i>	Red	Not Listed	Not Listed	Not Listed
Black-capped Chickadee	<i>Poecile atricapillus</i>	Green	Not Listed	Not Listed	Not Listed
Black-crowned Night-Heron	<i>Nycticorax nycticorax</i>	Red	Not Listed	Not Listed	Not Listed
Blackpoll Warbler	<i>Dendroica striata</i>	Yellow	Not Listed	Not Listed	Not Listed
Black-throated Green Warbler	<i>Dendroica virens</i>	Green	Not Listed	Not Listed	Not Listed
Blue Jay	<i>Cyanocitta cristata</i>	Green	Not Listed	Not Listed	Not Listed
Blue-headed Vireo	<i>Vireo solitaries</i>	Green	Not Listed	Not Listed	Not Listed
Brown-headed Cowbird	<i>Molothrus ater</i>	Green	Not Listed	Not Listed	Not Listed
Cedar Waxwing	<i>Bombycilla cedrorum</i>	Green	Not Listed	Not Listed	Not Listed
Chestnut-sided Warbler	<i>Dendroica pensylvanica</i>	Green	Not Listed	Not Listed	Not Listed
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	Accidental	Not Listed	Not Listed	Not Listed
Common Grackle	<i>Quiscalus quiscula</i>	Green	Not Listed	Not Listed	Not Listed
Common Raven	<i>Corvus corax</i>	Green	Not Listed	Not Listed	Not Listed
Common Snipe	<i>Gallinaga gallinaga</i>	Yellow	Not Listed	Not Listed	Not Listed
Common Yellowthroat	<i>Geothlypis trichas</i>	Green	Not Listed	Not Listed	Not Listed
Dark-eyed Junco	<i>Junco hyemalis</i>	Green	Not Listed	Not Listed	Not Listed
Downy Woodpecker	<i>Picoides pubescens</i>	Green	Not Listed	Not Listed	Not Listed
Eastern Kingbird	<i>Tyrannus tyrannus</i>	Yellow	Not Listed	Not Listed	Not Listed
Golden-crowned Kinglet	<i>Regulus satrapa</i>	Yellow	Not Listed	Not Listed	Not Listed
Gray Catbird	<i>Dumetella carolinensis</i>	Red	Not Listed	Not Listed	Not Listed
Green-winged Teal	<i>Anas crecca</i>	Green	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Hermit Thrush	<i>Catharus guttatus</i>	Green	Not Listed	Not Listed	Not Listed
Herring Gull	<i>Larus argentatus</i>	Green	Not Listed	Not Listed	Not Listed
Lincoln's Sparrow	<i>Melospiza lincolnii</i>	Green	Not Listed	Not Listed	Not Listed
Long-eared Owl	<i>Asio otus</i>	Red	Not Listed	Not Listed	Not Listed
Magnolia Warbler	<i>Dendroica magnolia</i>	Green	Not Listed	Not Listed	Not Listed
Mourning Dove	<i>Zenaida macroura</i>	Green	Not Listed	Not Listed	Not Listed
Nashville Warbler	<i>Vermivora ruficapilla</i>	Green	Not Listed	Not Listed	Not Listed
Northern Flicker	<i>Colaptes auratus</i>	Green	Not Listed	Not Listed	Not Listed
Northern Harrier	<i>Circus cyaneus</i>	Green	Not at Risk	Not Listed	Not Listed
Northern Parula	<i>Parula Americana</i>	Green	Not Listed	Not Listed	Not Listed
Osprey	<i>Pandion haliaetus</i>	Green	Not Listed	Not Listed	Not Listed
Ovenbird	<i>Seiurus aurocapilla</i>	Green	Not Listed	Not Listed	Not Listed
Palm Warbler	<i>Dendroica palmarum</i>	Green	Not Listed	Not Listed	Not Listed
Pine Siskin	<i>Spinus pinus</i>	Yellow	Not Listed	Not Listed	Not Listed
Purple Finch	<i>Carpodacus purpureus</i>	Green	Not Listed	Not Listed	Not Listed
Red-breasted Nuthatch	<i>Sitta Canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Red-eyed Vireo	<i>Vireo olivaceus</i>	Green	Not Listed	Not Listed	Not Listed
Ruby-crowned Kinglet	<i>Regulus calendula</i>	Yellow	Not Listed	Not Listed	Not Listed
Ruby-throated Hummingbird	<i>Archilochus colubris</i>	Green	Not Listed	Not Listed	Not Listed
Ruffed Grouse	<i>Bonasa umbellus</i>	Green	Not Listed	Not Listed	Not Listed
Savannah Sparrow	<i>Passerculus sandwichensis</i>	Green	Special Concern	Special Concern	Not Listed
Sharp-shinned Hawk	<i>Accipiter striatus</i>	Green	Not at Risk	Not Listed	Not Listed
Song Sparrow	<i>Melospiza melodia</i>	Green	Not Listed	Not Listed	Not Listed
Spotted Sandpiper	<i>Actitis macularius</i>	Yellow	Not Listed	Not Listed	Not Listed
Spruce Grouse	<i>Falcipecten canadensis</i>	Green	Not Listed	Not Listed	Not Listed
Swainson's Thrush	<i>Catharus ustulatus</i>	Green	Not Listed	Not Listed	Not Listed
Tennessee Warbler	<i>Vermivora peregrina</i>	Yellow	Not Listed	Not Listed	Not Listed
Veery	<i>Catharus fuscescens</i>	Green	Not Listed	Not Listed	Not Listed
Virginia Rail	<i>Rallus limicola</i>	Undetermined	Not Listed	Not Listed	Not Listed
White-throated Sparrow	<i>Zonotrichia albicollis</i>	Green	Not Listed	Not Listed	Not Listed
Willet	<i>Tringa semipalmata</i>	Red	Not Listed	Not Listed	Not Listed

Common Name	Scientific Name	NSDNR Status ¹	COSEWIC Status ²	SARA Status ³	NSESA Status ⁴
Winter Wren	<i>Troglodytes troglodytes</i>	Green	Not Listed	Not Listed	Not Listed
Yellow Warbler	<i>Dendroica petechia</i>	Green	Not Listed	Not Listed	Not Listed
Yellow-rumped Warbler	<i>Dendroica coronata</i>	Green	Not Listed	Not Listed	Not Listed

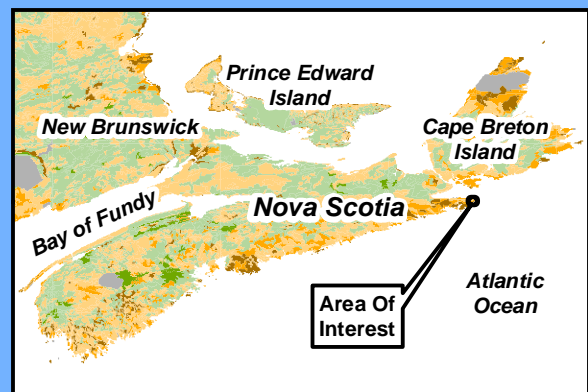
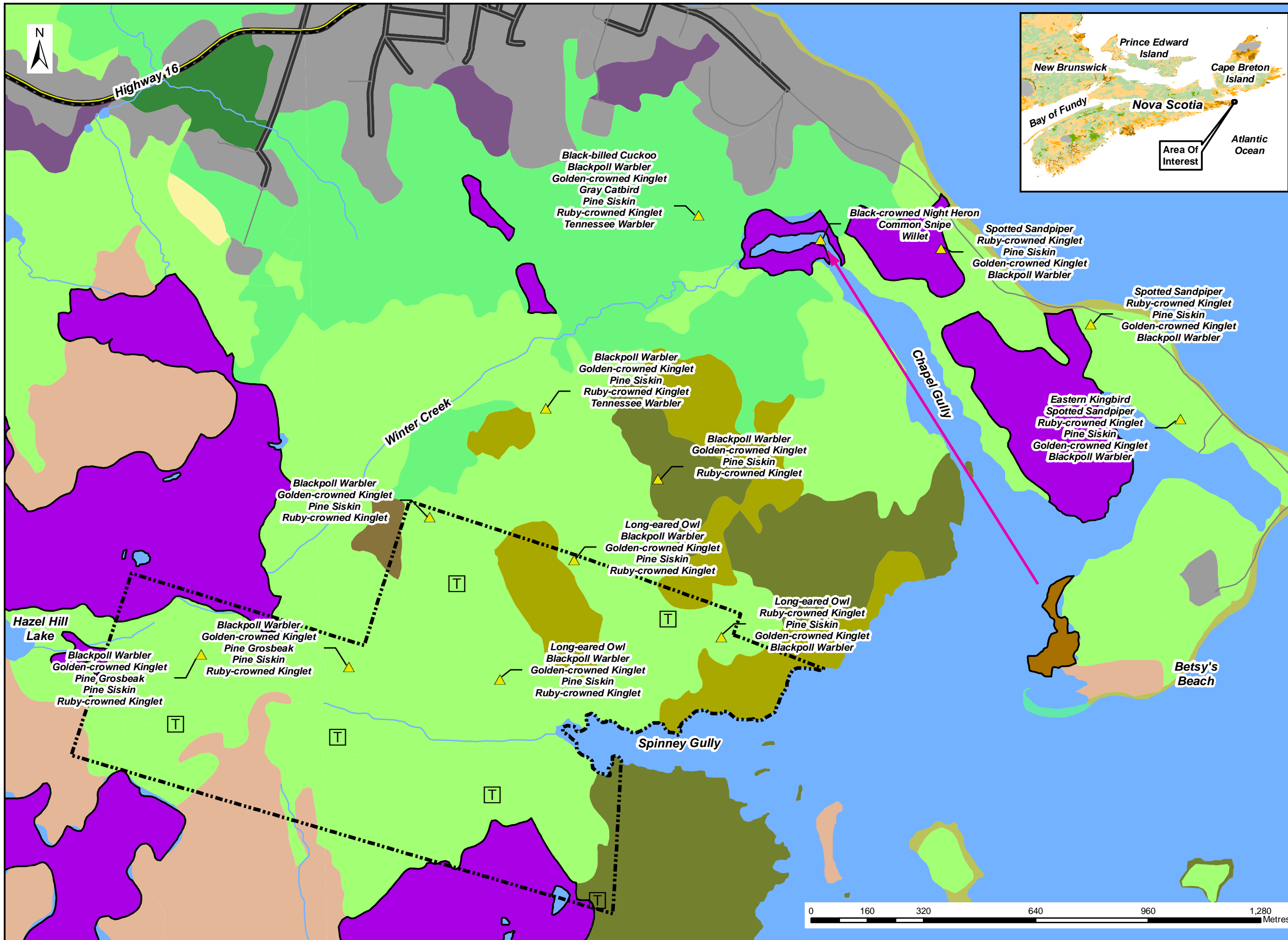
¹NSDNR 2010; ²COSEWIC 2012; ³SARA 2012; ⁴NSESA 2007

The following priority species were observed during these surveys:

- Black-billed Cuckoo – “Red” (NSDNR 2010);
- Black-crowned Night-Heron – “Red” (NSDNR 2010);
- Blackpoll Warbler – “Yellow” (NSDNR 2010);
- Common Snipe – “Yellow” (NSDNR 2010);
- Eastern Kingbird – “Yellow” (NSDNR 2010);
- Golden-crowned Kinglet – “Yellow” (NSDNR 2010);
- Gray Catbird – “Red” (NSDNR 2010);
- Long-eared Owl – “Red” (NSDNR 2010);
- Pine Siskin – “Yellow” (NSDNR 2010);
- Ruby-crowned Kinglet – “Yellow” (NSDNR 2010);
- Spotted Sandpiper – “Yellow” (NSDNR 2010);
- Tennessee Warbler – “Yellow” (NSDNR 2010); and
- Willet – “Red” (NSDNR 2010).

Some of the priority species, including Blackpoll Warbler, Golden-crowned Kinglet, Pine Siskin, and Ruby-crowned Kinglet, were common at the site and were observed at all proposed turbine locations (Figure 7). Long-eared Owl was the only other priority species observed within the current Project site boundaries. All other priority species were identified at locations on adjacent lands.

No significant migration corridors were indicated by the results of the peak spring migration surveys. Waterfowl and wader species, which were recorded in the small pond at the mouth of Winter Creek, were observed to use Chapel Gully as the preferred access route, essentially bypassing the current Project site.



Notes:

- Reference: Survey Locations from AMEC 2006. Habitat Mapping from NS Forest Inventory (NSDNR 2011).
- Projection: NAD83(CSRS), UTM Zone 20N

- Legend**
- Project Site Boundary
 - Current Proposed Turbine Location
 - Priority Species Locations, Spring 2005
 - Waterfowl and Wader Flyway
- NS DNR Wetland Inventory**
- Wetland Type**
- Bog or Fen
 - Fen
 - Marsh
 - Salt Marsh
 - Swamp
 - Water
 - Water Body
 - Burned Stand
 - Sugar Bush
 - Brush
 - Alders <75%
 - Coastal Habitat
 - Cliffs, Dunes, Coastal Rocks
 - Rock Barren
 - Barren
 - Agriculture
 - Urban
 - Beach
 - Road Corridor
 - Rail Corridor
 - Softwood
 - Mixedwood
 - Roads
 - Major Roads and Highways
 - Watercourse

2005 Spring Migration Priority Species Locations



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Scale: 1:10,000	Figure #: 7
Drawn By: G. Gregory	
Checked By: M. Smith	

