

Wocawson Energy Project Environmental Impact Assessment
Wocawson Energy Limited Partnership
September 2018

Appendix G

Wildlife Survey Report



DILLON
CONSULTING

WOCAWSON ENERGY PROJECT

Wildlife and Wildlife Habitat Summary Report (Final)



Table of Contents

1.0	Introduction	1
1.1	Project Description.....	1
1.1.1	Siting Considerations	4
1.1.2	Physical Components of the Project	5
1.1.3	Project Schedule	7
2.0	Wildlife and Wildlife Habitat Surveys Scope and Methodology	8
2.1	Scope of Work.....	8
2.1.1	Survey Protocols	8
2.1.2	Scope of Work.....	8
2.1.3	Spatial Boundaries	9
2.1.4	Temporal Boundaries.....	9
2.2	Methodology.....	11
2.2.1	Desktop Analysis Methods and Sources	11
2.2.2	Field Survey Methods.....	11
3.0	Terrestrial Environment Survey Results	12
3.1	Terrestrial Habitat Types.....	12
3.2	Unique and Sensitive Terrestrial Habitat	17
3.3	Wildlife Observations within the Assessment Area	20
3.3.1	Wildlife Species of Conservation Concern	20
3.3.2	Wildlife Species at Risk.....	21
3.4	Wildlife and Wildlife Habitat – Traditional Knowledge Perspective	21
4.0	Assessment of Potential Environmental Interactions	21
4.1	Identification of Project Interactions	22
4.1.1	Approach to Project Components and Project Interaction Matrix.....	22
4.2	Assessment of Residual Environmental Effects	23
4.2.1	Identification of Potential Environmental Effects.....	23
4.2.2	Standard Mitigation of Potential Environmental Effects.....	23
4.2.3	Characterization of Residual Environmental Effects.....	24

5.0	Summary and Conclusion	26
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6.0	Closure	27
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Figures

Figure 1: Wocawson Energy Wind Project Location	2
Figure 2: Wocawson Energy Wind Project Site Plan	3
Figure 3: Anticipated Turbine Hub and Blade Lengths.....	6
Figure 4: Wocawson Energy Wind Project Assessment Area.....	10
Figure 5a: Wocawson Energy Project Terrestrial Habitat Types.....	18
Figure 5b: Wocawson Energy Project Terrestrial Habitat Types.....	19

Tables

Table 1: Anticipated Project Schedule.....	7
Table 2: Terrestrial Habitat Types within the Proposed Turbine Locations.....	13
Table 3: Project Interaction with Environmental Components.....	22
Table 4: Potential Effects of the Project on Wildlife and Wildlife Habitat.....	25

Appendices

A	Additional Site Photographs
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References

1.0 Introduction

Dillon Consulting (Dillon) was retained by the Wocawson Energy Limited Partnership (WLP) to complete natural environment surveys in support of a future provincial registration of an Environmental Impact Assessment (EIA) for the Wocawson Energy Project (“the proposed project”). WLP is a partnership between Tobique First Nation (51%) and Natural Forces NB Inc. (49%).

The proposed project is located in an area where forest habitat and wildlife populations are present. Wildlife and terrestrial habitat including species at risk and species of conservation concern are considered important features and valued components (VCs) related to the proposed project. Natural environment surveys for the proposed project were conducted for VCs of the environment that were identified based on an understanding of the environmental features of the proposed project area, the nature of the proposed project, and the potential interactions that may occur between the proposed project and the environment/VCs.

This report provides a summary of the wildlife and terrestrial habitat surveys conducted in support of the Wocawson Energy Project EIA registration, and includes: a brief description of the proposed project; a description of the scope and methodology used for the wildlife and wildlife habitat surveys; a summary of the terrestrial environment survey results; and, an assessment of residual effects (including potential interactions and mitigation) of the proposed project on the terrestrial environment.

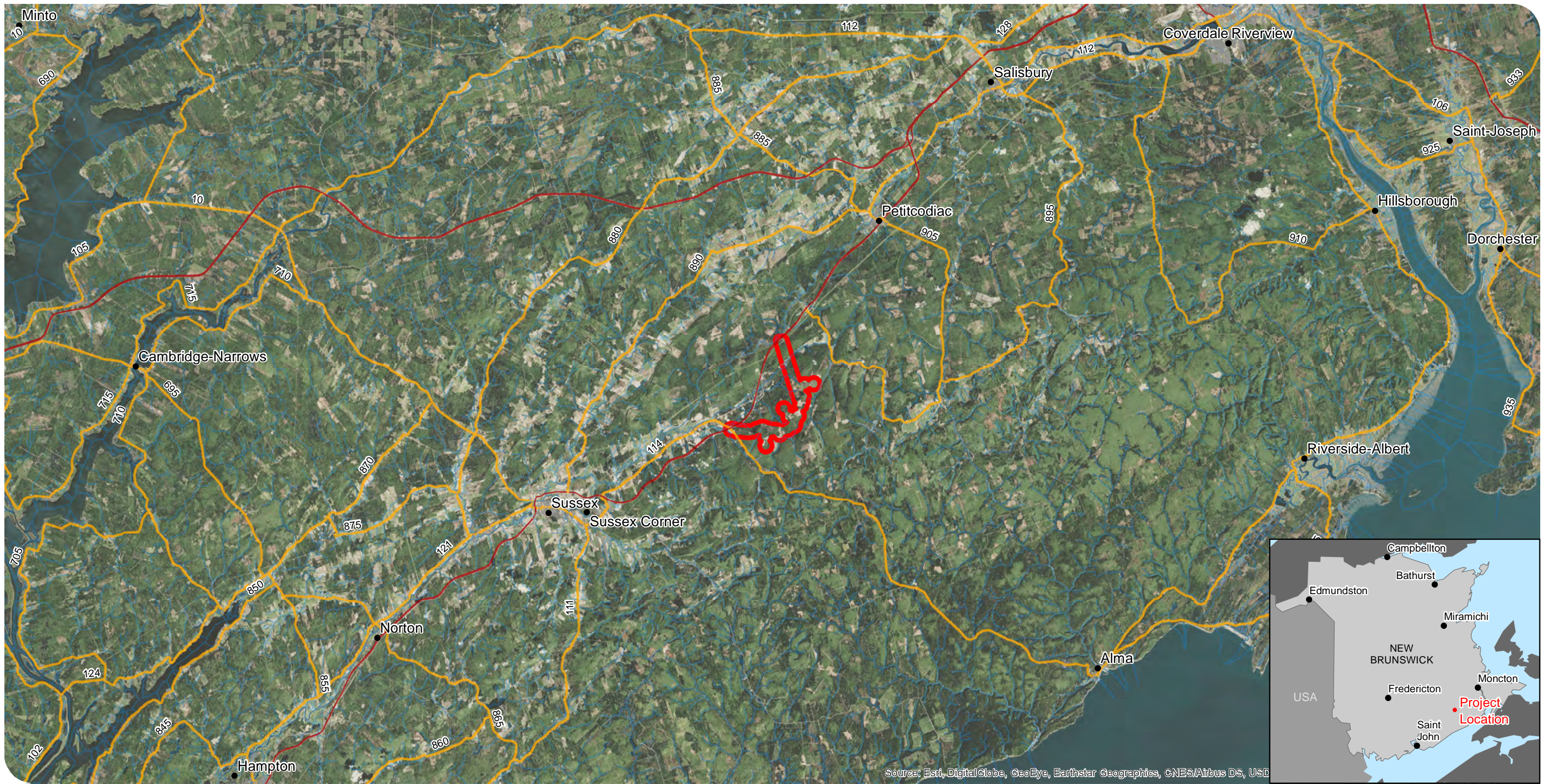
Though the terrestrial environment generally includes vegetation, wetlands, wildlife, wildlife habitat, and species at risk/species of conservation concern, the focus of this report is on terrestrial wildlife (excluding birds and bats), wildlife habitat, and wildlife species at risk/species of conservation concern (excluding birds and bats). Separate reports will be provided for other components of the terrestrial environment, specifically for bats, birds, vegetation (including rare plants), and wetlands and watercourses.

1.1 Project Description

The proposed 20-40 megawatt (MW) Wocawson Energy project is expected to provide electricity to approximately 3,600 – 7,200 New Brunswick homes. The proposed turbines are sited on approximately 1,150 hectares (ha) of Crown land located approximately 20 km east of the Town of Sussex, in Kings County, New Brunswick (refer to **Figure 1**). The transmission line associated with the Project will extend across Crown land as well as private land to connect to the existing power grid.

The project area includes 12 proposed turbine locations, connector lines, a substation and transmission line, as well as pre-existing road infrastructure (Mitton Road) to be upgraded for the project (refer to **Figure 2**). Mitton Road (located off NB Route 114) is the main access to the project area.

Although the developed project will only include 6 turbines, locations for 12 turbines were assessed to allow WLP the opportunity to refine the project footprint based on environmental constraints and to plan for future growth.



NATURAL FORCES TECHNOLOGIES
Wocawson Energy Wind Project

Wocawson Energy Wind Project Location
FIGURE 1



- Project Location
- Watercourses
- Expressway / Highway
- Freeway
- Local / Street



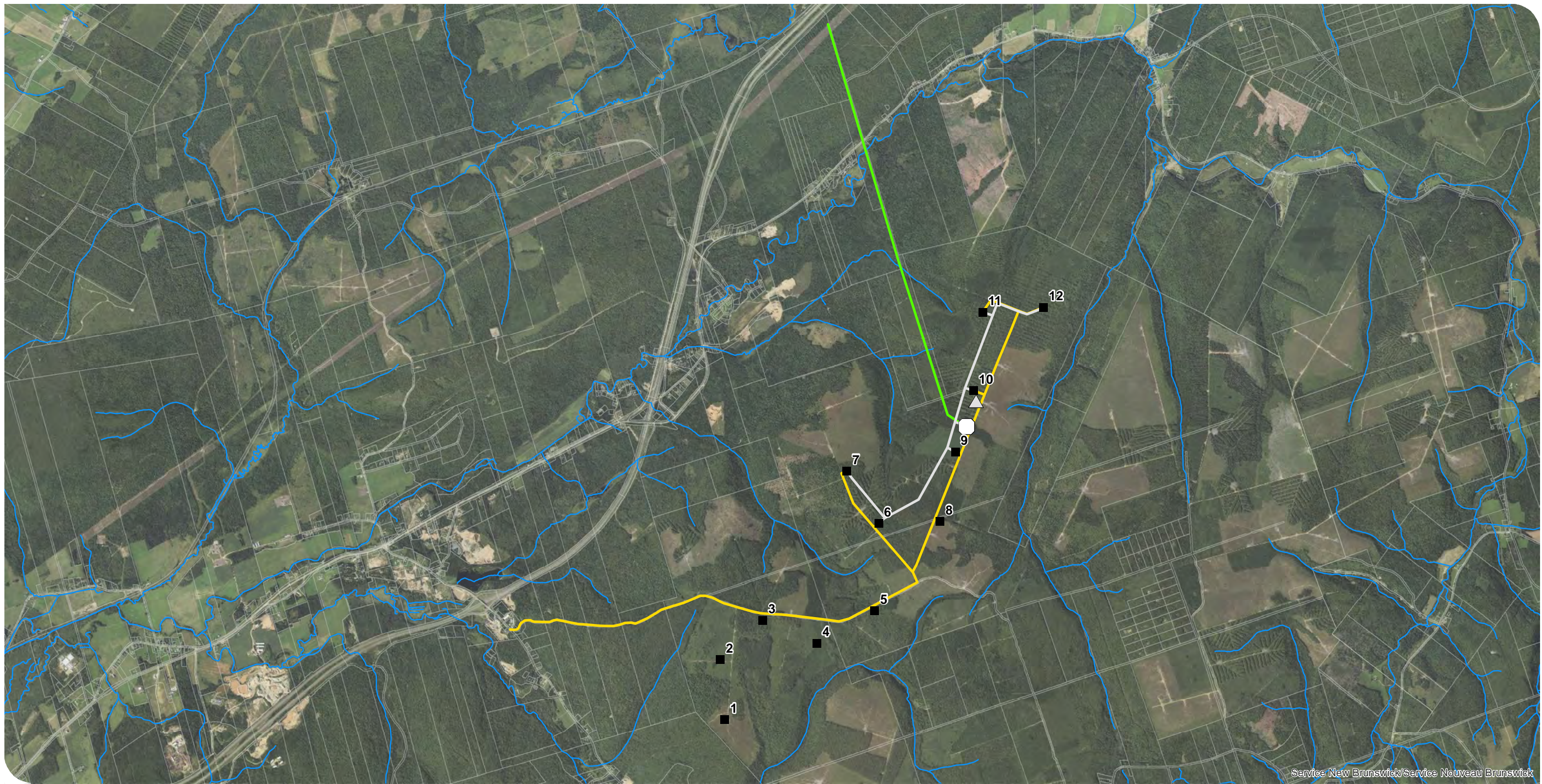
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NATURAL FORCES TECHNOLOGIES
Wocawson Energy Wind Project

- Proposed Turbine Locations
- Substation
- △ Met Tower
- Road Upgrade
- Proposed Transmission Line
- Collector
- PID
- Watercourses

Wocawson Energy Wind Project Site Plan
FIGURE 2



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1.1.1 Siting Considerations

The majority of the proposed project site is characterized as being predominantly in an early stage of forest regeneration or plantation due to historic and recent commercial forestry operations. Many of the turbine locations have been selected in areas of recent cut over (i.e., clear-cut and select-cut areas) to minimize the destruction of potentially undisturbed or more mature habitat. With respect to the areas that are required to be cut, it is anticipated that regeneration to current conditions (i.e. of early successional forest) will occur in a relatively short period of time upon completion of the proposed project.

The proposed turbine layout includes the sites of up to 12 turbines located along a ridge running approximately northeast-southwest between elevations 225 m and 275 m above mean sea level (amsl). The general project area is known to have an energetic wind regime particularly due to its high elevation (Natural Forces, 2018). Local topography is undulating with several low ridges also following a northeast-southwest orientation. No mapped or unmapped watercourses or wetlands were observed within the proposed turbine locations.

The proposed transmission line runs approximately north-south and crosses a variety of land uses such as gravel pits, rural residential property, recent clear cuts, and areas of immature to mature coniferous and deciduous forests in various stages of regeneration. The northern portion of the transmission line is proposed to cross three mapped watercourses and one unmapped watercourse, and also crosses one provincially regulated wetland (as identified on Service New Brunswick [SNB] GeoNB mapping) located in low lying floodplain (riparian) habitat of the Kennebecasis River, as well as two unmapped wetlands.

To facilitate the existing forestry operations, several logging roads are constructed and maintained across the area. WLP has selected the proposed project site to utilize existing roads reducing the need for new road construction. Additionally, several groomed snowmobile trails that pass through the proposed project area are frequently used during the winter months. WLP recognizes that the local snowmobile club is a concerned stakeholder and has selected proposed locations for site infrastructure such that project activities are not anticipated to affect the snowmobile trails or require the construction of new trails.

WLP has extensive knowledge with respect to the development of wind farms on lands with favourable characteristics to provide efficient renewable energy. Many considerations are taken into account during site selection that focus on efficiently delivering renewable energy to the local community in a way that minimizes the effects on the community and the environment (Natural Forces, 2018).

Specifically, the proposed project area is favourable due to the following characteristics (in no particular order): the available wind resource, the distance from residential dwellings and environmentally sensitive features, proximity to the New Brunswick Power (NB Power) transmission system, and the existing land use and disturbed nature of the area due to extensive forestry activities (Natural Forces, 2018). The following is a list of factors that have been considered during the site selection and design process:

Technical Considerations:

- Sufficient wind resource;
- Regional topography;
- Proximity to transmission system; and,
- Turbine technology.

Environmental Considerations:

- Proximity to provincially regulated wetlands;
- Proximity to residential dwellings or other sensitive buildings;
- Sensitivity of flora & fauna;
- Proximity to provincial or national parks and nature reserves; and,
- Risk of archaeological resource disturbance.

Land use considerations:

- Known culturally significant areas;
- Current land use;
- Historical land use;
- Future land use;
- Available access to the land; and,
- Proximity to residential properties, communities and towns.

1.1.2 Physical Components of the Project

The proposed project will be comprised of 6-12 Enercon wind energy generators, each with a rated capacity of 3.33 MW and a maximum hub height of 135 m and blade length of 72 m (exact model not yet determined). Refer to **Figure 3** for a conceptual rendering of the proposed turbine design.

The transmission line will extend approximately 5.6 km across privately owned lands, within a cleared corridor approximately 75 m wide, and will connect with existing New Brunswick Power infrastructure along the New Brunswick Department of Transportation and Infrastructure (NB DTI) right-of-way for Route 1. The proposed project's output at the point of interconnection to the electrical grid will be 20 - 40 MW (i.e. 6-12 turbines).

The project's lifespan ('design life') is expected to be 30-years (which is unique to Enercon wind turbines) (Natural Forces, 2018). The 30-year design life allows the Project to align itself with a 30-year Power Purchase Agreement (PPA) with NB Power, and allow a longer, stable energy production. Natural Forces has used Enercon machines exclusively for all its community wind projects currently under operation and has a long-standing relationship with the company.



Figure 3: Anticipated Turbine Hub and Blade Lengths

Base photo reference: Enercon <https://www.enercon.de/en/products/ep-4/e-141-ep4/>

1.1.3 Project Schedule

The proposed project schedule and activities are currently arranged as five distinct phases, as described in **Table 1**, below:

Table 1: Anticipated Project Schedule

Phase	Phase Details	Anticipated Schedule
1. Development Phase	This phase includes the post power purchase agreement development activities (including the EIA and related work).	Q4 2017 to Q1 2019
2. Pre-Construction Phase	This phase includes pre-construction activities, including: financing arrangement for debt and equity, wind turbine supply negotiation, site design, execution of the Facilities Study Agreement, tendering for all construction contracts, and final construction-related permitting.	Q4 2018 to Q2 2019
3. Construction Phase	This phase includes construction and commissioning related activities, including: tree clearing and grubbing, road building, electrical works, foundation pour, turbine delivery, turbine assembly, and final Project commissioning.	Q1 2019 to Q4 2019 Commercial Operation anticipated to begin Q4 2019
4. Operational Phase	This phase includes activities that occur during the operation of the wind project, including: post-construction monitoring, annual monitoring reports, remote monitoring of turbine performance, and maintenance.	Q4 2019 to decommissioning of the turbines (30 year lifespan)

The decommissioning phase of the project will include activities required to decommission the wind project, including: the removal of the turbine materials and associated infrastructure to an appropriate underground depth and restoration of the site. The precise timing of the decommissioning of the proposed project is currently unknown. If possible, the wind turbines' lifespan may be extended by replacing parts or otherwise refurbishing them to produce additional energy after their original 30-year lifespan. Therefore, the decommissioning phase of the project is not considered within the scope of this assessment. Once the proposed project is approaching the end of its useful life, a decommissioning plan will be submitted to the NBDELG prior to undertaking decommissioning activities that reflects the guidance and regulations in place at that time.

2.0 Wildlife and Wildlife Habitat Surveys Scope and Methodology

This section details the scope of the wildlife and wildlife habitat surveys conducted for the proposed project, and the methods that were used to conduct the surveys.

2.1 Scope of Work

2.1.1 Survey Protocols

Under the New Brunswick *Environmental Impact Assessment Regulation 87-83* (EIA Regulation) within the *Clean Environment Act*, areas of sensitive habitat and legally listed species at risk should be avoided to the extent possible. As such, to better understand the types and quality of habitat in the area of the proposed project, a baseline study of available terrestrial habitats is required to be conducted within the proposed project area. This characterization can identify the potential for occurrences of at risk wildlife and/or their critical habitat within the location of the proposed project.

The New Brunswick “Guide to Environmental Impact Assessment in New Brunswick” (NBDELG, 2018) requires that physical and natural features of the land be described. In relation to the terrestrial environment, the guide includes the following features:

- Environmental features that could impact the project;
- Existing vegetation;
- The type, extent or significance of any wildlife populations or habitat;
- Any known presence of species at risk or their habitat;
- Any known presence of critical or sensitive habitat; and,
- The presence of environmentally significant areas.

Furthermore, the NBDELG’s “Additional Information Requirements for Wind Turbines” sector guideline (NBDELG, 2004) requires that a description of habitat types (including the components above) be obtained at and surrounding each turbine site.

2.1.2 Scope of Work

The scope of work for the wildlife and wildlife habitat surveys is based upon an understanding of the nature of the proposed project and project area, as well as Dillon’s experience in assessing similar landscapes. For the purposes of this report and in support of the EIA registration for the project, the terrestrial environment is characterized as “wildlife and wildlife habitat”, which includes the following:

- **Wildlife and wildlife Habitat** (excluding bats and birds) – includes all terrestrial wildlife species and their habitats that have the potential to be affected by the Project activities;
- **Species at Risk and Species of Conservation Concern** (excluding bats, birds and vegetation) – includes those species listed by the federal and provincial authorities as well as regionally sensitive by the Atlantic Canada Conservation Data Centre (AC CDC); and
- **Environmentally Sensitive Areas** – includes habitats identified as protected or managed by federal and provincial authorities or non-governmental organizations (e.g., Nature Trust of New Brunswick).

Wildlife and wildlife habitat was selected as a valued component (VC) related to the proposed project due to the possible environmental effects of:

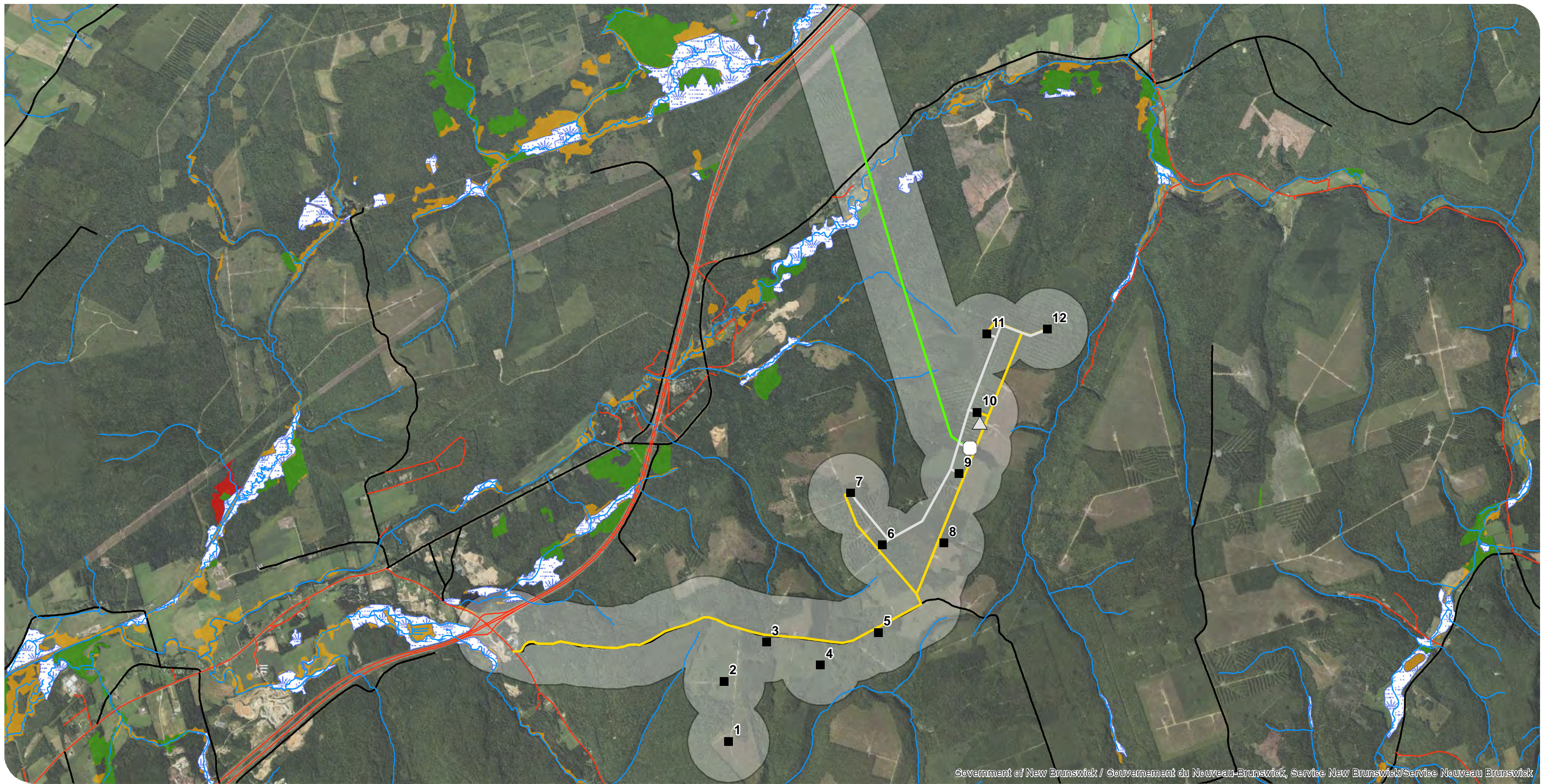
- A potential change or alteration of, disruption to, or removal of wildlife and their habitat as a result of the proposed project; and
- Effects to species listed under the federal *Species at Risk Act (SARA)* and/or the New Brunswick *Species at Risk Act (NB SARA)*.

2.1.3 Spatial Boundaries

For the purpose of this assessment, the spatial boundaries (i.e., the assessment area) has been identified as the area encompassing the access roads, each turbine location (plus a 150 m allowance surrounding each turbine), and the transmission line (plus 150 m allowance centered on the proposed line), extending to the existing power infrastructure. Refer to **Figure 4**.

2.1.4 Temporal Boundaries

The temporal boundaries for the assessment define the time periods for which likely environmental effects of the Project are considered. The temporal boundaries of this assessment include the duration of the construction phase (approximately 1 year in duration during 2019) and subsequent operation phase (approximately 30 years following construction) of the Project. In the construction phase, specific construction-related effects are anticipated to be short term and limited to either the duration of the activities that produce the effects or the duration of the construction phase. Effects associated with the operation phase are longer term, as the proposed Project is intended to be operational for at least 30 years (although the lifespan may be extended with routine maintenance or refurbishment as appropriate).



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NATURAL FORCES TECHNOLOGIES
Wocawson Energy Wind Project

**Wocawson Energy Wind
Project Assessment Area**
FIGURE 4



- Proposed Turbine Locations
- Substation
- △ Met Tower
- Road Upgrade
- Collector
- Proposed Transmission Line
- Watercourses

- Road Network**
- Collector
 - Roads
- Regulated Wetlands**
- Study Area

- NBDELG Draft Beta Wetland Mapping (unregulated)**
- Provincially Significant Wetlands
 - Intermediate Wetlands
 - Forested Wetlands



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2.2 Methodology

2.2.1 Desktop Analysis Methods and Sources

Prior to completing the terrestrial field surveys, Dillon reviewed readily available information from reputable sources. The information was reviewed to evaluate the potential for species of conservation concern (SOCC) and/or species at risk (SAR) within the general area of the proposed project and to assist in scoping the field programs. The information was reviewed, along with information on habitats present in the general area of the proposed project to determine preliminary potential for at risk wildlife species and/or their critical habitat. Dillon completed a review of the following sources and data lists prior to completing the field surveys:

- Atlantic Canada Conservation Data Centre (AC CDC);
- Environment and Climate Change Canada (ECCC);
- New Brunswick Department of Energy and Resource Development (NBDERD);
- The federal Species at Risk Registry;
- The Committee on the Status of Endangered Wildlife in Canada (COSEWIC);
- Publically available GIS map layers (e.g. ecological land classification, forest and non-forest inventory, wetland inventory, Protected Natural Areas, Wildlife Management Zones);
- High resolution aerial photography;
- New Brunswick Light Detection and Ranging (LiDAR) mapping projections;
- Environmentally Significant Areas Database;
- Ecological Reserves in the Maritimes; and,
- Kennebecasis Watershed Restoration Committee.

2.2.2 Field Survey Methods

Field studies of terrestrial habitats were conducted between May and July 2018, in concert with other targeted field surveys (i.e., wetlands, watercourses, baseline vegetation and rare plants). The survey area for the surveys was focused on the assessment area for the project as defined in Section 2.1.3 above) plus a 150 m allowance around the proposed turbine locations, a 75m allowance along the proposed transmission line, and road upgrades.

Dillon's biologists focussed on the general characterization of available terrestrial habitats within the survey area, as well as the potential for sensitive species or their critical habitats occurring in the survey area. The following criteria were documented:

- Occurrence of species at risk/species of conservation concern;
- Potential habitat for species at risk/species of conservation concern;

- Potential habitat for wildlife species;
- Unique or limiting wildlife habitat;
- Representative or typical wildlife habitat;
- Incidental observation and documentation of observed wildlife (regardless of conservation status); and,
- Wildlife sightings from previous studies.

During the field surveys, Dillon recorded wildlife and signs of wildlife in the form of dens, scat, browse marks, and visual observations within 150 m of the turbine locations, within 75 m of the transmission line, and road upgrade areas. Furthermore, a traditional knowledge perspective by a member of Tobique First Nation, who participated in the field surveys, was provided; and,

This assessment does not include avian or bat studies. These studies are reported separately in the Valued Component Appendix Reports for Avian and Acoustic Bat Surveys.

3.0 Terrestrial Environment Survey Results

The proposed project area is located within the Valley Lowlands Ecoregion, and specifically within the Anagance Ecodistrict that brackets the low-lying Kingston Ecodistrict. This area is characterized by rugged and bi-partitioned terrain where the landscape is dominated by steep river valleys and ridgetops (Zelazny, 2007). The softwood forests of the area are associated with shallow soils on hillsides, where white spruce, red spruce, and balsam fir are found with occasional hemlock and white pine stands (Zelazny, 2007). Tolerant hardwood stands composed of beech, sugar maple, and yellow birch with minor white ash and ironwood occur on upper slopes and ridgetops covered by fertile soils (Zelazny, 2007). Although wetlands are less common amongst the rugged relief, wetlands are present where the land borders the lower-lying Kingston Ecodistrict (Zelazny, 2007). The local terrestrial habitat types that are present within the assessment area are summarized within the following sections.

3.1 Terrestrial Habitat Types

The majority of the proposed project is located within an area that has been extensively used for forestry practices. The majority of the site (i.e., turbine locations and Mitton Road) is dominated by formerly harvested areas (clear-cuts or strip-cuts) that are now in different stages of natural regeneration, or plantations (refer to adjacent photo for a typical young plantation found within the area of the proposed turbines). The proposed transmission line









extends through several habitat types, including areas of relatively mature hardwood and softwood forest stands, as well as wetlands and watercourses (refer to the wetlands and watercourses summary report for descriptions of the aquatic habitats present within the assessment area). The dominant habitat types present within the proposed turbine locations, transmission line, and road upgrade areas are summarized in the sections below.


Proposed Turbine Locations

The dominant habitat types within the proposed turbine locations range from recent clear-cuts to areas of early-successional regeneration of tree species indicative of the fertile ridgetop soils of the Anagance Ecodistrict (NBDERD, 2008). The dominant tree species (overstory) include red spruce (*Picea rubens*), white pine (*Pinus strobus*), jack pine (*Pinus banksiana*), balsam fir (*Abies balsamea*), American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), white birch (*Betula papyrifera*), and striped maple (*Acer pensylvanicum*). The dominant habitat types available within the area of the proposed turbines are summarized in **Table 2**, below.

Table 2: Terrestrial Habitat Types within the Proposed Turbine Locations

Turbine Number	Representative Photo	Dominant Habitat Type
1		White spruce plantation, bordering recent harvest with some hardwood retention.
2		White spruce plantation, bordering a white spruce and white pine mixed plantation.

Turbine Number	Representative Photo	Dominant Habitat Type
3		<p>Immature white spruce plantation.</p>
4		<p>Young mixed wood forest dominated by red maple, American beech, white birch, white pine, and red spruce.</p>
5		<p>Recent clear cut with scrubby mixed wood regeneration.</p>
6		<p>Regeneration of white spruce, balsam fir, white pine and jack pine.</p>

Turbine Number	Representative Photo	Dominant Habitat Type
7		Immature white spruce plantation.
8		Immature white spruce plantation.
9		Immature white spruce plantation with white pine retention.
10		Former strip-cut with mid-successional hardwoods including American beech, striped maple, and white birch.

Turbine Number	Representative Photo	Dominant Habitat Type
11		Former strip-cut with early successional hardwood regeneration including American beech, yellow birch and striped maple.
12		Former strip-cut with early successional hardwood regeneration including American beech, sugar maple and red maple.

Proposed Transmission Line

The habitat present within the proposed transmission line corridor transitions from managed and formerly harvested areas in various stages of regeneration, to patches of mature forest stands. Dominant tree (overstory) species include white spruce (*Picea glauca*), white pine (*Pinus strobus*), red pine (*Pinus resinosa*), jack pine (*Pinus banksiana*), balsam fir (*Abies balsamea*), American beech (*Fagus grandifolia*), yellow birch (*Betula alleghaniensis*), white birch (*Betula papyrifera*), red maple (*Acer rubrum*), red oak (*Quercus rubra*), trembling aspen (*Populus tremuloides*), and striped maple (*Acer pensylvanicum*). Forest types were generally softwood dominant, with the exception of some small patches of semi-mature hardwood forest including red maple, red oak, and American beech within the overstory.

Within the area of the proposed transmission line, several areas of less disturbed habitat (i.e. semi-mature to mature) were observed. These areas included:

- A mature stand of eastern hemlock (*Tsuga canadensis*) and white pine (refer to adjacent photo) was observed within the boundary of a well-defined channel (which was dry at the time of the field survey in May 2018);
- A mature stand of eastern hemlock, yellow birch, and white pine on a ridge within the boundary of a watercourse (refer to the detailed summary report for watercourses and wetlands).



- A semi-mature hardwood stand of red oak, red maple, and American beech.

A general habitat classification for the areas of the proposed turbine and transmission line is presented on **Figure 5a and 5b**. For additional site photographs, refer to **Appendix A**.

Proposed Collector Line and Substation

The proposed collector line extends from Turbine No. 7 to Turbine No. 11. The habitat types present within these locations range from immature spruce plantations to formerly strip-cut areas in early successional hardwood regeneration. The hardwood species include American beech, sugar maple and red maple.

The proposed substation is located between Turbine Nos. 9 and 10 and on the southernmost extent of the proposed transmission line. The habitat within the immediate area of the substation includes a sparse tree canopy dominated by immature jack pine and white birch with white pine seedlings and limited vegetation within the understory. The remnants of former forestry activities (an old skidder track) are distinguishable and used as a game trail.

Mitton Road Upgrade

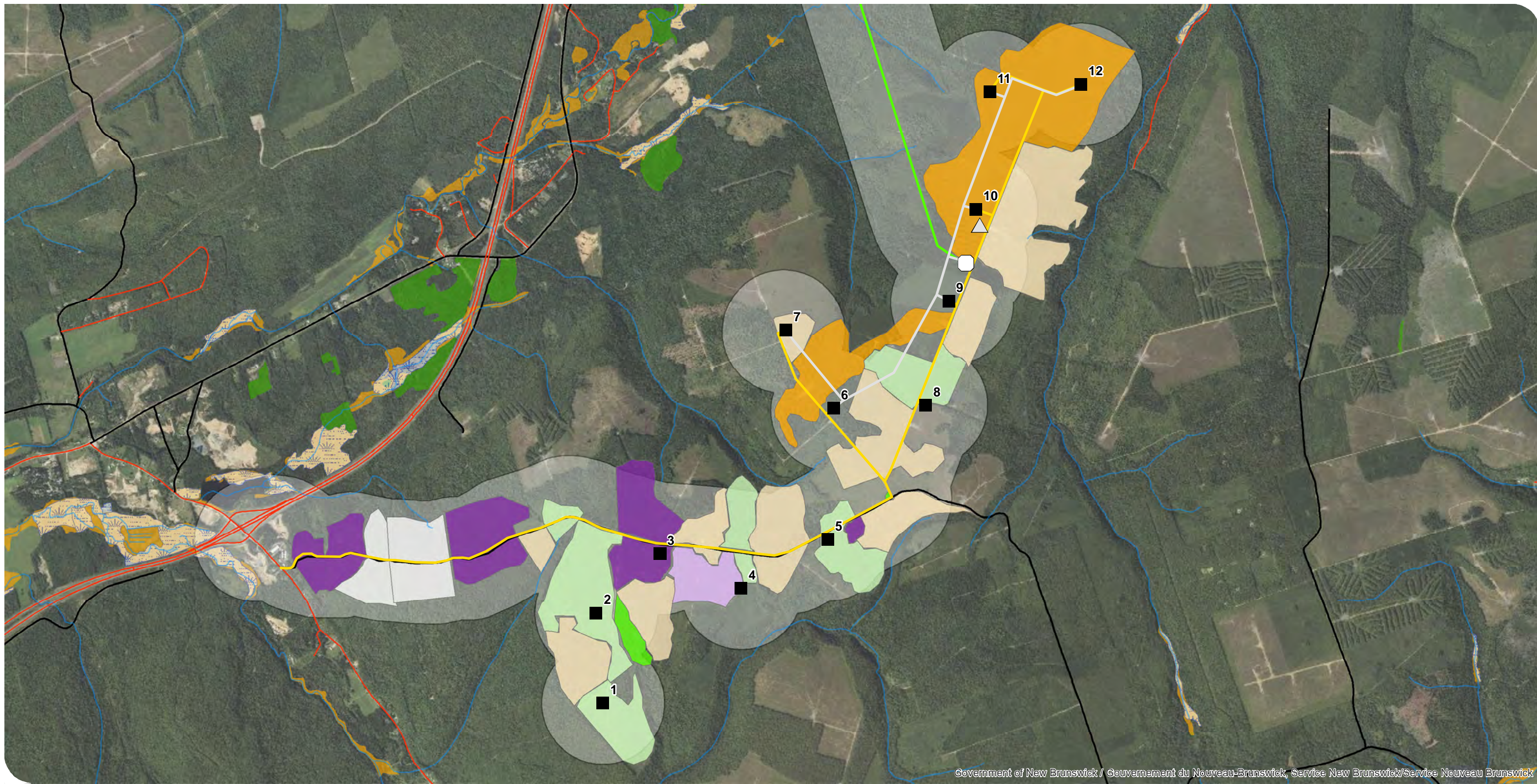
The habitat within the proposed Mitton Road upgrade areas consists mainly of previously disturbed forest edge habitat with occasional patches of mature mixed or softwood dominant stands. Several large recent clear-cuts, young spruce plantations, and semi-mature jack pine plantations border the proposed road upgrade.

3.2 Unique and Sensitive Terrestrial Habitat

A custom Atlantic Canada Conservation Data Centre (AC CDC) (2018) data report was obtained for a 5 km radius around the proposed project area. According to the AC CDC records review and desktop analysis, there are no managed, biologically significant, or designated Environmentally Significant Areas (ESA) (including deer wintering areas) or Protected Natural Areas (PNA) within 5 km of the proposed project area. The nearest PNAs include the Picadilly Mountain PNA (located 15 km southwest of the proposed project) and the Cat Road PNA (located 15.5 km southeast) (Natural Forces, 2018)

During the field studies, there were no observations of unique or sensitive terrestrial habitat within the assessment area. The proposed project is thus not anticipated to adversely affect unique or sensitive terrestrial habitat.

For a description of sensitive aquatic habitats, refer to the separate summary report for wetlands and watercourses.



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NATURAL FORCES TECHNOLOGIES
Wocawson Energy Wind Project

Wocawson Energy Wind Project
Terrestrial Habitat Types

FIGURE 5A

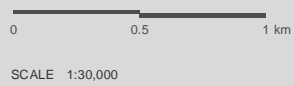


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| <ul style="list-style-type: none"> ■ Proposed Turbine Locations ⬡ Substation △ Met Tower | <ul style="list-style-type: none"> — Road Upgrade — Collector — Proposed Transmission Line — Watercourses | <p>Road Network</p> <ul style="list-style-type: none"> — Collector — Roads — Regulated Wetlands — Study Area | <p>Terrestrial Habitats</p> <ul style="list-style-type: none"> — Pre-Commercial Thinning — Clear Cut — Strip Cut — Select Cut Mixedwood — Immature Mixedwood — Semi-Mature to Mature Mixedwood — Softwood Plantation | <ul style="list-style-type: none"> — Semi-Mature to Mature Softwood — Semi-Mature to Mature Hardwood — Pine Retention — Potential Wetland | <p>NBDELG Draft Beta Wetland Mapping (unregulated)</p> <ul style="list-style-type: none"> — Provincially Significant Wetlands — Intermediate Wetlands — Forested Wetlands |
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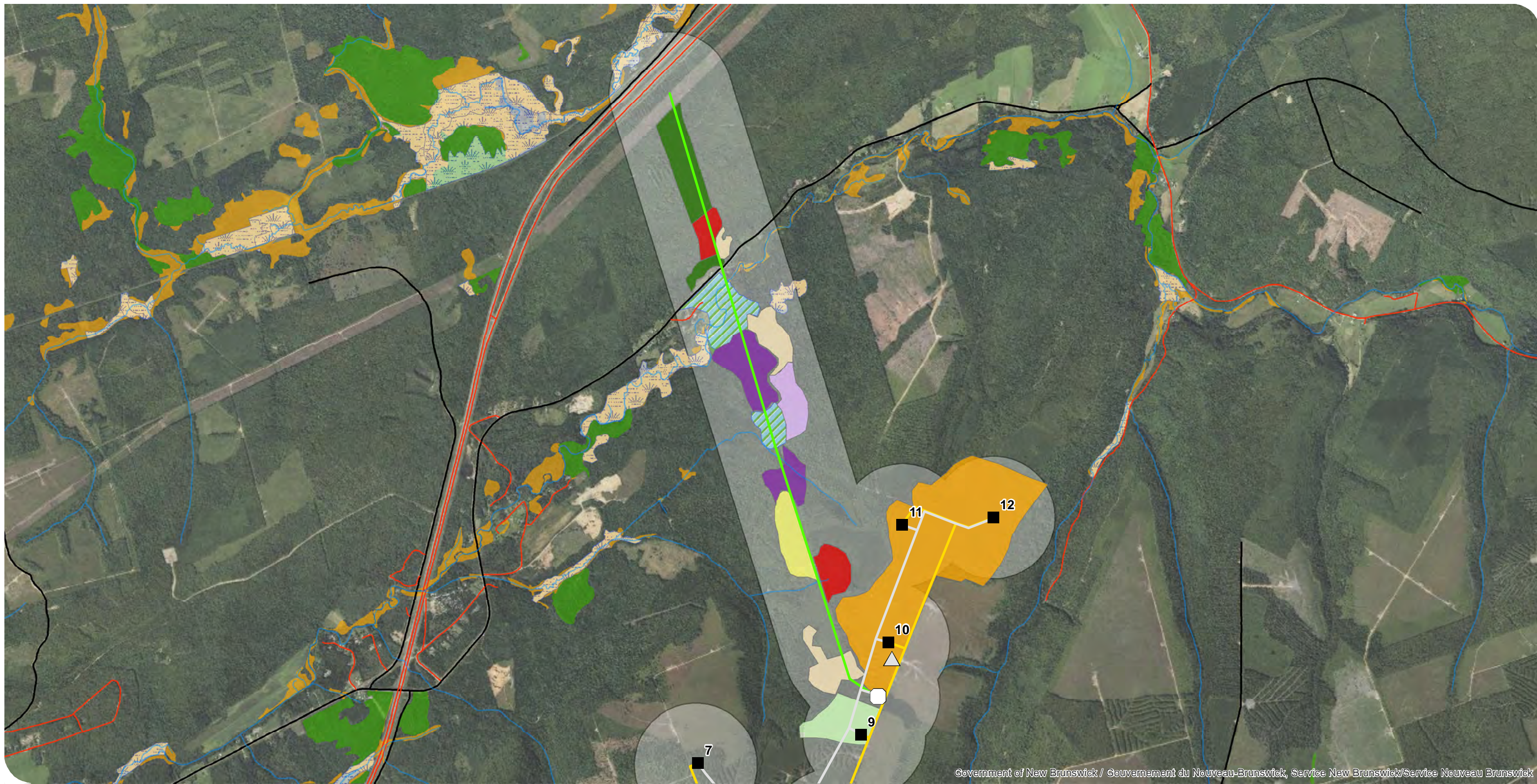
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NATURAL FORCES TECHNOLOGIES
Wocawson Energy Wind Project

Wocawson Energy Wind Project
Terrestrial Habitat Types

FIGURE 5B

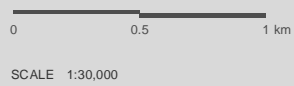


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| <ul style="list-style-type: none"> ■ Proposed Turbine Locations ○ Substation △ Met Tower | <ul style="list-style-type: none"> — Road Upgrade — Collector — Proposed Transmission Line — Watercourses | <p>Road Network</p> <ul style="list-style-type: none"> — Collector — Roads Regulated Wetlands Study Area | <p>Terrestrial Habitats</p> <ul style="list-style-type: none"> Pre-Commercial Thinning Clear Cut Strip Cut | <ul style="list-style-type: none"> Select Cut Mixedwood Immature Mixedwood Semi-Mature to Mature Mixedwood Softwood Plantation | <ul style="list-style-type: none"> Semi-Mature to Mature Softwood Semi-Mature to Mature Hardwood Pine Retention Potential Wetland | <p>NBDELG Draft Beta Wetland Mapping (unregulated)</p> <ul style="list-style-type: none"> Provincially Significant Wetlands Intermediate Wetlands Forested Wetlands |
|---|---|---|--|--|---|---|



MAP DRAWING INFORMATION:
DATA PROVIDED BY NBDERD

MAP CREATED BY: JNH
MAP CHECKED BY: ACS
MAP PROJECTION: NAD 1983 CSRS New Brunswick Stereographic



FILE LOCATION: G:\CAD\GIS\186975_SUSSEX EAST\SUSSEX EAST WIND PROJECT\MAPS FOR REPORT\TERRESTRIAL HABITATS A JULY 10_2018_JNH

PROJECT: 18-6975 STATUS: FINAL DATE: 2018-08-02

3.3 Wildlife Observations within the Assessment Area

A total of eight observations of mammals and two observations of reptiles and amphibians were made within the assessment area during the terrestrial field studies. Direct observations (i.e., sightings) and/or indirect evidence (e.g., scat, tracks, bones, and browse) of these species were recorded during the field surveys. The mammal species observed included:

- Eastern coyote (*Canis latrans*);
- Bobcat (*Lynx rufus*);
- Snowshoe hare (*Lepus americanus*);
- Eastern chipmunk (*Tamias striatus*);
- White-tailed deer (*Odocoileus virginianus*);
- American moose (*Alces alces*);
- American black bear (*Ursus americanus*); and,
- North American porcupine (*Erethizon dorsatum*)

All the above species have populations in New Brunswick that are considered secure (AC CDC, 2017).

It was also noted that although it is used heavily for forestry operations, the proposed project area provides large tracts of habitat that would be suitable for most wildlife species common to New Brunswick. In particular, the proposed project area provided suitable habitat for moose and deer. The large areas of previously harvested forest in successional regeneration may provide moose and deer with abundant browse. Evidence (i.e., tracks and scat) of eastern coyote (*Canis latrans*) were noted on the forestry roads and on old trails and woods/ATV/snowmobile trails, which coincided with observations of snowshoe hare (*Lepus americanus*), a major food item of the eastern coyote (NBDERD, 2017). Furthermore, evidence of these animals was observed in some locations along the proposed transmission line corridor, and on old trails and woods roads.

Reptiles and amphibians observed during field surveys included a wood frog (*Lithobates sylvaticus*) and maritime garter snake (*Thamnophis sirtalis*).

3.3.1 Wildlife Species of Conservation Concern

According to the AC CDC records review, there are no records of wildlife species of conservation concern or location sensitive species (excluding birds and bats; for details on both, refer to the avian surveys and bat surveys summary reports) that have been historically observed within 5 km of the proposed project area. Additionally, no wildlife species of conservation concern were observed during the field studies.

The proposed project is thus not anticipated to adversely affect wildlife species of conservation concern or their habitat.

3.3.2 Wildlife Species at Risk

According to the AC CDC records review, there are no records of wildlife species at risk (excluding birds and bats; for details on both, refer to the avian surveys and bat surveys summary reports) that have been historically observed within 5 km of the proposed project area.

Wood turtle is a species at risk of primary interest associated with clear, meandering forested watercourses, farmland and marshland in New Brunswick (ECCC, 2018). The wood turtle was not identified by the AC CDC as having been historically observed within 5 km of the proposed project area (AC CDC, 2018); however, according to the Kennebecasis Watershed Association, the Kennebecasis River and the other smaller watercourses located within the area may provide potential nesting and feeding habitat for the species (Marquis, D. Personal Communication, 2018).

Wood turtles were not observed during the field surveys. For details surrounding the aquatic habitats that may support wood turtles, refer to the summary report for wetlands and watercourses.

3.4 Wildlife and Wildlife Habitat – Traditional Knowledge Perspective

The terrestrial habitat present within the proposed project area was surveyed from a traditional knowledge perspective by a member of Tobique First Nation (TFN) who accompanied Dillon's biologists during the field surveys. Based on the knowledge of the member of TFN, the proposed project area did not offer unique habitat or wildlife species of special significance to traditional activities or uses.

Traditional activities such as hunting or snaring could continue in the area subsequent to the development of the proposed project.

This report focuses on wildlife and wildlife habitat only. For details surrounding the known traditional uses (based on interviews and knowledge of the TFN team member) of plant or aquatic species located within the project area, please refer to the summary report for rare plants and baseline vegetation and wetlands and watercourses.

4.0 Assessment of Potential Environmental Interactions

The identification of potential interactions between the Project and terrestrial wildlife and their habitat has been undertaken in consideration of the nature of the Project, its planned activities, as well as potential accidental events/malfunctions.

4.1 Identification of Project Interactions

4.1.1 Approach to Project Components and Project Interaction Matrix

As presented in Section 1.1.3, this assessment recognizes four main distinct Project phases. The potential interactions with the surrounding environment have been considered in terms of each distinct phase. Additionally, accidents and malfunctions will be considered.

The phases of the Project include:

1. *Development Phase;*
2. *Pre-Construction Phase;*
3. *Construction Phase; and,*
4. *Operation Phase.*

This initial screening (i.e., project interaction matrix) assists in determining if an interaction between the activities being carried out in each phase of the proposed project and the valued component is possible. The matrix is presented below in **Table 3**.

Table 3: Project Interaction with Environmental Components

Valued Components	Project Phases				
	Development Phase	Pre-Construction Phase	Construction Phase	Operation Phase	Accidents and Malfunctions
Wildlife and Terrestrial Wildlife Habitat			✓	✓	✓

Legend: ✓ = Potential interaction identified

Those interactions for which a checkmark is provided indicates that the Project activity may interact with the VC, and thus an environmental effects assessment is warranted in Section 4.2 below.

Those activities for which no interaction was noted with the VC (namely the development and pre-construction) are not carried forward or discussed further in summary report. Wildlife and wildlife habitat will not interact with the development and pre-construction phases of the proposed project due to the conceptual, planning, administrative, and design nature of these phases. Since there are no “on the ground” activities associated with these phases, no environmental effects are expected to result and therefore no interaction is anticipated with wildlife and wildlife habitat.

As described in Section 1.1.3, the decommissioning phase of the project is not considered within the scope of this assessment; a decommissioning plan will be completed prior to this phase of the project that reflects the guidance and regulations of the time.

4.2 Assessment of Residual Environmental Effects

4.2.1 Identification of Potential Environmental Effects

Without mitigation, the proposed project could interact with wildlife and wildlife habitat and cause environmental effects in the following ways:

- In general, construction of the proposed project will disturb natural wildlife habitats to make way for project components—with corresponding loss of habitat area and change in land use;
- Site preparation and clearing activities will result in the removal of immature (and limited amounts of mature) vegetation that provides habitat for wildlife species;
- Construction activities, in particular the use and movement of machinery and presence of humans on site, may disturb wildlife that may be present at the site;
- Noise, dust, combustion gas emissions, and vibration may cause a disturbance to wildlife species during construction;
- As an accident or unplanned event, wildlife injury or mortality could occur as a result of construction activities associated with the proposed project; and,
- The ongoing presence of the proposed project during construction and through its operation phase will result in the continued unavailability of the proposed project site until the end of the useful life of the project (which may be reversed following eventual decommissioning and restoration of the site).

4.2.2 Standard Mitigation of Potential Environmental Effects

Mitigation is identified for each interaction and/or effect in relation to the terrestrial environment in an attempt to prevent the interaction from occurring if possible, or to reduce the severity, magnitude, geographic extent, frequency, or duration of the interaction. Best management practices (based on industry guidelines and regulatory guidance documents) have been identified as appropriate mitigative measures. In addition, several acts, codes, regulations and guidelines may require appropriate actions be conducted as mitigative measures prior to or during the interaction.

The federal and provincial legislation and codes that could apply to the proposed Project include (but may not be limited to):

- *Canadian Environmental Protection Act* and regulations ;
- *Fisheries Act*;
- *Species at Risk Act*;
- *The Federal Policy on Wetland Conservation*;
- *Transportation of Dangerous Goods Act*, and regulations;
- *New Brunswick Clean Environment Act*, and regulations;

- *New Brunswick Clean Water Act*, and regulations;
- *New Brunswick Clean Air Act*, and regulations;
- *New Brunswick Occupational Health and Safety Act*, and regulations; and,
- *New Brunswick Species at Risk Act* and regulations.

The following standard mitigation measures have been identified to reduce the likelihood of occurrence, or minimize potential extent of effects of the Project on wildlife and wildlife habitat. Planned standard mitigation measures for the proposed project include the following:

- The area of disturbance associated with the development of the physical components of the proposed project (e.g., turbines, transmission line) will be minimized to the extent possible to limit the associated environmental effects associated with such disturbance;
- The Contractor will ensure that there is basic fire-fighting equipment available on-site and all personnel will be familiar with the equipment and equipment location the event of an accidental fire;
- The contractor will be required to provide spill response training to construction personnel and will ensure that spill response equipment is readily available on-site, and each piece of machinery is equipped with a spill response kit;
- Remedial action, or engineered controls, for any spills or leaks that occur will be completed;
- During construction, land users will be notified of the schedule and likely duration for construction activities;
- Proper erosion and sediment control measures will be installed and checked regularly and prior to and after storm events to ensure they are continuing to operate properly to minimize potential effects to adjacent habitat;
- A plan for handling fill and construction materials for the site will be communicated to the contractor (i.e., if stockpiling is required, materials will be stored away from any watercourse or wetland in pre-defined areas or removed from site to a pre-determined location) with the goal of minimizing the amount of soil stockpiled, and duration that soil is stockpiled, at the site; and,
- Exposed soils will be stabilized as soon as practical to minimize emissions of particulate matter.

A list of mitigation measures related to specific phases of the project (as outlined in Section 1.1.3) is provided in **Table 4**.

4.2.3 Characterization of Residual Environmental Effects

Table 4 identifies the potential environmental effects that may occur to wildlife and wildlife habitat (excluding birds), identifies proposed mitigation, and discusses residual environmental effects after mitigation has been applied.

Table 4 - Potential Environmental Effects of the Proposed Project on Wildlife and Wildlife Habitat

Project Phase	Potential Environmental Effect	Mitigation	Characterization of Residual Environmental Effects	Anticipated Significance of Residual Environmental Effects
Terrestrial Environment - Wildlife and Wildlife Habitat (Excluding Bats and Birds)				
Construction Phase	<ul style="list-style-type: none"> Clearing and grubbing of vegetation (habitat) during construction will cause a change in vegetation (flora) quality and/or quantity (i.e. a disturbance to wildlife habitat). The Project footprint will cause loss of immature (and limited mature) vegetation that provide habitat for wildlife. Disturbance from vehicles and construction equipment may cause wildlife avoidance of disruption of wildlife activity (such as breeding and/or feeding). Noise, dust, combustion gas emissions, and vibration may cause a disturbance to wildlife species during construction. 	<p>In addition to the standard mitigation measures provided in Section 4.2.2, the following mitigative measures will be employed to reduce the environmental effects to wildlife and wildlife habitat quality in the area of the Project prior to and during the construction phase of the project.</p> <ul style="list-style-type: none"> Vegetation will be retained where possible to maintain wildlife habitat; Existing access roads will be utilized where possible to reduce the loss of wildlife habitat; To minimize wildlife encounters, site and working areas shall be kept clean of food scraps and garbage and will be routinely removed from the site; In the case of wildlife encounters, the following shall be implemented: <ul style="list-style-type: none"> No attempt will be made by any worker at the project site to chase, catch, divert, follow or otherwise harass wildlife by vehicle or on foot; Equipment and vehicles will yield the right-of-way to wildlife; If a species at risk is encountered, contact a Species at Risk Biologist at ERD (506) 453-5873 or by email; All workers will adhere to the <i>Species at Risk Act</i>; and, Any nuisance wildlife as identified under the <i>Nuisance Wildlife Regulation (97-141)</i> of the <i>Fish and Wildlife Act</i> identified as disrupting production operation may only be removed by a licensed Nuisance Wildlife Control Officer or a licensed trapper. 	<p><u>Characterization of Residual Environmental Effects:</u> Magnitude: Low Spatial Extent: Immediate (limited to project site) Duration: Short term – Construction period (1 year) Frequency: Moderate Reversibility: Reversible</p> <p><u>Overall Summary:</u> With the implementation of planned mitigation, interactions between the Project and wildlife habitat during the construction phase of the Project are not expected to be substantive.</p>	Not significant
Operation Phase	<ul style="list-style-type: none"> The ongoing presence of the proposed project through its operating life may cause the absence of wildlife habitat in the project areas, and may result in wildlife avoidance. Possibility of vehicle collisions or encounters during routine monitoring or maintenance visits. 	<p>In addition to the standard mitigation measures provided in Section 4.2.2, the following mitigative measures will be employed to reduce the environmental effects to wildlife and wildlife habitat quality in the area of the Project during the operation phase of the project.</p> <ul style="list-style-type: none"> In the case of wildlife encounters, the following shall be implemented: <ul style="list-style-type: none"> No attempt will be made by any worker at the project site to chase, catch, divert, follow or otherwise harass wildlife by vehicle or on foot; and, Equipment and vehicles will yield the right-of-way to wildlife. 	<p><u>Characterization of Residual Environmental Effects:</u> Magnitude: Low Spatial Extent: Immediate (limited to project site) Duration: Long-term - Project Lifespan (30 years) Frequency: Low Reversibility: Reversible</p> <p><u>Overall Summary:</u> With the implementation of planned mitigation, interactions between the Project and wildlife habitat during the operation phase of the Project are not expected to be substantive.</p>	Not significant
Accidents, Malfunctions, and Unplanned Events	<ul style="list-style-type: none"> There is a potential for unplanned releases related to any construction project. Heavy equipment used during the construction activities may cause direct injury or death of wildlife through collisions or destruction of dens and food sources. 	<p>In addition to the standard mitigation measures provided in Section 4.2.2, the following mitigative measures will be employed to reduce the environmental effects to wildlife and wildlife habitat quality in the area of the Project prior to and during the construction and operation phases of the project.</p> <ul style="list-style-type: none"> Any spills or leaks that occur will be reported to the appropriate regulatory authorities, if applicable, as soon as possible; Remedial action, or engineered controls, for any spills or leaks that occur will be completed; Refueling, oiling, and maintenance of equipment will be completed at least 30 m away from any watercourse, wetland, or well to minimize potential effects that could arise in the event of a spill; Major servicing of equipment will be completed off-site by a licensed mechanic when possible; Rubbish and waste materials will be kept at minimum quantities and burning of this material will be prohibited; Chemicals and petroleum hydrocarbons will be stored in appropriate containers and in specifically designated areas. Where applicable, secondary containment of chemicals or petroleum hydrocarbons will be employed; Work entailing use of toxic or hazardous materials, chemicals, or otherwise creating hazard to life, safety of health, will be conducted in accordance with National Fire Code of Canada to minimize the potential for spills or fires; and, The same mitigation measures identified under Construction Phase above for minimizing wildlife encounters will be used to minimize potential for injury or mortality. 	<p><u>Characterization of Residual Environmental Effects:</u> Magnitude: Low Spatial Extent: Immediate (limited to project site) Duration: Short term Frequency: Low Reversibility: Reversible</p> <p><u>Overall Summary:</u> With the implementation of planned mitigation, and with the careful development and implementation of contingency and emergency response plans to be applied in the unlikely occurrence of an accident, malfunction, or unplanned event, interactions between the Project and wildlife and wildlife habitat arising from an accidental event during construction and operation are not expected to be substantive.</p>	Not significant

Note: As noted within section 4.1.1, the Decommissioning Phase of the proposed project is not included within the scope of this assessment.

Any residual effects on wildlife and wildlife habitat that may occur as a result of the construction phase of the project are expected to be of low magnitude and be reversible in nature. The spatial extent of potential residual effects is also anticipated to be limited to the project site, and limited to the construction period of 1 year. Therefore, any potential residual effects on wildlife and wildlife habitat are not considered to be significant.

Any residual effects on wildlife and wildlife habitat that may occur as a result of the operational phase of the project are expected to be of low magnitude and be reversible in nature. The spatial extent of potential residual effects is also anticipated to be limited to the project site, and may occur over the project's lifespan of 30 or more years. Any potential residual effects on wildlife and wildlife habitat are not considered to be significant.

With the implementation of planned mitigation, and with the careful development and implementation of contingency and emergency response plans to be applied, interactions between the Project and wildlife habitat during the Project activities are not expected to be substantive.

5.0 Summary and Conclusion

This report has been prepared for the construction and operation of the Wocawson Energy Project. The proposed project is expected to provide renewable electricity to approximately 3,600 – 7,200 New Brunswick homes and support New Brunswick Power in attaining their future renewable energy targets.

The information provided in this document is based on the current available design/planning information and existing environment information obtained during focused field surveys conducted in May to July 2018. The applicable environmental components and potential project environmental effects were assessed and presented with meaningful mitigation measures to minimize, and in some cases eliminate, the potential effects. Based on these interactions, it can be concluded that, with the proper mitigation and standard operating procedures as outlined in this document, the residual environmental effects of the project are anticipated to be not significant for the project phases.

6.0 Closure

This report was prepared by Dillon Consulting Limited (Dillon) on behalf of the Wocawson Energy Limited Partnership, in support of the Wocawson Energy Project EIA. Dillon has used the degree of care and skill ordinarily exercised under similar circumstances at the time the work was performed by reputable members of the environmental consulting profession practicing in Canada. Dillon assumes no responsibility for conditions which were beyond its scope of work. There is no warranty expressed or implied by Dillon.

The material in the report reflects Dillon's best judgment in light of the information available to Dillon at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions made based on it, are the responsibilities of such third parties. Dillon accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

Yours truly,

DILLON CONSULTING LIMITED



Kristin Banks, P.Eng.

Project Manager

Appendix A

Additional Site Photographs



Photo 1: Small white pine stand (retention) located approximately 140 m east of Turbine No. 11 (Photo taken during 2018 winter reconnaissance surveys).



Photo 2: View of clear cut areas along proposed transmission line facing south east from south side of the Kennebecasis River.



Photo 3: Bobcat tracks observed during 2018 winter bird surveys.



Photo 4: Warming hut located in the area of the proposed turbine locations used by a local snowmobile club.



Photo 5: Mature hemlock dominant stand located adjacent to the proposed transmission line corridor on the northwest side.



Photo 6: Clear cut stand with large red pine and white pine retention located near the south end of the proposed transmission line corridor.



Photo 7: Representative photo of young pre-commercially thinned hardwood stand along the proposed transmission line corridor.



Photo 8: Representative photo of young pre-commercially thinned hardwood stands along the proposed transmission line corridor.



Photo 9: View facing northeast of large clear cut area near proposed Turbine location #10.



Photo 10: Looking southeast towards the assessment area from Portage Vale Road.

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