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CONSULTING

NATURAL FORCES DEVELOPMENTS LP

# Mainland Moose Appendix 2021-2022

Westchester Wind Project





December 1, 2022

Natural Forces Developments LP  
Westchester Wind Project  
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Halifax, NS  
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Attention: Megan MacIsaac

***Mainland Moose Appendix: 2021-2022 Mainland Moose and Moose Habitat Surveys for the Westchester Wind Project***

Dillon Consulting Limited (Dillon) is pleased to provide you with the final report for the Mainland Moose and Moose habitat Appendix, for the studies conducted as part of the environmental assessment for the Westchester Wind Project.

We trust the following meets your present needs. If you have any questions or comments, please contact the undersigned at (902)-450-4000 ext. 5052 at your convenience.

Sincerely,

**DILLON CONSULTING LIMITED**

Kelly Regan, M.Sc.  
Project Manager, Associate

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# Introduction

Dillon Consulting (Dillon) was retained by Natural Forces Developments Limited Partnership (the Proponent) on behalf of the Westchester Wind Limited Partnership to complete natural environment surveys in support of the development of a Nova Scotia Environmental Assessment Registration Document (EARD) and associated Addendum for the Westchester Wind Project (the Project). The Project is being developed and will be owned and operated by the Westchester Wind Limited Partnership, a partnership between Natural Forces Developments Limited Partnership (referred to herein as the Proponent or Natural Forces) and Wskijnu'k Mtmo'taqtuow Agency Limited (the Agency), a corporate body wholly owned by the 13 Mi'kmaw bands in Nova Scotia. Natural Forces acts on behalf of the Westchester Wind Limited Partnership for many aspects of Project development.












The Project consists of up to 12 wind turbine generators (WTGs) capable of producing up to 50 MW of renewable energy that will be connected to the existing Nova Scotia Power transmission grid via an overhead transmission line, as well as a substation (**Figure 1**). The Project is located on a mixture of privately owned blueberry fields, previously forested land and undeveloped forested land in Cumberland County near the communities of Westchester Station, Rose, and Londonderry. It is located in an area where Mainland Moose (*Alces alces americana*) populations and habitat are present and a key environmental concern associated with wind projects is the potential for effects to moose and moose habitat. Mainland Moose, including species at risk (SAR) and species of conservation concern (SoCC), are considered important features and valued environmental components (VECs) related to the proposed Project.

The Project is located in an area where Mainland Moose are present. Mainland Moose and Moose habitat are considered important features and valued environmental components (VECs) because they are valued in their relationship with other wildlife and wildlife habitat, including other biological and physical components addressed as VECs in this environmental assessment (EA). Natural environment surveys for the Project were conducted for VECs that were identified based on an understanding of the environmental features of the proposed project area, the nature of the Project, and the potential interactions that may occur between the proposed project and the environment/VECs.

Taking into consideration the objectives of the EARD, this report provides an effects assessment on Mainland Moose and Moose habitat, and includes: a summary of the baseline Mainland Moose surveys conducted in support of the Westchester Wind Project EARD and Addendum, and includes: a brief description of the proposed project; a description of the scope and methodology used for the Mainland Moose surveys, a summary of the survey results, and, an assessment of residual effects (including potential interactions and mitigation) of the proposed project on Mainland Moose populations and Moose habitat.

**PROJECT LOCATION AND SITE LAYOUT**

FIGURE 1

-  Proposed Turbine Location
-  Proposed Substation Location
-  Property Lines
-  Roads to be Upgraded
-  Proposed Access Roads
-  Proposed Collector Network
-  Proposed Interconnection Line
-  Transmission Line
-  Highway
-  Watercourse
-  Waterbody

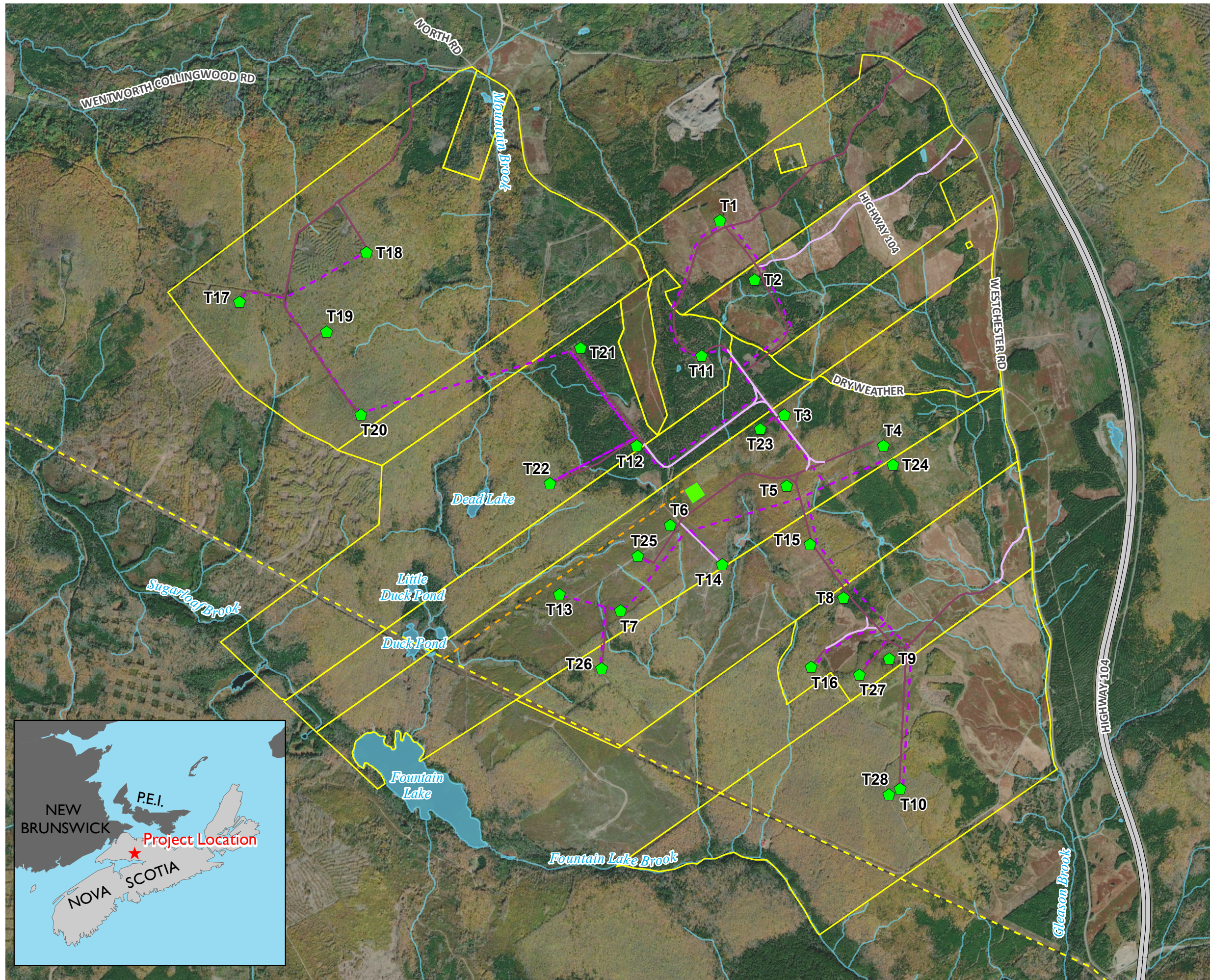


MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, GEONB, NATURAL FORCES

MAP CREATED BY: DU  
MAP CHECKED BY: KB  
MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 21-1329  
STATUS: DRAFT  
DATE: 2022-12-09



## 1.1 Background

The population of Mainland Moose in Nova Scotia (which excludes the moose population on Cape Breton Island) are listed as Endangered by the Nova Scotia Endangered Species Act (NS ESA) and ranked as S1 by the Atlantic Canada Conservation Data Centre (ACCDC) for Critically Imperiled in the province. Mainland Moose have complex spatial and temporal habitat requirements that include a mosaic of woodland and wetland habitat types. They require an abundance of mature forest for security and thermal cover, as well as areas of interspersed young deciduous trees and shrubs for browsing (NSDNRR 2021). Nova Scotia Department of Natural Resources and Renewables (NSDNRR) has recently released a recovery plan for the Mainland Moose (NSDNRR, 2021); because of the sensitivity of the population, this section is presented separately from other wildlife surveys.

The Project is located within an area that is designated as core habitat (Cumberland/ Colchester) within a concentration area (Cobequid Mountains) for the Eastern Moose (*Alces alces americana*) population in Nova Scotia (herein referred to as Mainland Moose) by the Nova Scotia Department of Resources and Renewables (NSDNRR) (NSDNRR, 2021). Core habitat refers to areas considered essential for the long-term survival and recovery of Mainland Moose, and that meets Moose seasonal (summer, winter, calving) requirements. Mainland Moose concentration areas were identified by the NSDNRR in 2012 using maps of preferred habitat, occupied range, and observational data from 1999 to 2011 to pinpoint areas of potential occupancy (NSDNRR 2012; NSDNRR 2021). Concentration areas provide occupancy and distribution information, however, do not necessarily reflect the most suitable Mainland Moose habitat. While the Project is located within one of the areas considered to be core habitat in the Recovery Plan to the Moose (*Alces Americana*) in Mainland Nova Scotia (NSDNRR 2021), anthropogenic areas including agricultural fields are not considered part of core habitat as they do not meet the diverse biophysical requirements. Therefore, special consideration was paid by the proponent to maximize the PDA located within the anthropogenic area and to minimize the proportion of the Project that is situated in core moose habitat.

## 1.2 Purpose and Objectives of the Report

This report provides a summary of the Mainland Moose surveys that were conducted as part of the biophysical surveys undertaken in support of the Project EA registration. The report includes the following:

- Brief description of the Project;
- Description of the scope and methodology used for the survey;
- Summary of the approach used to evaluate the data; and
- Proposed mitigation based on industry best practices and experience.

## 2.0

## Project Description

The following is a high-level summary of the Project. Please refer to the Westchester Wind Project Environmental Assessment Registration Document Addendum (the Addendum) dated December 2022 for further information.

The Project is located on Westchester Mountain in Cumberland County, Nova Scotia. The Project is proposed to have an installed capacity of up to 50 MW, amounting to up to 12 wind turbine generators and associated infrastructure, including an electrical substation, collector lines, and overhead transmission line (**Figure 1**).

The Project will be located predominantly on privately-owned lands used for blueberry farming, forestry, maple groves, and recreation (i.e., snowmobile trails). An easement will be required over a 300 m stretch of Crown land along an existing access road. The forestry activities include previously forested land at varying stages of regeneration, as well as undeveloped forested lands owned by forestry companies. In addition, the Project site met crucial factors that determined suitability, which included features such as the strength and consistency of the wind resources and its proximity to existing electrical and civil infrastructure. Lastly, the Project site was selected in order to minimize impacts to undeveloped lands as much as feasible, such as the ability to develop among existing mixed anthropogenic land uses and impacts of the site.

The purpose of the Project is to contribute to Nova Scotia achieving their renewable electricity targets through the generation of clean and renewable energy. Not only will this have environmental benefits, but will also reduce Nova Scotia's reliance on imported energy sources through the development of a localized renewable energy generation (*Renewable Electricity Regulations 2021*).



## 3.0 Scope of Work

Mainland Moose has been identified as one of the biophysical valued environmental components (VEC) for the Project. There are potential impacts on Mainland Moose, an endangered species, and their habitat.

The scope of work for the Mainland Moose survey is based upon an understanding of the nature of the Project and Local Assessment Area (LAA), as well as the field biologists' experience in assessing similar landscapes. Moose are difficult to inventory directly in mainland Nova Scotia due to their low numbers, scattered distribution, and survey timing windows. Aerial surveys are costly, and appropriate weather conditions are often sporadic. As such, a Pellet Group Inventory (PGI) survey was developed in accordance with the Nova Scotia Department of Natural Resources guidelines to obtain baseline information on the potential presence of Mainland Moose within the PDA (NSDNR 2013). PGI surveys use ungulate fecal pellet groups (scat) as a source of proxy data to assess the population of a species in a given area. In addition to conducting formal moose surveys, the PDA was continuously surveyed for incidentals, and should observations occur they were to be recorded during field reconnaissance programs in the spring/summer/fall of 2021 and 2022.

Based on the recommended protocols outlined in the "Guide to Addressing Wildlife Species and Habitat in an Environmental Assessment (EA) Registration Document" (NSE 2009), and feedback from the consultation process, the following scope of work was completed as part of the terrestrial wildlife and habitat surveys for the Project. The scope of work included two years of:










- An Initial desktop assessment of habitats within the LAA;
- Pellet Group Inventory survey for Mainland Moose (NSDNR 2013); and
- Reporting of incidental observations of Mainland Moose and signs and habitat of Mainland Moose during other field surveys conducted in 2021 and 2022.

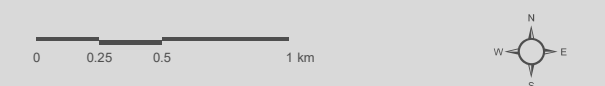
### 3.1 Spatial Boundaries

For the purpose of this assessment, the spatial boundaries have been defined in **Table 1** and shown on **Figure 2**. The spatial boundaries for the assessment took into consideration the large home range required by Mainland Moose, which is estimated to be 30-55 square kilometres (km<sup>2</sup>) (Snaith and Beazley 2004) and that moose, depending on the season, age, and gender, travel daily an average of 0.5 km to 1.4 km daily (AAM 2022).

**STUDY AREA AND LOCAL ASSESSMENT AREA FOR MAINLAND MOOSE**

FIGURE 2

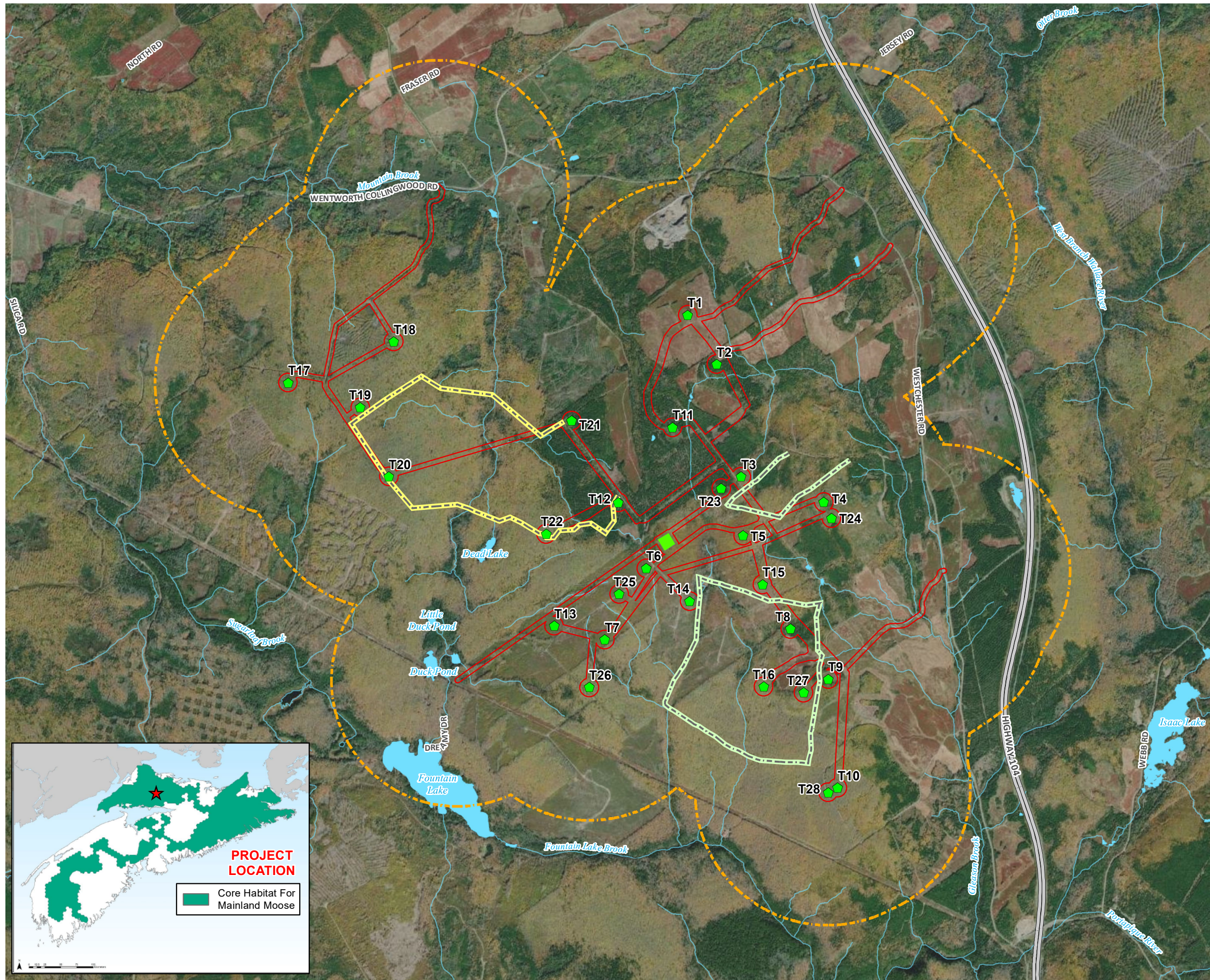
-  Proposed Turbine Location
-  Proposed Substation Location
-  Potential Development Area
-  Local Assessment Area
-  Moose Transect Location 2022
-  Moose Transect Location 2021
-  Highway
-  Watercourse
-  Waterbody



SCALE 1:30,000

MAP DRAWING INFORMATION:  
DATA PROVIDED BY DILLON CONSULTING, NSDNRR, NATURAL FORCES

MAP CREATED BY: MEC  
MAP CHECKED BY: KB  
MAP PROJECTION: NAD 1983 UTM ZONE 20N



**Table 1: Spatial Boundaries for the Assessment of Mainland Moose**

<b>Assessment Area</b>	<b>Definition</b>	<b>Purpose of Boundary</b>
Potential Development Area	Area encompasses the Project footprint and a buffer of 15 m on either side of shoulders of the roadways (either existing or new) and collector lines and transmission line, a 75 m buffer around the base of each turbine location, and a 25 m buffer around the substation.	Represents the extent of anticipated areas that could undergo physical disturbance associated with the Project. This area encompasses the proposed 28 turbines locations and their associated infrastructure. However, the Project would consist of up to 12 of those locations and their associated infrastructure.
Study Area	Transect-based survey areas within the LAA targeting representative habitats.	The area included in a focused survey on foot. Observations in the study area are extrapolated and applied to understand potential effects of the Project on the full LAA.
Local Assessment Area	A 1000 m buffer surrounding the project footprint of the proposed turbine locations, substation), roads and collector lines.	The maximum area where Project-specific environmental interactions can be predicted and measured with a reasonable degree of accuracy and confidence (i.e. the zone of influence of the Project phases on each VEC).

## 4.0 Methods

### 4.1 Desktop Survey

Prior to completing the field surveys for Mainland Moose, Dillon conducted a desktop review to evaluate the potential for moose and moose habitat within the general area of the Project and to assist in scoping the field program. The information was reviewed, along with information on habitats present in the general area of the Project, to determine the preliminary potential for at risk wildlife species and/or their critical habitat. Dillon completed a review of available resources prior to completing the field surveys, including the following:

- Fauna Desktop Study by Strum Environmental completed during the previous iteration of the Project (Strum 2012; 2013);
- Data from the Atlantic Canada Conservation Data Centre (2021 and 2022);
- Nova Scotia Department of Natural Resources and Renewables (NSDNRR) 2021 Recovery Plan for Mainland Moose;
- Publicly available GIS map layers (e.g., ecological land classification, forest and non-forest inventory, wetland inventory, Protected Natural Areas, Wildlife Management Zones); and
- High-resolution Google Earth imagery was available for the site from August 2012, September 2014, June 2017, July 2019 and August 2021.

#### 4.1.1 Habitat Assessment Map

The Project is located on privately owned lands used for blueberry farming, maple groves, and recreation (i.e. snowmobile trails) and is in Cumberland County near the community of Westchester Station. The forestry activities include previously forested land at varying stages of regeneration, as well as undeveloped forested lands owned by forestry companies. Additionally, the Project is located within an area that is designated as core habitat within a concentration area for Mainland Moose by the Nova Scotia Department of Resources and Renewables (NSDNRR) (NSDNRR, 2021). As previously discussed, core habitat for moose refers to areas considered essential for the long-term survival and recovery of Mainland Moose, and that meet Moose seasonal (summer, winter, calving) requirements (NSDNRR 2021). Concentration Areas for Mainland Moose refer to the areas identified by the NSDNRR in 2012 using maps of preferred habitat, occupied range, and observational data from 1999 to 2011 to pinpoint areas of potential occupancy (NSDNRR 2012; NSDNRR 2021). Although Concentration Areas provide occupancy and distribution information, they do not necessarily reflect the most suitable Mainland Moose habitat.

Available mapping through the Nova Scotia Department of Natural Resources and Renewables (NSDNRR) was reviewed to identify forest types, general land use, and habitats within the LAA. Observations gathered during the biophysical assessments carried out for this EA and aided by Google Satellite imagery were used to confirm the existing site conditions within the PDA. A GIS map was

generated to show the existing habitat and land use features within the PDA and calculate the area of potential disturbance within each type. Furthermore, the area and percentage covered by each habitat or land use type within the PDA were determined to identify the extent that areas covered within the PDA minimize the use of non-anthropogenic and forested areas.

## 4.2 Field Surveys

Spring Pellet Group Inventory (PGI) surveys were conducted on April 28, 2021 and May 5, 2022, targeting endangered Mainland Moose, with transects running through different habitat types and high-probability areas for moose. High-probability areas were defined as areas with which moose are associated (i.e., forested habitats with varying ages and types of coniferous and mixed-wood forest habitats with an abundance of mature forest that they use for security and thermal cover and interspersed young deciduous trees and shrubs that they use for food (NSDNRR 2021)). PGI surveys were performed by experienced wildlife biologists and field technologists who are skilled at identifying signs of Mainland Moose presence (including pellets).

Prior to visiting the Study Area (**Figure 2**), environmental biologists reviewed available mapping and desktop sources for habitat types that support a high potential for moose, or corridors typically used by moose, to select sampling transects. Information collected during the desktop survey was used to select transect locations that:

- a) Covered a representative portion of the PDA; and
- b) Covered a variety of habitat types with the potentially appropriate habitat for Mainland Moose.

The following list habitat characteristics that were targeted and representative photos are included in the Photo Plate (**Appendix A**):

- mixed wood forest stands;
- coniferous forest stands; and
- shrub wetlands.

PGI surveys were conducted during the spring prior to full leaf out when the ground surface was free of snow and fresh leaf litter to allow a clear, unhindered view of the forest floor during the surveys. The surveys were conducted on clear days and not during precipitation. The following weather observations were noted during the surveys:

- April 28, 2021: 3 to 15°C, cloudy-clear sky, and no precipitation; and
- May 5, 2022: 5°C to 12°C, mild rain ending before the start of the survey.

Each transect was walked using a compass and recorded using a handheld Global Positioning System (GPS) unit. If identified, only those pellet groups detected atop the last major leaf fall (i.e., fall 2020 for 2021 survey) and within 1 m of the transect-line were used in calculations regarding the potential number of moose or deer in the LAA. In the 2021 PGI survey, Transect 1 was 1825 m long, and Transect

2 was 4725 m long. In 2022, one continuous 4915 m transect was completed. The locations of the moose PGI survey transects are shown in **Figure 2**.

During the field PGI survey, any evidence of moose was documented via handheld GPS units and photos including all observances or fecal pellet groups encountered along pre-determined straight line transects. Evidence to be recorded included (but was not limited to) incidental sightings, tracks, antler sheds, rubbings/hookings, fecal pellets, and/or evidence of browsing and trails. In addition to conducting formal moose surveys, the PDA was continuously surveyed for incidental observations during the other field reconnaissance programs in 2021 and 2022.

## 5.0 Results

### 5.1 Desktop Survey Results

A fauna desktop study conducted by Strum Environmental in 2012 for a previous iteration of the Project overlapped the LAA for the 2021-2022 Mainland Moose surveys. The 2012 study did not identify any evidence of Mainland Moose; however, it acknowledged the potential for suitable moose habitat being present within the PDA.

Site specific ACCDC data reports were generated on May 7, 2021 and September 20, 2022, and included rare and sensitive species observations that were reported within 100 km of the study area. Data from the later ACCDC report indicated that moose had been reported on 217 occasions within 8.9 km of the PDA (ACCDC 2022). The observation dates and temporal range of the ACCDC data are not specified in the report.

The following managed/protected habitats that are potentially suitable for moose have been identified in LAA:

- An area designated as Core Habitat for Mainland Moose (NSDNRR 2021). The PDA is located within this area; and,
- Portapique River Wilderness Area is 2,050 hectares of old growth hemlock (*Tsuga Canadensis*), red spruce (*Picea rubens*), hardwood mixed-wood forests (NSE 2022b). This Wilderness Area is approximately 1 km south of the PDA.

#### 5.1.1 Habitat Assessment Map

Available mapping through the NSDNRR was reviewed to identify forest types, general land use, and habitats within the LAA and shown on **Figure 3**. Furthermore, the area and percentage covered by each habitat or land use type within the PDA were determined and are listed in **Table 2**. This data is based on available mapping and Google Satellite imagery. Approximately 57% of the PDA is located within areas that have been previously disturbed by forestry, agriculture, recreational trails and access roads, which are deemed as not-preferred moose habitat. The remaining 43% of the PDA will be developed within existing forest habitat, as summarized in **Table 2**.

**Table 2: Habitats Within the Potential Development Area**

Habitat	Area within the PDA (ha) <sup>1</sup>	Percentage of the PDA <sup>2</sup>
Softwood Forest	31.7	18%
Mixedwood Forest	15.2	9%
Hardwood Forest	27.9	16%
<b>Total Non-Disturbed Areas<sup>3</sup></b>	<b>74.8</b>	<b>43%</b>
Recently Cut Area or Regenerating Wood Lot	24.1	14%
Agriculture (Including Blueberry Fields)	8.9	5%
Powerline and Road Corridors	65.0	38%
<b>Total Area with Anthropogenic Disturbance</b>	<b>98.0</b>	<b>57%</b>

**Notes:**

1. Area calculations are estimates and are based on NSDNRR mapping and observations recorded at the site during the 2021 and 2022 biophysical surveys.
2. As previously described, the PDA encompasses all of the proposed 28 turbines locations and their associated infrastructure. The Project would consist of up to 12 of those locations and their associated infrastructure.
3. Non-disturbed habitats include treated and un-cut forestry stands and plantations

## 5.2 Field Survey Results

During the 2021 and 2022 field surveys, as well as a survey completed in 2012, the PGI survey transects (shown in **Figure 2**) were searched for moose fecal pellets, tracks, antler rubbings/hooks, browsed tree and shrubs, and shed hair or antlers. Moose have the potential to reside within the same region as the Project. No observations or signs of moose (i.e., antler sheds, rubbings/hooks, tracks, browse, sightings and/or pellets) were observed during the targeted survey or incidentally during any of the other biophysical field surveys that were carried out in the study area in 2021 or 2022.

As previously discussed, moose require an abundance of mature forest for security and thermal cover, as well as areas of interspersed young deciduous trees and shrubs for browsing (NSDNRR 2021). Suitable habitat for moose was identified within the LAA and study areas in regenerating mix-wood and coniferous forests that can be used for moose browsing; however, minimal mature forests were encountered. Potentially suitable habitat within the LAA is presented on **Figure 3**.

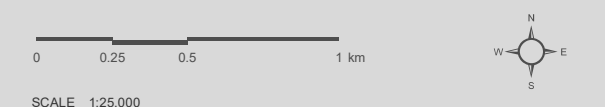
During the field survey, photos, GPS information and general observations were gathered to inform the assessment and mapping of habitat areas within the PDA, as discussed above. Representative photos of habitats encountered during the surveys are presented in **Appendix A**.



**MAINLAND MOOSE HABITAT ASSESSMENT**

FIGURE 3

-  Proposed Turbine Location
  -  Proposed Substation Location
  -  Potential Development Area (PDA)
  -  Local Assessment Area (LAA)
  -  Highway
  -  Watercourse
  -  Waterbody
  -  Wetland (Province of Nova Scotia, 2021)
- Habitat Type**
-  Softwood
  -  Mixedwood
  -  Hardwood - Dominant Forest
- Anthropological Land Use Type**
-  Recently Cut Area or Regenerating Woodlot
  -  Agricultural Field
  -  Blueberry Field

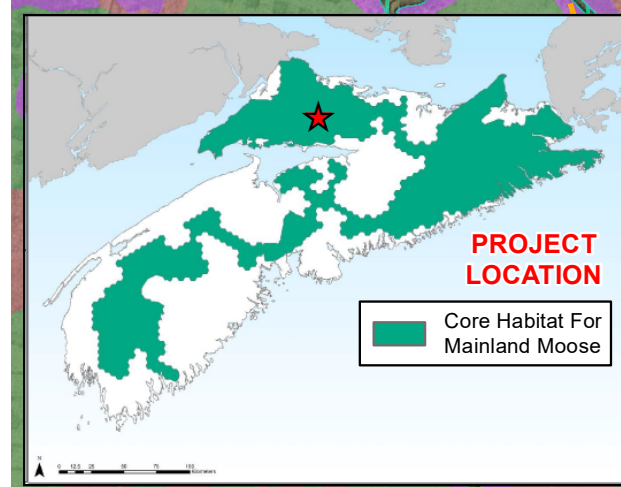
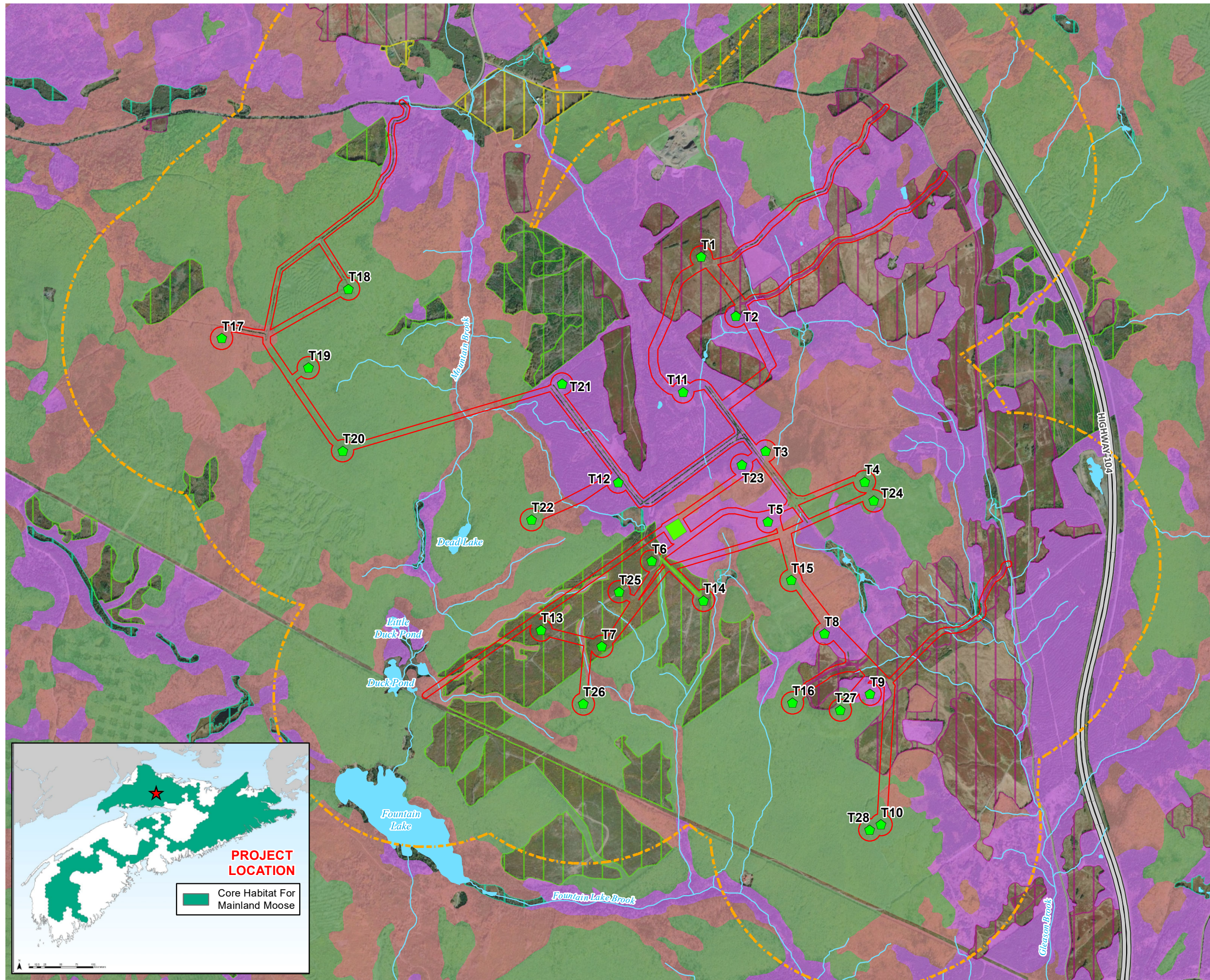


SCALE 1:25,000  
 MAP DRAWING INFORMATION:  
 DATA PROVIDED BY DILLON CONSULTING, NSDNRR, NATURAL FORCES

MAP CREATED BY: MEC  
 MAP CHECKED BY: KB  
 MAP PROJECTION: NAD 1983 UTM ZONE 20N



PROJECT: 21-1329  
 STATUS: DRAFT  
 DATE: 2022-12-09



## 6.0 Effects Assessment and Mitigation Recommendations

Although not encountered during any of the documented field surveys in 2012, 2021, and 2022, Mainland Moose have been historically identified in the vicinity of the Project. According to the ACCDC, moose have been reported on 217 occasions within 8.9 km of the PDA (ACCDC 2022). Additionally, Mainland Moose are known to reside in the Economy River Wilderness Area, which is less than 10 km southwest of the Project (NSECC 2022a).

Based on the results of the desktop and field surveys for Mainland Moose, it was concluded that the potential for moose to be present within the LAA is low. Existing anthropogenic activities within and surrounding the PDA such as public roads, Highway 104, a nearby quarry, All-Terrain Vehicles (ATVs) and snowmobile trails, agricultural blueberry fields, and maple syrup production are likely contributing factors that reduce the likelihood of Moose occupation within the LAA. Moose have, however, been observed in the region, which is connected to and is present within their core habitat (NSDNRR 2021); therefore, it is possible for moose to travel through the LAA.

The Project has been intentionally sited to minimize the potential impact of the Project on natural landscapes and undisturbed natural habitat by selecting lands previously impacted by anthropogenic activities. In this case, the majority (i.e., approximately 57%) of the PDA is sited on lands previously or presently used for forestry activities, agricultural operations, and access roads and trails. These impacted lands do not meet the biophysical requirements for core moose habitat as defined by NSDNRR (2021). The Project aims to benefit the site by providing an environmentally friendly and productive source of renewable energy for Nova Scotia while limiting potential impacts to the natural environment.

### 6.1 Identification of Potential Environmental Effects

Mainland Moose have been identified as one of the biophysical valued environmental components (VEC) for the Project. Although the potential for moose to be currently present within the LAA is low, it is possible for moose to travel through the area. Therefore, the potential impacts on Mainland Moose, an endangered species, and their habitat were considered and prepared for through mitigation measures.

#### 6.1.1 Approach to Project Components

The Project has three main distinct phases during which the potential interactions with the surrounding environment are considered distinct. Accidents and malfunctions are considered separately from the phases.

The phases of the Project include:

1. *Planning, Site Preparation and Construction;*
2. *Operation; and*
3. *Decommissioning.*

The Project interaction matrix in **Table 3** is used as an initial screening to assist in determining if there could be an interaction between the activities is being carried out in each phase of the Project and the Mainland Moose and their habitat.

**Table 3: Project Interactions with Environmental Components**

Valued Environmental Component	Project Phases			
	Planning, Site Preparation and Construction Phase	Operation Phase	Decommissioning Phase	Unplanned Events
Moose and Moose Habitat	✓	✓	✓	✓

Legend: ✓ = Potential interaction identified

Those Project phases for which a checkmark is provided indicates that the Project may interact with the Mainland Moose, and thus an environmental effects assessment is warranted. In this case, it is possible that interactions could occur during each phase of the Project, as discussed below. Mitigation measures for unplanned events (including but not limited to potential accidents, malfunctions or severe weather events) are also included in **Table 4** below.

### 6.1.2 Identification of Potential Environmental Effects

Without mitigation, the Project has the potential to cause a minor reduction of moose habitat due to linear infrastructure and turbine foundations. While the construction, operation, and decommissioning phases present the potential for negative impact, impacts are temporary or reversible, most notably when the decommissioning phase has concluded and land reclamation activities restore the Project site to its previous state. The potential impacts of the Project to Mainland Moose and their habitat include the following:

- Temporary disturbance within potential moose foraging habitat during Project construction and decommissioning activities due to increased human presence, noise and anthropogenic footprint.
- The loss and fragmentation of potential moose habitat due to linear infrastructure and crane pads during construction, operation, and decommissioning.

### 6.1.3 Standard Mitigation of Potential Environmental Effects

Standard mitigation has been identified for the anticipated interaction and/or effect in relation to moose and moose habitat in an attempt to prevent the interaction from occurring if possible, or to reduce the magnitude, geographic extent, frequency and/or duration of the interaction. Best management practices (based on industry guidelines and regulatory guidance documents) have been proposed as mitigation measures. In addition, several acts, codes, regulations and guidelines may require appropriate actions be conducted as mitigation measures prior to or during the interaction. The federal and provincial legislation and codes that could apply to the Project include (but may not be limited to):

- *Canadian Environmental Protection Act* and regulations (ECCC 1999);
- *Species at Risk Act* (ECCC 2002);
- *Transportation of Dangerous Goods Act*, and regulations (TC 1992);
- Nova Scotia Environment Act and regulations (NSG 1994-95);
- Nova Scotia Water Resources Protection Act, and regulations (NSG 2000);
- Nova Scotia Endangered Species Act, and regulations (NSG 1998a);
- Nova Scotia Wilderness Areas Protection Act (NSG 1998b), and regulations; and
- Contingency Planning Guidelines (NSECC 2021).

To further reduce the likelihood of interactions between any phase of the Project and Mainland Moose, the mitigation measures, summarized below in **Table 4** will be followed.

**Table 4: Potential Interactions and Proposed Mitigation for Mainland Moose**

Potential Interactions with Moose and Moose Habitat	Proposed Mitigation Measures
Short-term, reversible disturbance to potential Mainland Moose foraging habitat during construction and decommissioning due to increased human presence, noise and anthropogenic footprint.	<ol style="list-style-type: none"> <li>1. Vegetation will be retained where possible to maintain wildlife habitat;</li> <li>2. The Project footprint will be limited to that which is necessary to enable the Project to be carried out;</li> <li>3. Existing roads and trails will be utilized to limit disturbance outside the Project footprint and minimize the interactions with wildlife and wildlife habitat;</li> <li>4. In the case of moose encounters, the following will be implemented: (1) 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; (2) equipment and vehicles will yield the right-of-way to wildlife;</li> <li>5. Participation in or funding to Mi'kmaq run Mainland Moose recovery programs;</li> </ol>

Potential Interactions with Moose and Moose Habitat	Proposed Mitigation Measures
	<ol style="list-style-type: none"> <li>6. To minimize disruptions with potential moose activity at night, the Project construction activities will be limited to daylight hours when feasible;</li> <li>7. Equipment shall be kept in good working order and maintained to minimize noise disturbances;</li> <li>8. To minimize impacts Mainland Moose use of watercourses and movement in corridors, construction activities within 30m of a watercourse will be limited where feasible;</li> <li>9. All workers will adhere to the provincial <i>Nova Scotia Endangered Species Act</i> and federal <i>Species at Risk Acts</i>; and</li> <li>10. Reduced speeds, dust suppression, and noise and lighting restrictions will be implemented to minimize disturbance to Moose and other wildlife in the PDA.</li> </ol> <p><u>Mitigation measures for unplanned events</u></p> <ol style="list-style-type: none"> <li>1. Equipment shall be kept in good working order and maintained so as to reduce risk of spills/leaks and to avoid water contamination;</li> <li>2. Spill response kits must be readily available for each piece of equipment, on site workers are required be knowledgeable on emergency spill response protocols and initiate corrective measures immediately to minimise any impacts to the surrounding environment;</li> <li>3. Where applicable, secondary containment and limited quantities of chemicals and fuels required to be store on site shall be in an area away from the surrounding terrestrial environment, or direct pathways (i.e., ditches) to the surrounding environment, all chemicals and fuels will be stored in appropriate containers designed for the reduction of potential spills or leaks;</li> <li>4. Refueling, oiling, and maintenance of equipment will be completed in specifically designated areas located at least 30 m away from any watercourse, wetland, or well to minimize potential effects that could arise in the event of a spill;</li> <li>5. If contaminated soil is encountered, it will be reported to NSE and managed utilizing the Nova Scotia Contaminated Site Regulations; and,</li> <li>6. 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.</li> </ol>

Potential Interactions with Moose and Moose Habitat	Proposed Mitigation Measures
<p>Short-term, reversible loss and fragmentation of potential Mainland Moose habitat during <u>construction</u> and <u>decommissioning</u> due to linear infrastructure and crane pads.</p> <p>Long-term, reversible loss and fragmentation of potential Mainland Moose habitat during <u>operations</u> due to linear infrastructure.</p>	<ol style="list-style-type: none"> <li>1. Vegetation will be retained where possible to maintain Mainland Moose habitat;</li> <li>2. Control measures manage and prevent the spread of invasive plant species will be applied to each phase of the Project;</li> <li>3. Glyphosate will not be used in vegetation management for the Project;</li> <li>4. Following the construction and decommissioning phases of the Project, natural revegetation of the site will be promoted;</li> <li>5. The Project footprint will be limited to that which is necessary to enable the Project to be carried out;</li> <li>6. Existing roads and trails will be utilized to limit disturbance outside the Project footprint and minimize the interactions with wildlife and wildlife habitat;</li> <li>7. Road and access points will be laid out in a manner to minimize fragmentation of habitat and/or isolation of habitat where feasible; and,</li> <li>8. Decommissioning/reclamation activities following the Project will be undertaken to improve interconnections between landscapes in the PDA.</li> </ol>

In addition to the mitigation methods listed above and in **Table 4**, the Proponent has engaged with the Confederacy of Mainland Mi'kmaq (CMM) to understand current and proposed Mainland Moose recovery programs. Further discussions are required to understand the scope of work and funding required for such programs, however the Proponent commits to contributing to these programs in order to help the recovery of the Mainland Moose population as they are a species that are of particular significance to the Mi'kmaq and to the ecosystems within the area. Efforts such as these are important moving forward and lend well to the Mainland Moose Recovery Plan (NSDNRR 2021).

## 6.2

### Characterization of Residual Environmental Effects

The effects of the Project activities on Mainland Moose are expected to be limited to the PDA, as required to meet Project objectives during the construction, operation, and decommissioning phases. The Project is to be constructed within existing anthropologically disturbed areas where possible, which reduces effects to moose, moose habitat, and moose ability to traverse between habitats. Disturbance of mature forest habitat as a result of this Project will be minimized through site selection and by employing the proposed mitigation measures.

Noise associated with the construction phase of the project may deter moose and the potential effects are considered to be short term and reversible. With the proposed mitigation, the residual interactions of the Project with moose are anticipated to be short in duration and are not anticipated to be substantive because they are limited to the construction and decommissioning phases and are occurring already in highly fragmented habitat that has ongoing forestry, agriculture, and recreation activities.

Further fragmentation of habitat, which is presently fragmented by forestry activities, agricultural operations and access roads, as well as snowmobile and all-terrain vehicles (ATV) trails, is minimized through careful site selection and the re-purposing of existing roads and trails. Following the construction and decommissioning phases of the Project, natural revegetation of the site will be promoted.

### 6.3 Cumulative Effects

Cumulative effects are combined impacts that may occur when multiple wind power projects or other types of projects are located in the same region (NSECC 2021). This area of the province has a number of existing wind energy developments. The nearest wind farms are as follows:

- Higgins Mountain Wind Phase I, a 3.6 MW project located approximately 9 km east from the Project. This project was commissioned in 2006;
- Fitzpatrick Mountain Wind, a 0.8 MW project located approximately 28 km from the Project. This project was commissioned in 2007;
- Nuttby Mountain Wind, a 50.6 MW project located approximately 40 km east from the Project. This project was commissioned in 2010; and.
- Amherst Wind, a 32 MW project located approximately 45 km from the Project. This project was commissioned in 2012.

Additionally, there are other forms of existing disturbance on and adjacent to the Project site, including:

- A quarry that has proposed an expansion from 4 hectares (ha) to 40.36 ha to the north of the site, and is situated approximately 0.5 km from the PDA;
- Public roads including highway 104 bordering the LAA to the east;
- Roads for historical and ongoing agricultural and forestry activities located within the LAA;
- Recreational trails for motorized vehicles (heavy equipment, passenger vehicles, and recreational vehicles including All Terrain Vehicles and snowmobiles) located throughout the LAA; and
- Telecommunication towers and the associated overhead power lines and access routes located within the LAA.

The projected cumulative effects on Mainland Moose, and other terrestrial wildlife from the Project are anticipated to be very low. While the Project is within an area considered to be core habitat in the Mainland Moose Recovery Plan (NSDNRR 2021), anthropogenic areas, including agricultural fields, are not considered part of core habitat as they do not meet the diverse biophysical requirements. As the Project is proposed in an area with ongoing agricultural and forestry land uses, and the Project will utilize existing cleared corridors, there is a reduced risk of effects to moose, their habitat, and their ability to traverse habitats associated with the Project. Furthermore, the broader threat of climate change will have many negative impacts to Mainland Moose, including exacerbation of ticks and parasites, as well as the potential for thermal stress (NSDNRR 2021). Overall, the societal transition to renewable energy is a positive action that may support long term population growth through a reduction in climate change impacts.



## Summary and Conclusion

This report has been prepared for the Environmental Assessment of the Westchester Wind Project. The Project is expected to provide renewable electricity to Nova Scotia and support Nova Scotia Power in attaining its 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 throughout 2021 and 2022. Based on the results of the desktop and field surveys for Mainland Moose, it was concluded that the potential for moose to be present within the Potential Development Area is low and none were identified onsite during the 2021 or 2022 field surveys. Moose have, however, been observed in the region, and it is possible for moose to travel through the area.

In order to mitigate risk to moose during the Project phases, there will be a concerted effort to use existing corridors found on site to limit over story removal, and vegetation management will not involve the use of glyphosate. Furthermore, the broader threat of climate change will have many negative impacts on Mainland Moose, including exacerbation of parasites and thermal stress. Overall, transitioning to renewable energy will help reduce the effects of climate change. This may have a positive impact on the long-term population growth and viability of Mainland Moose in Nova Scotia.

## Closure

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This report was prepared by Dillon Consulting Limited (Dillon) for Natural Forces Developments Limited Partnership (the Proponent) on behalf of the Westchester Wind Limited Partnership, in support of the Westchester Wind Project Addendum (2022). 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.

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# Appendix A

## *Photographs*

<p><b>Mixed-wood Forest</b></p>  <p>Representative Photo May 5, 2022</p>	<p><b>Hardwood Forest/Wetland</b></p>  <p>Representative Photo May 5, 2022</p>	<p><b>Mature Hardwood Forest</b></p>  <p>Representative Photo May 5, 2022</p>
<p><b>Mixed-wood, WC &amp; Wetland</b></p>  <p>Representative Photo April 28, 2021</p>	<p><b>Fen and Watercourse</b></p>  <p>Representative Photo April 28, 2021</p>	<p><b>Blueberry Field</b></p>  <p>Representative Photo April 28, 2021</p>
<p><b>Regenerating Conifers</b></p>  <p>Representative Photo April 28, 2021</p>	<p><b>Mixed-wood and Stream</b></p>  <p>Representative Photo April 28, 2021</p>	<p><b>Coniferous Forest</b></p>  <p>Representative Photo April 28, 2021</p>