



# BENJAMINS MILL WIND PROJECT

Environmental Assessment Registration

01.11.2022

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## Executive Summary

This Environment Assessment document has been prepared for the registration of the proposed Benjamins Mill Wind Project (Project) by Dillon Consulting Limited on behalf of the Proponent, Natural Forces Developments Limited Partnership. The potential environmental effects of the proposed undertaking on the environment have been assessed and evaluated and are discussed herein. The purpose of this document is to provide information on the assessment of the environment for the protection of valued environmental components (VECs).

The proposed wind energy project, consists of 28 wind turbine generators capable of producing up to 150 MW of renewable energy that will be connected to the existing Nova Scotia Power transmission grid via overhead transmission lines. The Project will be located on a mix of privately-owned and provincial Crown lands within the West Hants Regional Municipality in Hants County. This undertaking will be constructed, owned, operated and maintained by Natural Forces Developments Limited Partnership (referred to herein as the Proponent or Natural Forces).

This Environmental Assessment registration details the desktop research, and field studies conducted in an effort to identify and assess potential impacts to physical, biophysical, and socio-economic valued environmental components (VECs).

Valued Environmental Components	Environmental Assessment Studies
Atmospheric Environment	Onsite Weather monitoring Climate Impact Assessment sound level impact assessment study
Physical Environment	Geology study Hydrology study of surface water and groundwater
Visual Environment	Visual Assessment Shadow Flicker Assessment
Terrestrial Environment	Vegetation and Lichen Surveys Assessment of Culturally Important Flora Preliminary Survey of Wetlands Terrestrial Wildlife Surveys
Aquatic Environment	Preliminary Fish Habitat Assessment Surveys
Species at Risk	Species at Risk and Species of Conservation Concern Assessment
Birds and Bird Habitat	Late-winter Resident Bird surveys Spring Migratory Bird Surveys Summer Breeding Bird Survey Nocturnal Breeding Bird Survey Fall Migration Surveys Nocturnal Avian Migration Survey  Supplementary winter bird surveys are scheduled to occur in January/February 2022 and supplementary radar and acoustic monitoring surveys are scheduled to occur in Spring 2022, an addendum will be issued to reflect these results.
Bats and Bat Habitat	Acoustic Bat Monitoring Survey
Socioeconomic Environment	Radio communication System Impact Study
Cultural and Heritage	Archaeological Resource Impact Assessment and Screening

From the data that has currently been assessed, it is anticipated that residual effects following the application of the mitigative measures will be minor to negligible and short term in nature. The Proponent is committed to minimizing any potential for environmental impact as a result of the construction, operation, and decommissioning of the Proposed Benjamins Mill Wind Project and has committed to post construction monitoring and mitigation activities that may be required given the predicted impacts.

The Proponent believes that with the careful planning completed to date the anticipated Project Development Area minimizes many environmental concerns while providing an excellent opportunity to transform a previously disturbed and fragmented site into a productive source of environmentally friendly renewable energy. The Benjamins Mill Wind Project will help Nova Scotia achieve their provincially mandated targets of producing 80% renewable energy by 2030, and will support local community economic development.

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Appendix O Environmental Management and Protection Plan
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This Environmental Assessment (EA) Registration Document has been created to initiate the regulatory process for the Benjamins Mill Wind Project (Project) for the construction of a renewable (wind) power generating project capable of producing up to 150 MW of renewable energy in Benjamins Mill, Nova Scotia. The registration document has been prepared by Dillon Consulting Limited and the Proponent, Natural Forces Developments Limited Partnership, in alignment with the Guide to Preparing an EA Registration Document for Wind Power Projects in Nova Scotia.

The Project is located on lands in Mi'kmaq traditional territory in an area where the Mi'kmaq have historically and continue to use the land and exercise their Aboriginal and Treaty rights.

## 1.0 Proponent Description

Name of Project	Benjamins Mill Wind Project
<b>Name of Proponent:</b>  <b>Joint Registry of Stocks Full Name of Proponent</b>	Natural Forces Developments Limited Partnership  Natural Forces Developments GP LTD., Natural Forces Technologies Inc., 3261507 Nova Scotia Limited, Natural Forces Wind Inc., and Natural Forces Assets Limited Partnership, carrying on business as Natural Forces Developments Limited Partnership
<b>Joint Registry of Stocks ID Number</b>	3324453
<b>Mailing and Street Address of Proponent:</b>	1205-1801 Hollis Street, Halifax, NS, B3J 3N4
<b>Chief Executive Officer:</b>	Robert Apold
<b>Proponent's Contact Person for the purposes of this EA Registration:</b>	Meg Morris Development Manager at Natural Forces mmorris@naturalforces.ca (902) 422-9663 (Phone) (902-422-9780) (Fax) www.naturalforces.ca

Signed by Robert Apold

On behalf of Natural Forces Developments Limited Partnership in acceptance the contents of the Environmental Assessment Registration Document

  
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## 2.0 Description of the Undertaking

### 2.1 Project Overview and Purpose

The proposed wind energy project, called the Benjamins Mill Wind Project (BMWP or Project), consists of up to 28 wind turbine generators (WTGs) capable of producing up to 150 MW of renewable energy that will be connected to the existing Nova Scotia Power transmission grid via an overhead transmission line. The Project is being developed by Natural Forces Developments Limited Partnership (referred to herein as the Proponent or Natural Forces).

The purpose of this Project is to help Nova Scotia achieve their renewable electricity standards through the generation of clean, renewable energy, and reduce Nova Scotia's reliance on imported energy sources through the development of a localized renewable energy generation (Renewable Electricity Regulations 2021).

Canada's and Nova Scotia's recent energy policies encourage renewable energy generation to limit the negative consequences of fossil fuel usage, to reduce greenhouse gasses, and to meet future energy demands. To support the implementation of these policies, Nova Scotia has developed a number of initiatives to encourage the development of renewable energy projects. The Nova Scotia *Electricity Act* (2004) sets out clear requirements regarding the source of electricity to be supplied to the province. The Project will help achieve provincially mandated targets outlined in the *Renewable Electricity Regulations* made under Section 5 of the *Electricity Act*, which requires the province of Nova Scotia to achieve 80% renewable energy by 2030. Reaching this goal will also support the province's objectives of achieving a 53% reduction in greenhouse gas (GHG) emissions by 2030 and becoming net-zero by 2050 (Renewable Electricity Regulations 2021). The increase in renewable energy needed to meet these targets will likely be obtained mainly through wind, marine renewable, hydropower, solar, geothermal, and biomass. The Nova Scotia renewable electricity standard 2030 states that 1100 GWh of electricity must be acquired from independent power producers to meet 2030 targets (Renewable Electricity Regulations 2021).

The BMWP is located in an undeveloped fragmented forested area in Hants County near the communities of Smiths Corner and Falls Lake. The WTGs are proposed to be located in areas that have been previously clear cut through forestry activities, creating a highly fragmented habitat. The proposed BMWP can transform this disturbed habitat into a site that will provide an environmentally friendly and productive source of renewable energy for Nova Scotia while limiting potential impacts to the environment.

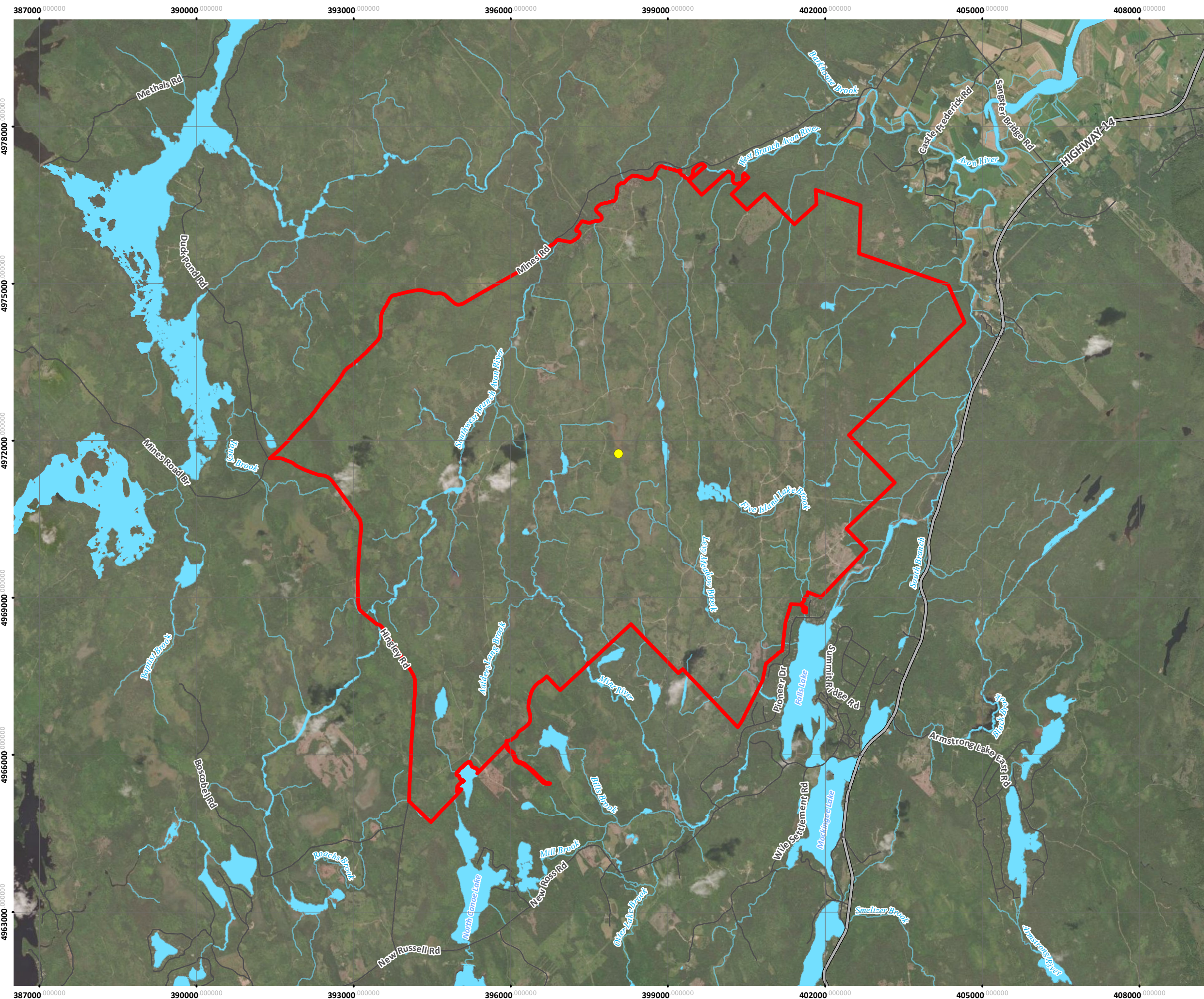
Development of wind energy projects has been instrumental in reducing harmful greenhouse gases associated with traditional carbon-based energy sources, both locally and abroad. Further, as previously mentioned, the Nova Scotia provincial target is to produce 80% of its energy from renewable sources by 2030. With less than a decade until this deadline, the development of wind energy is the most feasible option to help meet renewable energy goals while providing economic development for local communities.

## 2.2 Geographical Location

The proposed Project site is located in the West Hants Regional Municipality area of Hants County, approximately 13 km southwest of Windsor, Nova Scotia (**Figure 1**). The proposed WTG locations and associated infrastructure are situated mainly on privately-owned land with only four WTGs located on provincial Crown lands near Highway 14. The proposed development area has largely been used for forestry activities and therefore has a network of existing privately maintained forestry roads.

A lease for the privately-owned land where project infrastructure is located has been obtained by Natural Forces, which will continue for the construction and operational phases of the Project. This lease includes the land required to build approximately 24 of the wind turbines and the associated roads, collector lines, the substation and other project infrastructure. Appropriate land agreements will be obtained by Natural Forces with the province for the remaining infrastructure located on Crown land. As such, once the BMWP becomes operational leases will be obtained for the lands used by the turbines located on Crown land and a License of Occupation will be obtained to encompass the access roads and collector lines. Natural Forces has already begun working with the province for this process.





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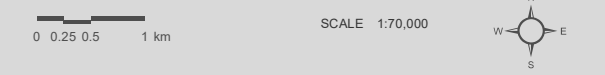
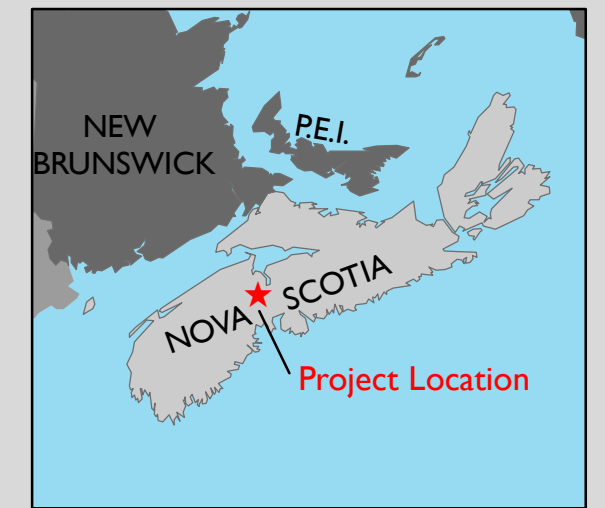


BENJAMINS MILL WIND PROJECT

**PROJECT LOCATION**

FIGURE 1

- Project Location
- Centre of Site (20N, 397362m E, 4972663m N)
- Highway
- Road
- Watercourse
- Waterbody



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

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



PROJECT: 21-1329  
 STATUS: DRAFT  
 DATE: 2022-01-10



## 2.2.1 Siting Considerations

Natural Forces has a proven record in the development of renewable energy projects in Nova Scotia, Atlantic Canada and across the country. Through past experience in developing these projects, the Proponent has developed extensive knowledge on best practices with respect to site finding and development of community-based wind farms. To determine site suitability, the Proponent completed a detailed assessment of the considerations listed below prior to selecting the location of the BMWP.

Specifically, the Project site is attractive due to the wind resource, elevation, proximity to and location of the Nova Scotia Power transmission system, distance from residences, previous forest harvesting activities across the site, and low environmental sensitivity.

The following is a list of factors that were considered during the site finding and development process:

- Technical Considerations;
  - Suitable wind resource;
  - Regional topography;
  - Proximity to and location of transmission system; and
  - Available turbine technology.
- Environmental Considerations;
  - Proximity to wetlands and watercourses;
  - Proximity to residential dwellings or other areas sensitive to sound levels and visual impacts;
  - Sensitivity of flora and fauna;
  - Proximity to provincial or national parks, nature reserves and other sensitive areas; and
  - Risk of archaeological or heritage resource distribution.
- Land Use Considerations;
  - Known culturally significant areas;
  - Available access to the land;
  - Communication corridors;
  - Current land use;
  - Future land use; and
  - Proximity to residential properties, communities, and towns;
- Planning Considerations; and  
Municipal zoning by-law regulations.

### 2.2.1.1 Technical Considerations

The BMWP is located on a topographical ridge with an elevation ranging from 190-261 m above mean sea level. As a result of the elevated topography and prevailing winds coming from the coastline (west), the BMWP site provides an attractive wind resource for a wind energy project.

Natural Forces has been in discussion with Nova Scotia Power Inc. (NSP) since 2020 regarding interconnecting the BMWP to the existing transmission grid. Together, Natural Forces and NSP have identified that there is a suitable 138 kV transmission line that crosses through the BMWP site. The Feasibility Study for a 48 MW BMWP identified no technical issues with the proposed Project connecting to existing line L-6054, and a Feasibility Study for a larger BMWP is ongoing. This line tap will require the



construction of approximately 200 m of new overhead transmission line and a new substation onsite. The new 200 m transmission line required will be constructed, owned, and operated by NSP, however, it has been included in the scope of this Environmental Assessment (EA). The point of interconnection, collector lines, and location of the new proposed substation are demonstrated in **Figure 2**.

The Proponent will be using the services of a third-party consultant to conduct a geotechnical investigation to determine geophysical conditions for turbine design and construction. This assessment is planned to be completed in the fall of 2022.

Lastly, based on site specific measured wind data, turbine availability, site suitability assessments by the manufacturers, and capacity available on the grid, an appropriate turbine technology will be finalized in 2022.

#### **2.2.1.2 Environmental Considerations**

Many environmental impacts associated with the construction and operation of a wind farm can be reduced or eliminated through proper screening during development. The Proponent has consulted with regulatory agencies and conducted desktop and field studies to locate wetlands, watercourses, sensitive habitats, endangered species, and residential dwellings near the BMWP lands in an effort to design the project to avoid as many of these sensitive features as possible.

A thorough desktop review of available data for flora and fauna species in the area (i.e., 100 km from the centre of the site) has been conducted in order to identify species at risk and species of high importance that may be impacted by the proposed development. The desktop review was then supplemented by several field assessments and surveys completed in 2021. Flora and fauna species at risk or of high importance identified during the desktop assessment or field surveys are discussed in **Section 6.2.3**.

Archaeological resource desktop studies have also been conducted by Cultural Resource Management Group Ltd (CRM). Further details of this study are discussed in **Section 6.4**.

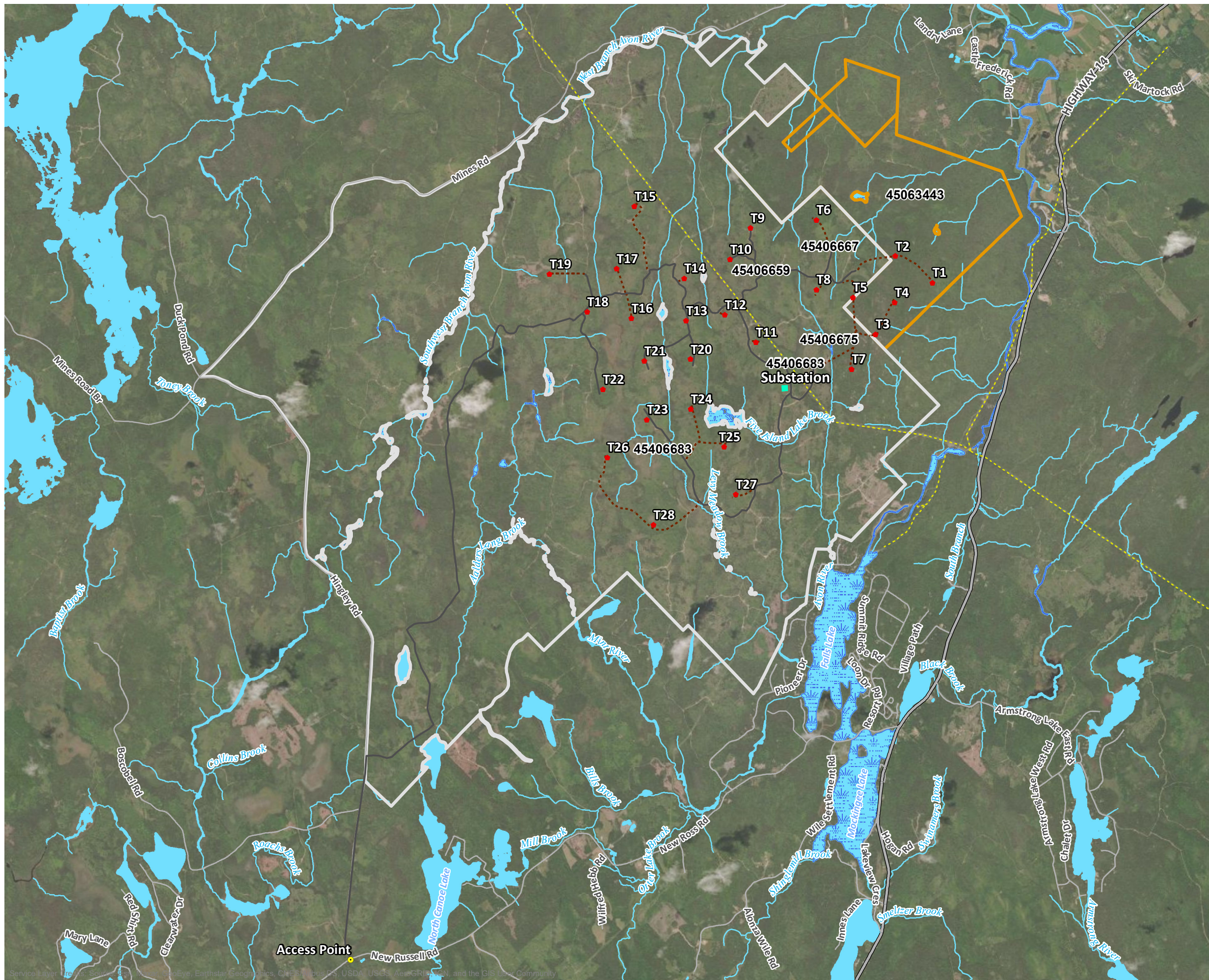
#### **2.2.1.3 Land Use Considerations**

The BMWP requires consideration of current land uses within the proposed Project site. The BMWP site is located on a mix of privately-owned and provincial Crown lands approximately 3.3 km west of Highway 14 (Figure 2). The privately-owned site lands have undergone several generations of wood harvesting and have a network of existing forestry roads. The provincial Crown lands are largely undisturbed with few existing roads that access the property. Currently, there is recreational use of the Crown land for activities such as hunting and snowmobiling, in addition to any use of the land by the Mi'kmaq Nation. These land uses have been considered in the site layout and consultation with the land users will continue.

Where part of the BMWP is located on provincial Crown land, any changes to access to those portions of the lands will be determined in collaboration with the province and will consider the current uses of the land.

Adjacent to the BMWP site is a mix of privately and Crown owned properties that have various land uses, including hiking trails and hunting cabins. The BMWP requires consideration of these current land



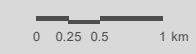


BENJAMINS MILL WIND PROJECT

**PROJECT LAYOUT**

FIGURE 2

- Proposed Access Point
- Turbine
- Highway
- Public Road
- Existing Site Road
- New Site Road
- Transmission Line
- Substation
- Watercourse
- Waterbody
- Wetland
- Crown Land
- Privately Owned Land



SCALE 1:60,000



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

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



PROJECT: 21-1329  
STATUS: DRAFT  
DATE: 2022-01-10

Service Layer Credits: Source: Esri, DeLorme, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



uses and consultation with these land users will be ongoing to ensure safe use and continued enjoyment of these lands.

#### 2.2.1.4 Planning Considerations

The Proponent has consulted the West Hants Regional Municipality Land Use By-Law (2019) zoning regulations for the Project area, and has engaged with both staff and Council to determine the steps necessary to obtain the required permits. The BMWP site is located in the General Resource zoning, making it appropriate for this type of development under current bylaws. The Proponent has submitted the application for the Development Agreement, the first of the planning requirements. Consultation with West Hants staff and Council will continue and the Development Agreement, Development Permit, and Building Permit will be obtained prior to commencing construction.

Following a detailed assessment of the above considerations, the proponent determined that the BMWP location has strong potential to provide efficient renewable energy while minimizing impacts to the community and the environment. The Project location and proposed layout from a regional and local context are shown in **Figure 2**.

### 2.3 Physical Components of the Project

The footprint of the Project is detailed in **Figure 2** and is estimated to cover approximately 130 hectares (ha). The following estimates are based on the full 28 turbine layout. This includes the following:

- 103 ha of existing roads to be upgraded and new access roads (includes approximately 14 km of new roads on site and 33 km of roads to be upgraded);
- 24 ha for the turbine foundations and crane pads;
- 1.5 ha for the substation;
- 1 ha for the collector lines that are not parallel to the roads; and
- 0.5 ha for the proposed transmission line and cleared right of way.

#### 2.3.1 Civil Works

##### 2.3.1.1 Access Roads

The access roads for the Project will range from 6 - 11 m wide with a maximum width of 15 m in areas to facilitate moving large turbine components (i.e. to navigate turning radiuses on turns). The access roads will be used to move workers and equipment about the site during construction, operation and decommissioning phases.

##### New Access Roads

The new access roads are anticipated to involve the removal of soil to a depth of between 0.25 – 1.0 m (depending on the ground conditions encountered during the geotechnical investigations) and placing layers of crushed stone. The stone is usually compacted, with a finished construction depth between 0.25 – 0.5 m, again dependent on the strength of the underlying ground formation. The internal site roads will be maintained in good condition during construction and throughout the lifetime of the Project to facilitate maintenance and on-going environmental studies. The roads will be left in place following the eventual decommissioning of the Project if the landowners are in agreement.

The removed topsoil would be stored in accordance with best practice guidelines, and later used for site restoration. Soil needed for backfill would be stored temporarily in low bunds adjacent to the excavations until needed. Any remaining excavated material would be shaped into fill slopes in the road bed, or removed from site to an approved landfill or disposed of appropriately.

#### Existing Access Roads to be Upgraded

The Project site has many existing roads currently used by local industry and by recreational users. It is anticipated that approximately 47 km of existing roads can be used with minor upgrades. However, portions of existing roads may need to be widened to support large truck and material movements and turning radii of the turbine components. The process for upgrading roads is similar to that of constructing new roads, however, clearing and grading is only required where roads need to be widened, which will greatly minimize the area of new disturbance from the proposed Project.

#### Transmission Line Access Roads

In addition to the main Project access roads that will be used to transport WTG parts and used by construction crews, there is also a need for access routes into the new proposed transmission lines. These access roads will make use of existing trails near the proposed line but these trails will need to be upgraded to support construction crews. Roads into the transmission line corridor would be temporary for gaining access and would be approximately 6 m in width. A road approximately 4m wide along the transmission line corridor may be maintained during the lifetime of the project to facilitate maintenance.

#### **2.3.1.2 Crane Pads**

The installation of the WTGs will require crane pads that will be approximately 70 m by 70 m in size. The crane pad is required to safely accommodate the weight of the large crane necessary for turbine installation and maintenance. Each WTG location will be designed to support the arrangement of the crane pad and the turbine foundation on the surrounding topography constraints of the Project site.

Construction of the main crane pads will involve the removal of soil to a depth of between 0.25 – 0.5 m, depending on the ground condition encountered during the geotechnical investigation. The subsoil will be covered by layers of graded crushed stone. Total construction depth is between 0.25 – 0.5 m, also dependent on the characteristics of the underlying geological formations.

The crane pads will be retained throughout the operation phase of the Project to allow for periodic WTG maintenance, and to accommodate any crane necessary should any large components require replacement. The crane pads may also be utilized during the decommissioning phase of the Project.

#### **2.3.2 Turbine Foundation**

It is anticipated that concrete foundations approximately 20 m in diameter will be required for each WTG. A detailed geotechnical investigation will be undertaken at each WTG location to establish the nature of the soil and substrate characteristics. A registered professional Engineer will design the foundations to match the geological conditions.

The construction of the reinforced concrete foundations will include excavation to a depth of approximately 3 meters, the placement of concrete forms and steel reinforcement, and the pouring of

concrete within the forms. The upper surface of the base will lie approximately 1 m below ground level. Rock chipping and blasting is anticipated to be required to facilitate excavation. The central support pedestal would extend 0.20 m above existing ground level to receive the bolted bottom tower section. Suitable excavated material would be compacted in layers on top of the concrete foundation to terminate in line with the existing ground level, leaving room to allow sufficient topsoil reinstatement for vegetation growth. The foundations will be regularly checked for any signs of failing during the operational phase.

The soils removed will be stored in accordance with provincial regulations and best practice guidelines. They will not be stored within 30 m of streams or wetlands, and will be replaced during the restoration phase in consultation with the Department of Natural Resources and Renewables Land Services Branch. Soil material needed for backfill will be stored temporarily in a designated area adjacent to the excavation location until needed. Any remaining excavated material will likely be recycled to another site needing clean fill material or graded into the natural slope of the surrounding site.

### 2.3.3 Wind Turbine Generators

The proposed Project consists of the construction of up to 28 wind turbine generators. Each WTG has an individual generating capacity of 4.2-6.2 MW for a total Project capacity of up to 150 MW. There are a variety of turbine models being considered for the Project. The specification range for features of models under consideration, which are designed and certified according to the latest international standards, are summarized in **Table 1**. Currently the basis for design is the International Electrotechnical Commission (IEC) standards of the IEC-61400 series. From base to blade tip, the WTGs under consideration have maximum heights of 170-200 m.

**TABLE 1: TURBINE SPECIFICATIONS**

Feature	Range Under Consideration
Rotor diameter	138 – 170 m
Swept area	15,000 – 23,000 m <sup>2</sup>
Rotations per minute	Up to 12
Cut out wind speed	Up to 32 m/s
Hub height	100 – 131 m
Maximum sound pressure level	Up to 107.6 dB(A)
Tower material	Steel or concrete
Colour	White

All turbines will be monitored remotely 24-7 in real-time by a team of operators from the manufacturer. Natural Forces’ operations team will also monitor the turbines from Halifax, Nova Scotia. The operators will have the ability to shut off the turbines should they observe conditions that could pose a risk to the turbines’ proper functioning or risk to people or wildlife near the turbines. Ice may form on the rotor blades of WTGs in specific weather conditions. The ice build-up poses the risk of ice fragments detaching and creating safety hazards to the surrounding area. All turbines considered will be equipped with a reliable ice detection system. Once ice has been detected, the turbine rotor stops spinning, and will remain stopped until the ice has been melted, which will occur either passively through a natural

melting process based on climatic conditions or actively with a de-icing system that heats and melts the ice on the WTG blade. This will effectively reduce the risk of ice throw.

#### 2.3.4 Lighting

A Lighting Plan for the turbines will be developed and approved by Transport Canada and Canadian Wildlife Services (CWS) to minimize impacts on migrating birds while ensuring aviation safety. The lighting plan will comply with Transport Canada recommendations and Standard 621 – Obstruction Marking and Lighting - Canadian Aviation Regulations (Transport Canada 2021). Chapter 12 of the standard outline’s regulations for wind turbines greater than 150 m. The current standard requires two CL-864 (medium intensity, flashing red – 20-40 flashes per minute) lights installed on the nacelle with one operating and one as a back-up. At least three CL-810 (low intensity, flashing red in sequence with nacelle) lights are also required mid-way up the tower (half of the nacelle height) and are to be visible in all directions. These types of lights are likely to be used for the BMWP but will be adjusted as per Transport Canada recommendations.

The standard requiring lighting midway up the tower came into effect in 2016 and follows European practices for tall structures. This standard has been improved from the European practice by implementing flashing, instead of steady burning lights. This change was recommended from the Federal Aviation Administration’s technical report on Evaluation of New Obstruction Lighting Techniques to Reduce Avian Fatalities (Patterson 2012).

#### 2.3.5 Civil and Electrical Works

The electricity produced from the WTGs will be stepped-up from 34.5 kV to 138 kV at the substation via the main step-up transformer(s). Each wind turbine has a small pad mount transformer located inside the tower that initially steps up the voltage to 34.5kV. A bare copper earthing (grounding) cable will be laid alongside the WTG foundation for lightning protection; grounding will also be installed at other areas as determined by the electrical design. The electrical, communications and grounding cables will leave the WTG foundations below grade. This will be installed according to the design engineer’s specification. Typical design will require the cables to be installed by the direct buried method consisting of excavation of a trench with a minimum depth of 1.2 m, placement of a layer of sand, then the collection system cables, earthing and fibre optic cable which are then covered by another layer of sand. Clean aggregate, as specified by the design engineer, will then be placed on top of the sand as the trench is filled back in.

Caution tape, stating “Danger Underground Electrical Cable” will be placed along the full length of the trench at approximately 0.15 m below the finish grade. Any buried electrical cable will likely be marked with permanent safety signs to warn of potential hazards from excavation. The size, type and location of the marker signs will be determined in consultation with the Land Services Branch and be in accordance with applicable safety standards.

#### 2.3.6 Interconnection to Grid

The Project will be connected to the existing Nova Scotia Power L-6054 138 kV transmission line. A feasibility study has been completed for this point of interconnection for a 48 MW project size and at the time of the submission of this document to the province, another study was ongoing for a larger installed capacity. The planned interconnection will require a short new 138 kV line approximately 200



m long and a single-breaker switching substation including one 138 kV circuit breaker and associated switches, a control building and protection system, and communications and control between the point of interconnection switching substation and the Nova Scotia Power SCADA system.

### 2.3.7 Turbine Installation

The main WTG components include the tower sections, nacelle, generator, stator, hub and blades. Towers are typically delivered in six large sections if using conventional steel towers or numerous smaller sections if using the pre-cast concrete variety. Once delivered, the tower sections will be erected in sequence on the WTG foundations using a 150-tonne tailing crane and a large 800 – 1000 tonne main lift crane. The smaller crane will erect the base and lower midsection of the towers and then assist the main crane with the erection of the upper-midsection, the tower top section, the nacelle, generator, stator, hub and the blades. For the nacelle and blades, the assembly will involve the use of a small 135 tonne rough-terrain crane for vehicle off-loading, a 150-tonne tailing crane for preliminary assembly, and a main erection crane of approximately 800-1000 tonnes for the main lift. The blades are attached one at a time on the hub which will already be installed on the nacelle.

## 2.4 Setbacks and Separation Distances

The Project layout allots for the following setbacks from all proposed WTG locations:

- 30 m from wetlands and watercourses;
- 1.6 km from all residential dwellings and cabins;
- 3.9 km to nearest Important Bird Area (IBA) Southern Bight, Minas Basin;
- 4.3 km to the nearest Provincial Park (Falls Lake Provincial Park);
- >5 km to nearest Provincially Protected Nature Reserves (Panuke Lake Nature Reserve) and Wilderness Areas (South Panuke Wilderness Area); and
- 2.7 km to nearest communication tower.

Environmentally sensitive and managed areas are discussed further in **Section 6.2.5.1**.

## 2.5 Schedule

The approximate proposed schedule for the construction activities is presented in **Table 2**.

Preconstruction activities and clearing are expected to start in Q4 of 2022 with operation of the BMWP in Q1 2024.

After the initial tree and land clearing and earth works activities for the construction of the BMWP are complete the following main construction activities will occur:

- Construction of access roads, crane pads and lay down areas;
- Construction of the turbine foundations;
- Installation of electrical infrastructure (i.e., power poles, power lines and underground electrical, transmission lines and substation);
- Turbine installation;

- Commissioning of the WTGs; and
- Removal of all temporary works and restoration of the site.

Construction activities will be limited to daytime hours when feasible. The overall erection process for the WTGs will take approximately six to eight days each, depending on the wind conditions, and will not start until suitable wind conditions prevail. Turbines cannot be erected when wind speeds exceed approximately 8 m/s, and the optimal time for assembly often occurs during the early evening. As a result, some construction in the early evening and night is possible during this stage of construction, however, it will be minimized to the extent possible.

**TABLE 2: PROJECT SCHEDULE**

Phase	Beginning of Phase
<b>Phase I - Planning, Site Preparation and Construction</b>	
- Clearing and Grubbing	Q4 2022
- Access Road and Laydown Area	Q4 2022
- Turbine Foundation	Q2 2023
- Electrical infrastructure	Q2 2023
- Crane Pad Construction	Q2 2023
- Turbine Installation	Q3 2023
- Commissioning	Q4 2023
- Removal of all temporary works and restoration of the site	Q1 2024
<b>Phase II – Operation and Maintenance</b>	
- Turbine Operation	Q1 2024
- Inspection and Maintenance	Q1 2024
<b>Phase III - Decommissioning</b>	
Infrastructure Removal	25+ years after commissioning
Site Reclamation	

**2.6 Planning, Site Preparation and Construction**

The main site access is from New Russell Road off Highway 14. The majority of the access roads will make use of existing designated roadways and private roads but may require upgrades to support oversized vehicle movements as described in **Section 6.3.3**. Using existing roads allows the Project to significantly minimize its footprint and potential impacts to the environment. Minor temporary road widening may be required along specific portions of provincially maintained roads allowing for wider turn widths. This road widening will be coordinated with Nova Scotia Public Works and the West Hants Regional Municipality Public Works Department and all necessary permits will be acquired before commencing work. New Russell Road will be the entry point for all workers, construction equipment and WTG components for the duration of the construction phase (Figure 2).

Clearing, Grubbing and Earth Works

Clearing, grubbing and earth works activities will be planned to occur outside of the breeding bird season where possible. If clearing is required during the breeding bird season, a qualified biologist will be onsite to conduct monitoring to identify possible breeding birds in the area and their active nests.

These monitoring efforts will follow Environment and Climate Change Canada's (ECCC) specific considerations related to determining the presence of nests. A biologist will observe the bird species in the area and determine if there is presence of suitable nesting habitat within the proposed clearing area. As well, they will observe bird behaviour including, but not limited to, territorial males and individuals carrying food to determine the potential for active nests in the area.

Additionally, the results of the bird surveys completed as part of this assessment will be reviewed to identify species of ground nesters that have been observed at the BMWP site. A large portion of the Project lands has been previously cleared during forestry activity and should ground nesters be found to reside in the Project area during the construction phase, nest searches will be conducted prior to construction activities that may impact ground nesters.

#### Fill Material

Fill material will likely be sourced on site via bedrock removal at each WTG location based on desktop geotechnical information and will be coordinated by the Project's construction manager and civil contractor. Should any wetland crossings be required during the construction of access roads, the Proponent will engage in ongoing consultation with the Nova Scotia Department of Environment and Climate Change (NSECC) to determine the proper alteration applications required and applicable wetland compensation. The Proponent is committed to following the proper measures as indicated by NSECC. Details on the Projects interactions with wetlands and watercourses is further discussed in **Section 7.2**.

#### Traffic Control

Traffic on site roads will need to be managed if forestry is still ongoing along the internal site roads throughout the duration of all phases of the Project. Traffic control signs (such as stop and yield) will be installed at the access road intersections. A speed limit of 30 km/h will be posted at site access locations.

#### Site Restoration

After construction, turbine erection, and commissioning are completed and the Project is in the operation phase, all temporary works will be removed and the land re-graded. The stored topsoil will be replaced, graded and given an aesthetically pleasing appearance.

## **2.7 Operation and Maintenance**

#### Site Access and Traffic

Once the Project is operational, minimal vehicle activity will be required. The internal site roads will be used for periodic maintenance and safety checks. A comprehensive supervisory control and data acquisition (SCADA) system will be installed within the turbines for remote monitoring and control of the wind turbines, which will minimize the need for on-site personnel. The SCADA system ensures safe efficient operation of the turbines and of the overall Project site.

#### Project Safety Signs

Project signage will be located at the entrance to the site. These signs will provide essential safety information such as emergency contacts and telephone numbers. As well, the signs will provide

information about the Project and the companies involved in the Project. Safety signs and information will also be installed throughout the Project Site as required. These signs will be maintained throughout the operational life of the Project.

### Inspection and Maintenance

Scheduled maintenance work will be carried out several times each year throughout the operational phase in addition to routine site visits. Unscheduled maintenance is anticipated to be minimal, as the SCADA system allows 24/7 monitoring of the turbines by the manufacturer and the operations team at Natural Forces. Maintenance procedures may require the use of small or large cranes for brief periods of time, for replacement of blades or other turbine components.

### Vegetation Management

Minor vegetation management will be required during operation. This management will be minimal beyond vegetation that threatens safe operation of the Project, such as any trees close to the overhead collector lines or within the WTG footing/crane pad area. Herbicides will not be used to manage vegetation on site.

## **2.8 Decommissioning**

The Project will be in operation for approximately 25 years, depending on the length of the power purchase agreement (PPA) with Nova Scotia Power. There is the potential to extend the operational period if a new PPA, or equivalent, and extended land agreements are secured. If an extension to the PPA is not obtained, the Project will be decommissioned by removing the infrastructure and reclaiming the site.

### Infrastructure Removal and Site Reclamation

Decommissioning will commence within six to nine months after the PPA has been terminated. The WTG components will be dismantled and removed from the site. Similar traffic movements to those experienced during the delivery of the turbine components are anticipated. The decommissioning phase will require considerably lower vehicular support than during the construction phase. The following four steps are anticipated in the decommissioning phase:

1. The WTGs will be dismantled and removed from the site for scrap or resale. The base will be removed to below plough depth, and the stockpiled topsoil will be releveled so that the land may be returned to its former use.
2. The internal site roads and site entrance may be removed if required. After removal, the land will be returned to its former use.
3. The underground cables will be below plough depth and contain no harmful substances. They may be recovered if economically attractive or left in the ground. Terminal connections will be cut back below plough depth.
4. All other equipment, including overhead collector lines and the substation, will be dismantled and removed, and the land will be returned to its former use.

### Site Restoration

After the turbines have been decommissioned all worksite infrastructure will be removed and the land re-graded for site restoration. Site restoration, aiming to have the decommissioned site resemble the natural state of the site will be initiated. Native plants and soil will be factored into the restoration plan to minimize the potential for habitat loss and invasive species spread.

## **2.9 Future Modifications or Extensions**

There are no future phases planned for the BMWPP at this time. The Proponent will sign a PPA with Nova Scotia Power for approximately 25 years, which is consistent with the WTGs life expectancy. Prior to the end of the PPA, decommissioning and site reclamation plans will begin, or a new PPA may be signed with necessary maintenance occurring to extend the life of the Project. Should the life of the project be extended beyond 25 years, the Proponent will re-engage with regulatory authorities at that time.

## **3.0 Mi'kmaq of Nova Scotia**

### **3.1 Overview**

Indigenous engagement and consultation are important aspects of any project development. It is fundamental that Indigenous communities have a full understanding of proposed projects in order to meaningfully engage in the development process and assess potential impacts to Aboriginal and Treaty Rights. This requires strong, active communication that considers the varied needs of individual communities. Natural Forces values the contributions that Indigenous Peoples make to improve upon their renewable resource projects across Canada. As such, Natural Forces, the Proponent, has developed an approach and initiated engagement with the 13 Mi'kmaq bands in Nova Scotia regarding the proposed Project.

Beyond sharing information and addressing Mi'kmaq concerns, Natural Forces aims to build lasting relationships and earn the support of the Mi'kmaq bands through open and accessible communication. Natural Forces makes it a priority to communicate all potential impacts of the Project, including benefits that renewable energy can bring through local economic growth, energy security through source diversity, and reducing air pollutants associated with carbon-based energy sources.

The sections below outline the approach and general methods of engagement and involvement proposed and implemented by Natural Forces to engage and consult with the Mi'kmaq bands in Nova Scotia for the Project, an essential component of the development process.

### **3.2 Regulatory Requirements and Guidelines for Consultation**

The Province of Nova Scotia is required to consult with the Mi'kmaq bands prior to making decisions on approving developments that have the potential to adversely affect an Aboriginal or Treaty right. In this way, the Mi'kmaq are not stakeholders, they are Rightsholders. Recent case law states that the Province may delegate certain operational aspects of the duty to consult to project proponents, acknowledging that the proponents often have access to more detailed information on the planned phases and components of a given project, especially in early stages. In Nova Scotia, the actions taken by proponents in this respect are considered engagement, not consultation. Descriptions of the ongoing

engagement with the Mi'kmaq that Natural Forces is undertaking for the Project are included in this section.

As the developer of the Project, Natural Forces is actively engaging with the Mi'kmaq. The appropriate engagement process has been undertaken to meet, and exceed, requirements of the Proponents' Guide: The Role of Proponents in Crown Consultation with the Mi'kmaq of Nova Scotia (the Proponents' Guide), the provincial guidance document that accompanies the EA regulation, have and will continue to occur along with other engagement efforts as described in this report.

Although not a regulatory requirement, the Canadian Wind Energy Association published a document titled Wind Energy Development Best Practices for Indigenous and Public Engagement (2017) to help facilitate the responsible development of wind energy projects throughout Canada. This document has also been used as a guideline through the development of the Project and continues to be drawn upon for Mi'kmaq engagement.

### 3.3 Communities Engaged

The first step of the engagement process is the identification of the Mi'kmaq bands that could be impacted by the Project. This step provides a better understanding of the communities that currently and traditionally have lived and used the lands on which the Project is proposed and the surrounding resources. Properly identifying the appropriate Rightsholders ensures those whose rights may be impacted by the Project have access to information and opportunities to discuss and voice any questions or concerns about the Project that may arise.

Natural Forces contacted the Nova Scotia Office of L'nu Affairs (OLA, formerly the Office of Aboriginal Affairs) in January 2021 to initiate the process of properly identifying the Mi'kmaq bands whose Aboriginal and Treaty rights may be impacted by the Project. As part of this, Natural Forces sent a formal Project Description to OLA. Upon review and further discussions with Natural Forces, the OLA clarified that the Proponents' Guide would need to be followed and provided a list of the of the Mi'kmaq bands with which engagement is required, which includes Annapolis Valley First Nation, Glooscap First Nation, Millbrook First Nation, and Sipekne'katik First Nation. The Project site is located approximately 16 km SW of Glooscap First Nation and approximately 35 km SE of Annapolis Valley First Nation.

Though the OLA specified these four bands for engagement, Natural Forces broadened the engagement efforts to include all 13 Mi'kmaq bands in Nova Scotia, which are:

- Acadia First Nation
- Annapolis Valley First Nation
- Eskasoni First Nation
- Glooscap First Nation
- L'sitkuk (Bear River) First Nation
- Membertou First Nation
- Millbrook First Nation
- Paqtnkek Mi'kmaw Nation
- Pictou Landing First Nation
- Potlotek First Nation



- Sipekne'katik First Nation
- Wagmatcook First Nation
- We'koqma'q First Nation

Natural Forces has engaged with the 13 Mi'kmaq bands directly, as well as with Kwilmu'kw Maw-klusuaqn (KMKNO). KMKNO is the consultation organization that represents the Mi'kmaq bands in Nova Scotia, with the exception of Sipekne'katik First Nation and Millbrook First Nation.

### 3.4 Direct Engagement Activities

Natural Forces began engagement activities with the 13 Mi'kmaq bands in March 2021 with an initial letter to each of the Mi'kmaq Chiefs and either KMKNO or the bands' Consultation Coordinator (or equivalent), introducing them to the Project as a proposed development. This initial contact included a Project description, maps, information on Natural Forces, contact details for further comments or questions, and an offer to meet to further discuss the Project. The letters were sent both by email and mail, and follow up emails were sent in April. This initial contact was made early in Project development to ensure the Mi'kmaq are informed and/or involved throughout all stages. No comments or follow up has been received based on this contact.

Following these letters, Natural Forces had two meetings with KMKNO to provide additional Project information and to discuss the communication protocol with the Mi'kmaq bands. During these meetings, Natural Forces provided a presentation introducing Natural Forces and the Project in more detail, and summarizing the ongoing development activities. KMKNO provided details on their preferred communication protocol both internally and for updates to each band.

In June 2021, Natural Forces met with the OLA to review the engagement activities that had taken place to date with the Mi'kmaq bands and the plans for future engagement. During this meeting, the OLA confirmed that engagement efforts had been appropriate and that Natural Forces should continue with the planned engagement.

In scoping the environmental surveys to occur at the Project site in 2021, Natural Forces worked with Dillon Consulting to hire a Mi'kmaq technician to complete a site walk-over to identify any culturally significant vegetation species that could be impacted. Natural Forces engaged with KMKNO and the Confederation of Mainland Mi'kmaq (CMM) to establish the best protocol in hiring a technician for this work. It was determined that the process should begin by reaching out to the nearest Mi'kmaq bands to the Project site. As no interest was identified from the nearest bands, the search was extended to include organizations such as the Mi'kmaw Conservation Group. A candidate was still not identified to fill this position with the expanded search. In lieu of having a Mi'kmaq monitor survey the site, Dillon Consulting engaged with Maqamigew Anqotumeg to compare the plant inventory from the site surveys to identify culturally significant vegetation species. It is noted that a site specific survey was unable to be carried out by Maqamigew Anqotumeg due to ongoing Covid-19 related travel restrictions during the appropriate growing seasons.

Natural Forces has also met with Membertou Geomatics to scope a Mi'kmaq Ecological Knowledge (MEK) Study at the Project site. The MEK study for the Project will begin as soon as possible, which will depend on travel restrictions due to COVID-19.

## 3.5 Indirect Engagement Activities

### 3.5.1 Webpage, Email, and Social Media

Project webpages are a great tool to share information and to receive comments from community members. The advantages of a website are that it can be updated frequently and it is continuously available to stakeholders and Rightsholders. The webpage is primarily used to inform the general public, stakeholders, and the Mi'kmaq bands about various aspects of the Project, including, but not limited to:

- Current project information;
- Notices for open information sessions;
- Maps of the Project location;
- Site specific turbine information;
- Posting of technical reports, such as the EA document;
- Project activity schedules;
- Construction activity notices; and,
- Educational and media related material.

Additionally, the 'Frequently Asked Questions' section on the website allows Natural Forces to address questions and concerns brought forward through all engagement and consultation activities. A webpage for the Project was created in the winter of 2021. This has ensured that information has been available to community members should they wish to learn more about the Project. The Project webpage can be viewed at:

<https://www.naturalforces.ca/benamins-mills-wind-project.html>.

This webpage is updated on an ongoing basis, which will continue through all phases of the Project.

Email has, and will be, used to contact Mi'kmaq bands, answer questions, plan engagement activities, distribute newsletters, and send Project updates. When deemed necessary to reach individuals more effectively, documents will also be sent in the mail. Natural Forces also remains open to meeting with the Mi'kmaq bands to discuss the Project as needed when requested.

### 3.5.2 Toll-free Line

Natural Forces has a toll-free phone line for those who wish to contact the company via telephone. This removes the burden of cost on community members who are subject to long distance calling fees.

### 3.5.3 Signage

At the entry points to operational wind energy projects, signage is often posted to identify the project, the primary contact, and the presence of hazards, such as ice throw during certain weather conditions. Natural Forces will use signage as an opportunity to provide additional information about the Project, including facts about the construction schedule, electricity generation, and wind energy statistics. At a minimum, signage will include contact information for Natural Forces.

### 3.5.4 Other Engagement Tools

There are many other engagement tools that Natural Forces remains open to implementing. Such activities are often determined in conversation with communities to determine which activities are best suited for a particular community. These include, but are not limited to:

- Participation in community events: BBQs, sporting events, and other gatherings can allow an opportunity for the Proponent to have informal discussions about the Project with community members.
- Presentations to schools and other community groups: Information sessions held in schools and to community groups can be completed if interest arises from the Nation.
- Workshops: Workshops can be facilitated in many different formats and for several objectives based on community needs.
- Expert visits: If a key area of concern is identified, an expert can be integrated into the engagement process as opposed to working solely with the proponent. Experts may attend a meeting, presentation or community workshop as most appropriate to the level of interest and the issue of concern.

All of these additional engagement tools are subject to the current policies and recommendations surrounding COVID-19. These additional engagement tools should be used when it is deemed safe to do so, and when a specific need is identified that would be of benefit to the concerned band.

### **3.6 Effects of the Undertaking on the Mi'kmaq in Nova Scotia**

As previously mentioned, the rights of various Mi'kmaq bands in Nova Scotia may be impacted by the Project. Ultimately, the effects of an undertaking on the Mi'kmaq can only be determined by the Mi'kmaq. No comments or feedback have been received to date that indicate an assessment of any impacts. As such, Natural Forces will work with Membertou Geomatics to complete a MEK study for the Project site, and will continue engaging with the Mi'kmaq bands throughout the Project phases. During the registration and public review period of the EA, the Proponent will be available to answer questions and explain any context to community members.

### **3.7 Ongoing Engagement**

This report outlines Natural Forces' approach to facilitating an open, transparent, and comprehensive dialogue with the Mi'kmaq bands to fulfill and extend beyond the provincial duty to consult. Natural Forces will continue efforts to notify, inform, and engage with the Mi'kmaq in Nova Scotia about the Project.

Natural Forces has and will continue to address comments and concerns from all First Nations and First Nation organizations to the best of their ability. To date, Natural Forces has not received opposition to the Project. Generally, the Project has been very well received.

Natural Forces is committed to continuing consultation and engagement with the Mi'kmaq bands throughout the lifetime of the Project to ensure their concerns are properly addressed and that the bands have a full understanding of the Project, its schedule, construction activities, and work to be carried out.