

Strong Breeze Wind Project – REA Summary Report

A summary of Draft Renewable
Energy Approved Reports



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Abbreviations

CEMP	Construction Environmental Management Plan
DOR	Design and Operations Report
DPR	Decommissioning Plan Report
EIS	Environmental Impact Study
ERCPC	Emergency Response and Communications Plan
IESO	Independent Electricity System Operator
kV	kilovolt(s)
L	Litre
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
MTCS	Ministry of Tourism, Culture and Sport
MW	Megawatt(s)
O. Reg.	Ontario Regulation
Project	Strong Breeze Wind Power Project
REA	Renewable Energy Approval
ROW	right-of-way(s)

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SBWPP	Strong Breeze Wind Power Partnership
Stantec	Stantec Consulting Ltd.
WTGs	wind turbine generators
ZOI	Zone of Investigation

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1.0 INTRODUCTION

1.1 OVERVIEW

Strong Breeze Wind Power Partnership (SBWPP or the Proponent) is proposing to develop, construct, and operate the Strong Breeze Wind Power Project (the Project) in the Municipality of Dutton Dunwich, within Elgin County, Ontario. The Project was awarded a power purchase contract with the Independent Electricity System Operator (IESO) in March 2016. The Project requires a Renewable Energy Approval (REA) as per Ontario Regulation (O. Reg.) 359/09 (as amended May 2016) under Part V.0.1 of the Ontario *Environmental Protection Act*. Strong Breeze Wind Power Partnership has retained Stantec Consulting Ltd. (Stantec) to prepare the REA application, as required under O. Reg. 359/09.

The proposed Project is considered a Class 4 Wind Facility according to subsection 6 of O. Reg. 359/09. The Project will include up to 20 wind turbine generators each with a rated capacity between 3.0 MW and 4.2 MW depending on the make/model chosen. The REA application for the Project will include 20 turbine locations, but the actual number of turbines will be chosen during detailed design and the final maximum installed nameplate capacity will not exceed 57.5 MW. Other Project components include: access roads, electrical lines, substation, communication tower, meteorological tower(s), temporary construction areas, corner improvements, and an operations and maintenance building. The Project will connect to the existing 230 kilovolt (kV) transmission circuit located north of Aberdeen Line and west of Iona Road.

1.2 REPORT REQUIREMENTS

O. Reg. 359/09, Section 17 (1) 3 requires the preparation of a summary of the documents to be submitted as part of the REA application, to support Aboriginal community consultation and feedback. This REA Summary Report provides a summary of each draft report with the exception of the Consultation Report. Comments and feedback received from Aboriginal communities, municipalities, and the public will be considered and incorporated into the Consultation Report prior to submission of the REA application to the Ministry of the Environment and Climate Change (MOECC).

This REA Summary Report includes a summary of the following draft reports:

- Project Description Report
- Construction Plan Report
- Design & Operations Report
- Decommissioning Plan Report
- Natural Heritage Assessment and Environmental Impact Study



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- Water Assessment and Water Body Report
- Acoustic Assessment Report
- Stage 1-2 Archaeological Assessment Report
- REA-Checklist: Consideration of Potential for Heritage Resources
- Property Line Assessment Report
- Wind Turbine Specifications Report

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2.0 SUMMARY REPORT OVERVIEW

A general overview of the activities during construction, operation, and decommissioning phases of the Project is provided in **Section 4.5** of the Project Description Report. Details on these activities are provided in **Section 2.3** of the Construction Plan Report, **Section 4.0** of the Design & Operations Report and **Section 3.0** of the Decommissioning Plan Report.

An overview of the proposed Project schedule is provided in **Section 4.8** of the Project Description Report. It is anticipated that the REA application will be submitted to the MOECC in the summer of 2017, with a decision to be made approximately six months following submission. The approximate start of construction would be in 2018, with the Commercial Operation Date in 2019.

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3.0 SUMMARY OF DRAFT REA DOCUMENTS

The following sections provide a summary of each draft document that will be provided as part of the Project's REA application, with the exception of the Consultation Report. The Consultation Report will be completed once comments and feedback from Aboriginal communities, municipalities, and the public have been incorporated.

Each document summarized below was prepared in accordance with O. Reg. 359/09, and in consideration of the MOECC's *Technical Guide to Renewable Energy Approvals* (MOECC 2017).

3.1 PROJECT DESCRIPTION REPORT

The Project Description Report provides: contact information for the Proponent; a list of federal, provincial, municipal and other authorizations that may be required for the Project; a general schedule; and a summary of Project information based on the content of the other draft REA reports. The latter includes a description of project components and activities, negative environmental effects that may result from engaging in the Project during construction, operation and decommissioning and mitigation and monitoring. The report also provides an overview of key residual environmental effects of the Project.

The Project will be located on privately-owned agricultural lands and within municipal road Rights-of-Way (ROWs) within the Municipality of Dutton Dunwich, in the County of Elgin, Ontario. All project components proposed on privately held properties include a lease agreement with the landowner that will extend over the life of the Project.

The term "Project Location", is defined by O. Reg. 359/09 as:

"a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project" (MOECC, 2016).

The Project Location is generally bounded by Chalmers Line to the north, Coyne Road to the west, Iona Road to the east and Erin Line to the south. The Project Location is shown in **Figure 1, Appendix A**.

The Project Location includes all structures, such as turbines, access roads, electrical lines, the substation, the operations and maintenance building and the connection point, as well as any temporary work areas to be used during construction of the Project.

The Project will consist of up to 20 wind turbine generators (WTGs), access roads, electrical lines, a substation, a communication tower, an existing meteorological tower, temporary construction areas, corner improvements, and an operations and maintenance building. According to subsection 6(3) of O. Reg. 359/09, the proposed Project is classified as a Class 4 Wind Facility.

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3.2 CONSTRUCTION PLAN REPORT

The Construction Plan Report describes the Project activities planned during the construction phase so that potential negative environmental effects may be identified and mitigation measures can be proposed where required.

Construction activities are anticipated to take approximately 12 months. The exact calendar dates are yet to be determined, and will be based on the timing of the REA approval. The selected general contractor will be required to provide a more detailed and updated construction schedule after detailed design work has been completed; the schedule will then be posted to the Project website: www.strongbreezewind.com. A summary and anticipated schedule of Project construction is provided in **Section 2.1** of the Construction Plan Report.

Proposed site preparation, construction, and installation activities for the Project are outlined in **Section 2.3** of the Construction Plan Report, including:

- staking and clearing
- installation of access roads and culverts
- construction staging and temporary storage areas
- installation of crane pads
- installation of turbine foundations
- turbine assembly
- electrical line and fibre optic line installation
- installation of junction boxes and the transformer substation
- installation of a communications tower
- construction of an operations and maintenance building
- site clean-up and restoration
- commissioning.

The turbine tower sections and blades, nacelles, electrical cabling, and communication tower sections will be delivered by transport trucks. Multiple cranes will be used to lift components and skids from trucks and to erect towers on the prepared surfaces. The typical equipment used in construction of a wind project consists of cranes, excavators and trenching equipment, vacuum trucks, bulldozers, dump trucks, concrete trucks, water trucks, compaction equipment, and street sweepers.

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The Project was sited to avoid natural and socio-economic features to the extent possible. The Project's design and component layout was developed by the Proponent in consultation with the Lower Thames Valley Conservation Authority, and Stantec's terrestrial, aquatic, cultural heritage, stormwater and noise experts.

A summary of potential effects (with likelihood and magnitude, as applicable), performance objectives, and mitigation measures associated with construction of the Project is provided in **Section 3.0** of the Construction Plan Report. Impacts to the following were considered:

- Heritage and Archaeological Resources
- Natural Heritage Resources
- Water Bodies and Aquatic Resources
- Air, odour and dust emissions
- Noise
- Land Use and Socio-Economic Resources
- Provincial and Local Infrastructure;
- Public Health and Safety
- Areas Protected under Provincial Plans and Policies.

With the implementation of mitigation measures, construction impacts will be minimized. Mitigation measures include erosion and sedimentation control, spill prevention, stormwater management, dewatering management, buffers, vegetation management and restoration, soil management, and general construction best management practices. In addition, a Construction Environmental Management Plan (CEMP) will be prepared to cover critical construction and environmental management tasks including traffic management, emergency response, stormwater management, health and safety, and the mitigation measures identified within the Construction Plan Report. The CEMP will be the controlling plan for all construction activities, and will be designed to minimize potential adverse environmental effects.

Trained personnel will be on-site to monitor construction, and will ensure compliance with the mitigation and monitoring requirements outlined in the CEMP. The Construction Plan Report provides guidance to the Proponent and general contractor on how to monitor mitigation measures, and how to verify compliance with O. Reg. 359/09. The general contractor will be responsible for the implementation of construction effects monitoring. All monitoring measures will be conducted in compliance with regulatory and agency standards and guidelines.

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3.3 DESIGN AND OPERATIONS REPORT

The Design & Operations Report (DOR) provides the Project's site plan, facility design plan, and a description of the facility's components. It also contains operational details of the Project, including maintenance and staffing, and provides an overview of the Emergency Response and Communications Plan. Potential negative environmental effects from the operations phase, including maintenance, are described along with mitigation and monitoring measures in respect of those effects.

A site plan displaying the proposed location and extent of the Project components is included in **Appendix A** of the DOR, along with other figures showing land uses and infrastructure within 300 metres of the Project Location and existing environmental features. Additional information about site plan components is provided in **Table 2.1** of the DOR. Descriptions of the facility components are provided in **Section 3.0** of the DOR.

The Project's design and component layout was developed in consultation with the landowners, and with consideration of Stantec's terrestrial, aquatic, cultural heritage, noise and other experts. The regulation defines specific setbacks for wind turbines. Once the setbacks from noise receptors, roads, and property lines were applied, the Project was designed to be set back as far as possible from natural heritage features (significant and non-significant) and water bodies. Potential effects and mitigation measures associated with Project operations are discussed in **Appendix C** of the DOR.

The following summarizes the equipment and components that make up the Project Location during the operations phase:

- Wind turbine generators
- Turbine foundations
- Crane pads
- Access roads
- Water crossings
- Electrical infrastructure, including a transformer substation and electrical lines
- Operations and maintenance building
- Communications tower and an existing meteorological tower
- Stormwater management infrastructure.

Operation activities include continuous remote monitoring of the facility, maintenance, and inspection/monitoring activities, and are detailed in **Section 4.0** of the DOR.

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A summary of potential effects, performance objectives, and mitigation/monitoring measures associated with the operation of the Project is provided in **Table 5.1** of the DOR. The environmental effects monitoring plan for Project operation has been designed to provide guidance to the Proponent and/or Operations Manager on monitoring the proposed mitigation measures and to verify compliance of the Project with O. Reg. 359/09. The Proponent and/or the Operations Manager would be the primary party responsible for the implementation of operational-effects monitoring. Implementation of these measures would be undertaken in compliance with regulatory and agency standards and guidelines.

The Emergency Response and Communications Plan (ERCP) will be developed with and/or reviewed by First Responders and the Municipality's and County's Emergency Services Departments. The ERCP will be implemented throughout the life of the Project (from construction to decommissioning) and updated as required. The purpose of the Emergency Response and Communications Plan is to establish and maintain emergency procedures to effectively deal with an emergency situation and to minimize potential effects.

The Proponent will maintain contact with Project stakeholders (public, Aboriginal communities, and the municipalities) during the operation of the Project, as needed. Methods of communication could include providing Project updates on the Project website, by letters, newspaper notices, and/or direct contact via phone or email. A sign will be posted during all phases of the Project at the gates of the facility (also on the Project website and with the Township, County and Ministry of the Environment and Climate Change), which will include a telephone number, email, and mailing address for contacting the Proponent. Complaints would be recorded in a Complaint Response Document. Reasonable efforts would be made to take appropriate action as a result of concerns as soon as practical.

3.4 DECOMMISSIONING PLAN REPORT

The Decommissioning Plan Report (DPR) describes the Project activities planned during the decommissioning phase so that potential negative environmental effects may be identified and mitigation measures can be proposed where required.

The Project is anticipated to have an operational lifespan of 20 or more years. At the end of the Project lifespan, the Project components are expected to be decommissioned as described in Section 3.0. If Project economics and need remain viable at that time, the facility could be "repowered" with new technology and continue operating for an extended period, subject to regulations at the time.

Decommissioning activities are expected to take 3-6 months.

Assuming that at the time of decommissioning the lands will return to agricultural land use, a Rehabilitation Plan will be designed to restore lands affected by the Project to a state suitable for this use. Where electrical lines are located above or below municipal road allowances, they will be removed in consultation with the relevant authority. Any surface water or natural features affected by operation or decommissioning activities will be restored in consultation with

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landowners and the relevant authorities. The Rehabilitation Plan will be prepared prior to decommissioning. All decommissioning and restoration activities will be performed as per the requirements of relevant governing agencies, and will be in accordance with relevant statutes in effect at the time of decommissioning and with consideration of industry standard practices.

Section 3.2.2 of the DPR describes the process that will be undertaken to dismantle the various components associated with the Project and provides a brief overview of the potential environmental effects associated with each decommissioning activity. The majority of potential environmental effects related to decommissioning are similar to those during construction and are detailed, along with mitigation measures, in **Section 3.0** of the Construction Plan Report.

Prior to decommissioning the Project, the Proponent or project operator will complete a waste audit and prepare a waste reduction work plan in accordance with any applicable guidelines or requirements from the MOECC or relevant regulations in effect at the time of decommissioning. Much of the facility would consist of reusable or recyclable materials; as a result, there would be minimal residual waste for disposal from decommissioning the facility.

Advance notification of decommissioning will be provided to the municipality, Aboriginal communities, the LTVCA, other government agencies and the public. The DPR will be reviewed and updated as needed at least 6 months prior to the Project's retirement date, and if changes are required, a revised report will be provided to the MOECC.

The Emergency Response and Communications Plan detailed in the Design & Operations Report will be updated and used during the decommissioning of the Project. This plan includes methods for informing the public, municipalities, Aboriginal communities, nearby landowners, other stakeholders, and relevant agencies about activities occurring at the Project site (from standard decommissioning activities to emergencies).

The Proponent would obtain authorizations, permits and approvals required at the time of decommissioning from the appropriate government and regulatory agencies/bodies.

3.5 NATURAL HERITAGE ASSESSMENT AND ENVIRONMENTAL IMPACT STUDY

3.5.1 Natural Heritage Assessment

The Natural Heritage Assessment and Environmental Impact Study Report (NHA) is intended to satisfy the requirements outlined within O. Reg. 359/09 (s. 24 through 28, 34, 37, and 38). It is required to determine whether natural features exist in and/or within 120 metres of wind turbines, electrical lines and transformers, and other project components in the Project Location. The NHA report identifies the existence and boundaries of all natural features within the Project Location and a 120 m Zone of Investigation (ZOI) based on a records review and site investigation, and provides an evaluation of significance for each identified feature. Evaluations are based on either an existing Ministry of Natural Resources and Forestry (MNRF) designation of the feature or by using evaluation criteria or procedures established or accepted by the MNRF. An

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Environmental Impact Study (EIS) is included to identify and assess any negative environmental effects and identify mitigation measures for significant natural features within the Project Location or ZOI as per O. Reg. 359/09, s.38 (2).

For the Records Review, background data were used to identify natural features in the Project Location and ZOI, and in the landscape surrounding the ZOI, including wildlife species with range overlap with the Project Location and ZOI. The Records Review identified approximately 40 MNRF-identified Wooded Areas and a number of wildlife species.

The Site Investigation was conducted to confirm the presence and boundaries of natural features within the Project Location and ZOI following the MNRF *Natural Heritage Assessment Guide* (2012) and recommended guidance documents and protocols. The site investigation identified the presence of 3 wetlands and 7 woodlands within the project location. No project components are in natural features. In some instances, the Project Location overlaps with natural features, where the electrical line is to be installed. However, in these instances, the electrical line will avoid the natural feature by either installing the line around the natural feature boundary, or directionally drilling under the natural feature.

For all natural features in the Project Location and ZOI, a determination was made of whether the natural feature is provincially significant, significant, not significant or not provincially significant. Significant features identified during the Evaluation of Significance and carried forward to the environmental impact study (EIS) include:

Features

- wetlands
- woodlands

Candidate Significant Habitat

- landbird migratory stopover areas
- waterfowl nesting areas
- amphibian breeding habitat (woodland and wetland)
- generalized candidate significant wildlife habitat

No Project components are proposed in, on, or over natural features assessed as significant in the EOS. The primary mitigation measure employed to reduce impacts to significant natural features and functions was avoidance. Prior to final siting of the Project, information from the Site Investigation was used to develop a project layout. Substantial effort was allocated to the design of the final layout to ensure that Project components were sited outside of conservatively identified significant natural feature boundaries. Separation distances from Project components to significant natural features were maximized to the extent possible as an impact avoidance strategy. This included moving proposed turbine locations, minimizing access road widths and

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lengths, and using underground cabling where possible. The result is a proposed project layout that is sited predominately within actively agricultural land without removal of significant natural features. By avoiding significant habitat, the project is anticipated to minimize impacts to species during construction and operation.

Impacts during operation are anticipated to be negligible. Impacts to birds are not anticipated as the project is sited outside of significant migratory landbird stopover areas and are relatively well-spaced to avoid disruption to flight patterns. Project components are located away from waterfowl nesting habitat.

Indirect impacts resulting from construction activities, such as dust generation, sedimentation, and erosion are expected to be short term, temporary in duration and mitigated through the use of general construction mitigation. The risk of accidental intrusion and vegetation removal beyond the work area will be reduced through demarcation of work areas. During construction, there will be increased vehicular traffic and the potential for accidental spills. The risk will be mitigated by implementation of a sediment and erosion measures, including the identification of specific locations for material stock-piling and maintenance activities to isolate any spills from the wetland. In the event of an accidental spill, the MOECC Spills Action Centre will be contacted and emergency spill procedures implemented immediately.

Decommissioning of the Project is expected to experience similar impacts to those described above during construction.

Section 5.4 of the NHA provides a discussion of general construction mitigation, including measures for vegetation removal, sediment and erosion control, dewatering, noise and directional drilling. Potential negative impacts and proposed mitigation measures during the construction and decommissioning phases of the Project are summarized in **Appendix B** of the NHA. Post-construction monitoring of wildlife and natural features is summarized in **Appendix B** of the NHA and monitoring commitments are further detailed in the Environmental Effects Monitoring Plan (EEMP) in the [Design and Operations Report](#).

3.6 WATER ASSESSMENT AND WATER BODY REPORT

The [Water Assessment and Water Body Report](#) identifies REA-defined water bodies that are within the Project Location and within 120 m of the Project Location (ZOI), assesses potential negative environmental effects that may result from the Project on water bodies, and identifies mitigation measures.

A Water Assessment includes a records review and site investigation to determine the presence and boundaries of water bodies within the ZOI (assuming that no Lake Trout lakes that are at or above development capacity are identified within 300 metres). If water bodies are identified within the ZOI, a [Water Body Report](#) must be prepared to assess impacts of the proposed work.

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The definition of a water body is provided in O. Reg. 359/09 as follows:

“...a lake, a permanent stream, an intermittent stream and a seepage area but does not include, a) grassed waterways, b) temporary channels for surface drainage, such as furrows or shallow channels that can be tilled and driven through, c) rock chutes or spillways, d) roadside ditches that do not contain a permanent or intermittent stream, e) temporarily ponded areas that are normally farmed, f) dugout ponds, or g) artificial bodies of water intended for the storage, treatment or recirculation of runoff from farm animal yards, manure storage facilities and sites and outdoor confinement areas”.

A records review was conducted in accordance with section 30(1) of O.Reg. 359/09. Data was gathered through agency requests and accessing online databases and sources, including databases from the Ontario Ministry of Natural Resources (MNRF 2017a; MNRF 2017b); Lower Thames Valley Conservation Authority (LTVCA); Fisheries and Oceans Canada's (DFO) Drain Classification (MNRD 2017a); and Thames – Sydenham and Region Source Protection Plan (TSRSPC 2015). Information obtained as a result of the information requests / records review are presented in section 2.3 and section 3 of the Water Assessment and Water Body Report. Watercourses and waterbodies as mapped by the MNRF may or may not meet the definition of a water body as per O. Reg. 359/09. As such, site investigations were conducted in accordance with section 31 of O. Reg. 359/09. As such, site investigations took place on August 15 to 19 and November 21 to 24, 2016. The purpose of the site investigations were to: (1) ground truth the results of the records review to identify corrections, if required; (2) determine whether additional water bodies exist, other than those identified during the records review; and (3) identify the boundaries of water bodies located within the ZOI.

Based on the results of the records review and field investigations, 45 reaches of water bodies were identified within the ZOI and carried forward for impact assessment. The Project is located within the LTVCA jurisdiction and spans the Central Lower Thames and Lake Erie subwatersheds. Some areas of the Project Location fall within highly vulnerable aquifers and significant groundwater recharge areas of the Thames – Sydenham and Region Source Protection Region, however none of the proposed Project activities are identified in the protection plan as restricted.

General mitigation measures for construction activities near a watercourse include completing in-water work within the MNRF's timing windows, storing materials and equipment in a manner that prevent deleterious substances from entering the water, implementation of sediment and erosion control measures prior to construction and ensuring that a spill kit is on-site at all times in the event of an accidental spill of fuel, oil, or other deleterious substances. Specific mitigation measures for new culvert crossings, overhead electrical lines, installation of underground collector lines and the substation are provided in section 5.0 of the Water Assessment and Water Body Report.

With the implementation of mitigation measures, the proposed Project activities are predicted to have no residual effect on water bodies.

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3.7 NOISE STUDY REPORT

A Noise Study Report (NSR) was prepared in accordance with O. Reg. 359/09, the MOECC's Technical Guide to Renewable Energy Approvals (2017), and MOECC's *Noise Guidelines for Wind Farms* (PIBs 4709e, October 2008). The NSR assesses noise sources associated with the Project and their potential effects on the relevant points of reception.

The noise sources for the Project are the twenty (20) WTGs and one (1) substation transformer. Other Project components (e.g., distribution lines, junction boxes) are considered insignificant sources of noise.

As a make and model for the WTGs has not yet been selected for the Project, two WTG models that are currently being considered for the Project were included in the acoustic assessment:

- **Option A:** The Vestas serrated trailing edge blades V136 WTG model with normal operating mode (S0 mode) and with a power rating of 3.45 MW or its operational modes known as sound optimized modes (SO mode WTGs).
- **Option B:** GE 3.6-137 WTG model with normal operating mode (NO Mode) with a power rating of 3.63 MW or its operational modes known as Noise-Reduced Operating modes (NRO mode WTGs).

The specifications for these WTGs are discussed in detail in the Wind Turbine Specifications Report, and a summary is provided in the NSR.

The Project will operate throughout the year during any time of day. Because the WTGs could operate outside the daytime period defined by MOECC, sound level effect during evening/nighttime hours (19:00 to 07:00) is considered in the assessment. The assessment assumed that sources of noise operate at 100% of the rated capacity which represents a conservative scenario for the predictable worst case hour of operation.

Locations of noise sensitive receptors were identified in accordance with the Guideline to assess the noise effect due to the Project. The location within the noise sensitive land at which noise is assessed is called the Point of Reception (POR). The PORs were selected accordance with the Guideline. Field studies verified existing PORs within a 2 km distance from each WTG and within 1 km of the substation.

This NSR includes a total of 652 PORs, and 10 of the closest PORs were assessed as those expected to experience the highest noise effects.

The WTGs and the substation transformer were modeled as point sources, and to be conservative, no shielding/barriers such as existing buildings, other than the barriers recommended for the transformer substation, were considered in the assessment.

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The adjacent Elgin Grovlea windfarm facility's sound emissions were found to be not significant in the Project Location and surrounding area. The sound effect of the proposed Strong Breeze operation is far less than the sound effect of the Elgin Grovlea project, and does not contribute to sound levels at the Project PORs. Compliance at nearby PORs was established using noise barriers for the transformer substation.

Given the results of the acoustic assessment, the noise contribution from the Project would meet the MOECC noise criteria for both proposed WTG models at noise-sensitive PORs. Therefore, Stantec's assessment concludes that with the mitigation measures recommended in section 5.5 of the NSR, the Project will operate in compliance with O. Reg. 359/09.

3.8 STAGES 1-2 ARCHAEOLOGICAL ASSESSMENT

Stantec undertook the Stage 1-2 archaeological assessment (AA) of the project location as required by sections 21 and 22 under Part V.0.1 of O. Reg. 359/09.

The Stage 1 AA consisted of historical records and mapping research, and determined that the land in and around the Project Location exhibited moderate to high potential for the identification and recovery of archaeological resources and a Stage 2 archaeological assessment was recommended. A small portion of the Project Location was recommended for Stage 2 assessment that could not be completed due to the presence of "modern disturbances" such as an existing gravel lane. The Stage 2 AA was conducted between October 31, 2016 and January 25, 2017 and involved a combination of pedestrian surveys at 5 m intervals, test-pit survey at 5 m intervals, and photographic documentation, where appropriate. The Stage 2 AA identified 32 new archaeological locations. Of those locations, no further assessment was recommended for 27 locations identified during the Stage 2 AA, and a Stage 3 AA was recommended for the remaining six archaeological sites should it be determined that they cannot be avoided by Project re-design. Where avoidance is possible but construction activities will occur near one of these archaeological sites, a construction monitoring zone ranging from 20 m to 70 m from the site will be observed where a licensed archaeologist will be required to monitor any construction activities occurring in that zone. Detailed recommendations for each archaeological location are provided in the [Stages 1-2 Archaeological Assessment Report](#).

3.9 REA CHECKLIST: CONSIDERATION OF POTENTIAL HERITAGE RESOURCES

Consultation and records research determined that there are no protected heritage properties within the Project Location. Following the Ministry of Tourism, Culture and Sport (MTCS) *REA Checklist: Consideration of Potential for Heritage Resources*, in accordance with subsection 23 (2) of O. Reg. 359/09, it was determined that 8 cultural heritage resources with cultural heritage value or interest are present within the Project Location. Where heritage resources were determined to be situated within the Project Location, the impacts of the proposed Project on identified heritage attributes were evaluated. Based on that evaluation, it was determined that

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there is a low-likelihood potential of indirect impacts 5 of the heritage resources. No direct impacts are anticipated. Mitigation measures are outlined in **Section 6.4** of the Cultural Heritage Assessment Report. None of the heritage resources identified are at risk of removal, and will remain intact.

3.10 WIND TURBINE SPECIFICATIONS REPORT

The Project will include up to 20 wind turbine generators, each with a rated capacity between 3.0 MW and 3.7 MW depending on the make/model chosen.

Each wind turbine will consist of the following key components:

- reinforced concrete tower foundation
- tower comprised of tubular steel sections
- nacelle (comprised of electrical generator and housing)
- three rotor blades
- rotor/hub (the structure to which the blades attach)
- step-up transformer
- power converter and switchgear
- electrical wiring and grounding
- tower lighting

Two turbines are currently being considered for the Project:

Option A - The Vestas V136 turbine model with a normal operating mode and sound optimized mode.

Option B – The General Electric (GE) 3.6-137 turbine model with a normal operating mode and Noise-reduced operating mode.

Underground electrical lines will carry the electricity to the municipal road rights-of-way, typically following the turbine access roads. Electrical lines in the ROWs will transport electricity to the Project's substation located north of Aberdeen Line and West of Iona Road. Details of tower components are provided in the Wind Turbine Specifications Draft Report.

3.11 PROPERTY LINE ASSESSMENT REPORT

Under O. Reg. 359/09, wind turbines are to be located at a distance equal to the turbine's hub height from an abutting property unless the landowner(s) have entered into an agreement with the Proponent to allow a turbine to be sited closer to the property line than the turbine's hub height. A turbine may be sited as close as the turbine's blade length plus 10 m if the Proponent

STRONG BREEZE WIND PROJECT – REA SUMMARY REPORT

Summary of Draft REA Documents
July 26, 2017

submits a Property Line Setback Assessment to fulfill the requirements of Section 53 of O. Reg. 359/09.

The purpose of the Draft Property Line Setback Assessment Report is to identify existing land uses located on abutting properties within hub height distance (the overlap) and evaluate whether locating wind turbines closer than hub height to the property line will adversely impact neighbouring businesses, properties, infrastructure or land use activities. This analysis includes all abutting properties, including those participating in the Project (i.e., those on which Project components are located).

All of the twenty proposed turbine sites meet the minimum setback requirements of at least 550 m from the nearest non-participating noise receptor. All of the proposed turbine sites are located at distances greater than the length of the turbine blade plus 10 m from a non-participating property line or public road right of way (ROW).

Thirteen turbines are located closer to abutting property lines than their hub heights. An assessment of the thirteen turbines, including the distance from the centre of each turbine to the property line, and the distance of overlap, was completed.

Agricultural land (field crops), hedgerow, woodland, wetland and Stride Road are present within the overlapping area. However, no businesses (buildings) are located within the overlapping area. No potential effects, mitigation measures or new effects are anticipated as a result of siting the turbines closer than hub height to abutting property lines.

STRONG BREEZE WIND PROJECT – REA SUMMARY REPORT

Closure
July 26, 2017

4.0 CLOSURE

This document entitled Strong Breeze Wind Project – REA Summary Report was prepared by Stantec Consulting Ltd. ("Stantec") for the account of Strong Breeze Wind Power Partnership (the "Client") to support the approvals and permitting process for the Client's application for a Renewable Energy Approval for the Strong Breeze Wind Project in Municipality of Dutton Dunwich, within Elgin County, Ontario. In connection thereto, this document may be reviewed and used by the federal, provincial and municipal government agencies participating in the approvals and permitting process in the normal course of their duties; and stakeholders may provide comment as part of the regulatory approvals process. Except as set forth in the previous sentence, any reliance on this document by any third party for any other purpose is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others, unless otherwise stated therein. Any unauthorized use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on unauthorized use of this document.

STANTEC CONSULTING LTD.

Prepared by _____
(signature)

Katherine Myrans, M.Sc., BA (Hons.)
Project Manager

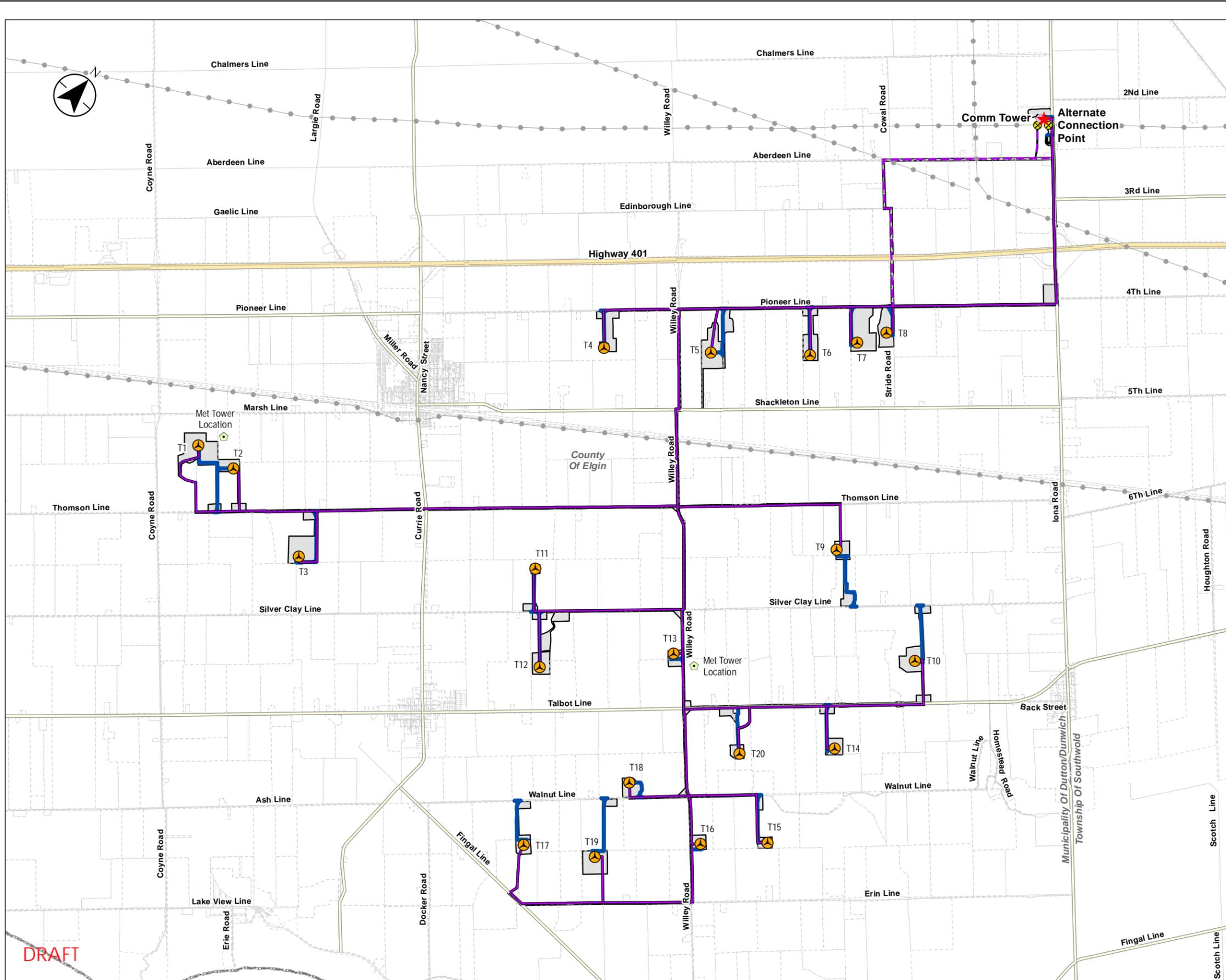
Reviewed by _____
(signature)

Rob Nadolny, B.Sc. (Hons.)
Principal



**APPENDIX A:
PROJECT LOCATION FIGURE**

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Legend

- Proposed Wind Turbine Location
- Transformer Substation
- Proposed MET Tower Location
- Communication Tower Location
- Connection Point Option
- Alternate Electrical Line Route³
- Electrical Line Route³
- Access Road
- Project Buildings
- Constructible Area
- Expressway / Highway
- Major Road
- Minor Road
- Railway - Discontinued
- Existing Hydro Line
- Property Boundary
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier



- Notes**
1. Coordinate System: NAD 1983 UTM Zone 17N
 2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2016.
 3. Location of electrical lines in municipal rights of way to be determined. Location may be on either side of the road within the constructible area shown.



Project Location: Municipality of Dutton/Dunwich and County of Elgin
 Prepared by BCC on 2017-07-19
 160950885 REVA

Client/Project: STRONG BREEZE WIND POWER PARTNERSHIP
 STRONG BREEZE WIND PROJECT
 PROPERTY LINE ASSESSMENT

Figure No. 1
 Title: Project Layout
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