



REPORT

To: Diane Pearce, CAO

File: D03

Date: March 22, 2013

Title of Report: **Windlectric Inc. – Municipal Consultation Form**

Refer to: ☒ Township Council Administration Committee Closed Session
 Administrative Budget

Executive Summary

Windlectric Inc. is seeking a Renewable Energy Approval (REA) from the Ministry of Environment for a total maximum name plate capacity of between 56 – 75 MW wind turbine installation in Loyalist Township with most of the proposed infrastructure and construction to occur on Amherst Island. This report addresses potential development issues and notes opportunities for feedback by Council to the Ministry via a municipal consultation form.

Recommendation

That the comments of the Director of Planning and Development Services, the Engineering Department via AECOM, the Cataraqui Region Conservation Authority peer review and the Loyalist Heritage Committee regarding Windlectric Inc. 56 to 75 MW wind turbine installation on Amherst Island and Lots 24 to 26, Concessions 1 and Broken Front on the mainland, be received, and that the Director of Planning and Development Services be authorized to forward the completed municipal consultation form to the proponent and to the Ministry of the Environment, which includes the feedback of the three Departments, the Heritage and Cemeteries Committees and two peer reviews.

ORIGINAL SIGNED BY

Murray J. Beckel,
MCIP, RPP
Director of Planning and
Development Services

ORIGINAL SIGNED BY

Diane Pearce, CAO

***APPROVED BY CAO
FOR COUNCIL CONSIDERATION***

Report

In 2009, the Government of Ontario removed the ability for municipalities to regulate renewable energy undertakings as a land use under the Planning Act, R.S.O. 1990,

as amended. This prohibition extended to several planning approvals including official plans, zoning by-laws, interim control by-laws and site plan control.

In its place, a Renewable Energy Approval (REA) was established under the Environmental Protection Act, with the Ministry of the Environment acting as the approval authority. A municipality's role is restricted statutorily and is primarily advisory only (a municipality retains certain minor rights under the Municipal Act for by-laws like regulating signage, tree cutting, site alteration, etc.).

As part of the consultation process for a Class 5 wind project, a proponent is to provide a municipal consultation form (see attached) and supply all reports to all affected municipalities 90 days prior to a public meeting. A copy of the Ministry's flow chart is attached.

Windlectric Inc. has submitted on behalf of its Amherst Island Wind Energy Project a notice, a municipal consultation form and a series of studies including:

1. Draft Project Description Report;
2. Draft Design and Operations Report (including a Draft Acoustical Assessment);
3. Draft Construction Plan Report;
4. Draft Decommissioning Plan Report;
5. Draft Wind Turbine Specifications Report;
6. Draft Natural Heritage Assessment/Environmental Impact Report;
7. Draft Water Assessment and Water Body Report;
8. Draft Protected Properties Assessment;
9. Draft Heritage Assessment;
10. Draft Stage 1 Archaeological Assessment;
11. Draft Stage 2 Archaeological Assessment;
12. Draft Underwater Archaeological Assessment;
13. Draft Setbacks Report; and
14. Draft Shadow Flicker Report (Available March 5, 2013)

The company is proposing to develop a 56-75 megawatt (MW) wind energy project under a contract with the Ontario Power Authority on multiple properties on Amherst Island and the mainland. The various studies review the following project components:

- Two alternative mainland transmission routes;
- Two alternative switching stations and corresponding point of communication coupling with Hydro One;
- Three alternative mainland temporary dock locations along the mainland shoreline (between Jim Snow Drive and the western extent of INVISTA lands);
- A submarine cable with three alternative routes near the mainland;
- Three alternative mainland submarine cable landing locations (all come on shore near the former INVISTA plant site);
- Up to three alternative met tower locations on Amherst Island;

- Up to four potential locations for an operating and maintenance building (building size of 1,100 m² or 1,800 m² with a site footprint of 4,900 m²);
- One substation location south west of Amherst Island Public School;
- One storage building location (48 m² in area) on Art McGinn Road;
- A 34.5 kV Kilovolt (kV) underground and/or overhead electrical power line collector system;
- Up to 36 2.3 MW turbine locations scattered across the island;
- 35 km of access roads; and
- One permanent dock on the Amherst Island shoreline found west of Stella.

A few site plans are attached to assist Council.

The towers (including the hub) would have a height of 99.5 metres, with a blade length measuring 55 metres, resulting in a total height of 154.5 metres.

During construction, several laydown areas are proposed, as well as a concrete batching plant and site trailer, situated approximately 750 - 800 metres south west of Amherst Island Public School.

The power is then to be transmitted by underground and/or overhead transmission line from the substation on Second Concession Road northerly (700 metres west of Stella) to a point near the permanent dock in Lot 35, Concession 1.

In the municipal consultation form, the Ministry of Environment is requesting feedback on the following matters:

1. Infrastructure and servicing;
2. Road access and related issues;
3. Traffic and related issues;
4. Municipal service connections other than roads;
5. Landscaping;
6. Emergency Management procedure/safety protocol;
7. Easements or covenants;
8. Issues or recommendations with respect to the proposed rehabilitation of any temporary disturbance area and any municipal infrastructure that could be damaged;
9. Location of fire hydrants;
10. Location of buried kiosks and above grade utility cables;
11. Proposed location of existing and proposed gas and electric lines;
12. Building permits and licenses;
13. Significant natural heritage features and water bodies; and
14. Archaeological and heritage resources.

Please note that residents' letters or comments that have been received by Council are not attached, but where technical feedback was received it was examined and where appropriate has been addressed in this report and/or the consultation form.

In accordance with Township policy (see attached), upon receiving the consultation

form and studies, the writer circulated various departments for comments, of which the Engineering Department (via AECOM peer review) and Emergency Services Department raised concerns or technical comments. A copy of the AECOM memo is attached. The Engineering issues relate to road, ferry, stormwater management/drainage, fill/grade requirements, the groundwater sensitivity, etc. and AECOM believes that REA approval at this time is premature due to lack of documentation on a number of substantive issues. The Emergency Services Department concerns have been woven into the municipal consultation form, but in general, the lack of detail means there are concerns during construction and operational phases and concern with the size and potential fire load with the storage building. Given the complexity to the project, the Cataraqui Region Conservation Authority, on behalf of the Township, provided a peer review (attached) on the various reports and their input on natural heritage features. Feedback from the Township's Heritage Committee was also sought and is attached. In addition the Township's Cemeteries Committee raised concerns and their remarks are affixed.

The writer reviewed the various reports and will provide comments on the development overall and specifically suggested feedback to Council on the following:

1. Roads/Infrastructure;
2. Cultural Heritage;
3. Natural Heritage;
4. Noise – Batching Plant;
5. Landscaping;
6. Building Permits;
7. Emergency Management Procedures;
8. Groundwater concerns;
9. Pertinent By-laws;
10. Compatibility; and
11. Decommissioning

The consultant's reports, as presented, lack detail that is necessary to provide informed comments and, as specifically stated by AECOM and the CRCA, an approval of the project is premature until the full scope of the project with an appropriate level of detail is supplied enabling a proper assessment of impact on municipal infrastructure, the natural environment, cultural heritage, and land use compatibility.

Roads Infrastructure

The Engineering Department had the various studies peer reviewed by AECOM for the purposes of impact on infrastructure and roads, and its thorough response can be found attached.

Some major themes of AECOM's review are:

- a) The proponent has not provided any information on a Traffic Management

- Plan, except to say it will be developed later. AECOM believes approval of the proposal is premature at this time until detailed information is provided. For in depth comments, please refer to the attached AECOM report.
- b) The proponent needs to acknowledge the Island roads have evolved slowly from the original carriage roads that, due to limited access to the Island, have not been developed to standards typical for the rest of Ontario. The proponent needs to complete topographic and geotechnical investigations and detail necessary upgrades. The proponent needs to commit to entering into a Road Use Agreement with the Township.
 - c) A significant concern for residents of Amherst Island is impact on the Island's single elementary school. The proponent has not adequately addressed issues related to the safety of pedestrians and cyclists accessing the school, particularly as it relates to young children. The proponent has not considered distractions to school children due to the construction and operation of wind turbines in close proximity to the school.
 - d) A similar concern exists for the narrow streets in the hamlet of Stella. Safe access to commercial and community facilities is a concern. Proposals to protect heritage features need to be further developed.
 - e) Drainage is a concern. Amherst Island is relatively flat, and water is conveyed long distances by street flow. Interrupting street flow with new accesses to wind turbine sites, or with upgrades to Township roads, may concentrate or redirect flows to deficient watercourses, therefore drainage needs to be addressed by a detailed assessment.
 - f) The proponent has to conduct studies to show that residents' water supplies are not interrupted. Changes to aquifers, as a result of foundation excavation, or damage to shore wells and connecting piping have to be addressed.

The AECOM review is added as an appendix to the municipal consultation form.

Cultural Heritage

Four (4) reports were reviewed by staff and the Township's Heritage Committee and the Cemeteries Committee including the Draft Heritage Assessment, Draft Protected Properties Assessment, and the two Draft Archaeological Assessments.

Staff and the Heritage Committee share similar concerns and these are summarized as follows:

1. The heritage inventory is incomplete, many buildings, structures and sites (approximately 100) across the Island were not included, particularly in Stella and Emerald.
2. The consultant only considered Stella as having a Heritage Cultural Landscape. Can the balance of the Island be considered a landscape?
3. Stella has a narrow main street with several older buildings placed very close to the allowance. Given that the examination was incomplete, more detail needs to be provided in the inventory of heritage features and their attributes to be able to assess impact on these elements including any trees.

4. The literature review conducted by the consultant is incomplete and it would appear many local persons and historians were not consulted.
5. The construction assessment impact on heritage buildings and structures appears to only focus on blasting. Vibration from truck traffic and the ramming was not discussed.
6. The proponent should have examined alternative haul routes than just traffic through Stella. The proposed operations and maintenance building site is directly across from the Pentland Cemetery and is not suitable.

The Cemeteries Committee has the same observation about the operations and maintenance building, and further has noted serious concerns and asks that the appropriate Ministries take into consideration the vibration and stability of the headstones and stone fencing at Pentland Cemetery. The Committee, as part of the road use agreement, request that a third party expert review the site pre, during and post construction, and repair, if needed. A similar survey and monitoring is requested for Glenwood Cemetery, and an assessment of the vibration impact on the headstones and the vault.

The consultant's reports provide minimal information on the intended batching plant. Of particular concern is the plant's proximity to Stella, the Amherst Island Public School, and St. Paul's Presbyterian Church and Glenwood Cemetery. Further discussion occurs later in this report.

Nicholas Holman, a very experienced heritage architect that once worked for the Ontario Heritage Trust believes the entire Island can be considered a cultural heritage landscape (see attached comments), worthy of a Heritage Conservation District recognition under Part V of the Ontario Heritage Act. In some of his communication, there is a suggestion that a by-law can be passed to designate a study area, and if so designated, pass a by-law to prohibit or set limitations with respect to the alteration of property and the erection, demolition or removal of buildings or structures. His report is attached.

Council is cautioned that passage of such a study by-law would commit the municipality to significant expense to do research and catalogue the attributes of the landscape.

If a by-law was passed to prohibit or to set limitations, such by-law can be appealed to the Ontario Municipal Board and the municipality would have to defend its decision. In preparing a by-law, serious thought would have to be given as to what would be prohibited or limited, as such a by-law could impact activities outside of the proposed wind energy system. Any by-law would also have to be passed in good faith.

Natural Heritage

The Township had the Natural Heritage Assessment/Environmental Impact Report peer reviewed by the Cataraqui Region Conservation Authority (CRCA), and its response is attached.

While CRCA staff are of the opinion that the content of the report reflects the general requirements of Ontario Regulation 354/09 and the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011), there are outstanding items that should be addressed before it can be concluded that the proposal can proceed without causing substantial harm to the significant habitat on Amherst Island.

Section 4 of the peer review provides a path forward to address concerns. Nine points overall are asked to be addressed and these are:

- There needs to be a greater regard to the significance of Amherst Island within local, Provincial and national/continental contexts.
- The comparison with Wolfe Island (with respect to mortalities) does not represent a true comparison with other Ontario wind facilities. The two islands while having similarities are different in some aspects. Comparisons with other Ontario wind facilities would indicate that both Amherst and Wolfe Islands would be among the highest in mortality in Canada.
- The cumulative impacts of the construction and operation of large-scale wind energy projects on Wolfe and Amherst Islands (if constructed) is not addressed.
- Prey analysis studies should be conducted, which would assist in the micro siting of wind turbines.
- Existing data should be used to further refine/assess turbine locations based on observed species use, and where data gaps exist with respect to use, additional monitoring should be conducted and or collaboration with local experts/groups to fill gaps.
- A critical analysis of prime versus marginal significant wildlife habitats should be conducted across species preferences with particular attention to threatened, endangered and special concern species to preserve the greatest diversity within the broadly identified significant wildlife areas.
- The mortality rates for Amherst Island may exceed Environment Canada threshold values, unless density is reduced by avoidance or behavioral changes; either would have impacts.
- Displacement/avoidance impacts should be understood prior to proceeding to ensure Amherst Island does not become void of raptors or other species due to the unavailability of suitable habitat away from turbine influence.
- Impacts to endangered and threatened species should be discussed in the Natural Heritage Assessment and Environmental Impact Statement.

Landscaping

In terms of landscaping, the ability to mask the appearance of wind turbines will be minimal due to their height. However, the substation and the operations and maintenance building will also have a prominent appearance and the proponent should be required to prepare a landscape plan to minimize appearance. Such a plan should be prepared to the Township's satisfaction, and buffer tools such as

distance and vegetation should be utilized to screen any fencing and storage and other features that impact aesthetics.

The proponent has not indicated whether lighting will occur at the entrance to the operation and maintenance building or another site, but, if it is to be installed, such fixtures should be full cutoff in order to respect the rural environment and nearby residents and the night sky.

Building Permits

Several components of the project are subject to building permits, including:

1. All turbines (foundation and tower only);
2. Operations and maintenance building;
3. Storage building; and
4. Any other building or structure above 10 m².

Of particular concern is the operations and maintenance building given its floor area of 1,100 m² or 1,800 m². Amherst Island is to be considered a remote location for fire-fighting for the purposes of the Ontario Building Code and as such must be deemed to have inadequate fire fighting capability due to the building's scale and given that little fire load detail was supplied. The writer draws to the proponent's attention the need to provide adequate fire fighting water or equivalent, that is the responsibility of the proponent under sentence 3.2.5.7(1) of Division B of the Building Code. An assessment will have to be completed by a professional engineer with appropriate qualifications. In addition, floor drains in the operations and maintenance building cannot directly discharge into a septic system, as the studies suggest. Instead, an oil/grit separator will need to be installed between the two.

At the decommissioning stage, any buildings or structures exceeding 10m² will require demolition permits in compliance with the Building Code of the day.

Emergency Management Procedures

In terms of emergency management, the Emergency Services Department has concerns throughout the life cycle of the project.

During the construction phase, the primary concern is impairment of emergency response. As a traffic plan has not been provided, little feedback can be given at this time. The Deputy Fire Chief notes a traffic management plan is to be prepared, as turbine delivery and possible interruptions/delays in local traffic will occur.

The Emergency Services Department wants the opportunity for feedback on the Traffic Management Plan and notes that any excessive delays or a delay resulting from a breakdown that blocks a road must be relayed to the Emergency Services Department immediately.

The same sort of concern is expressed during the decommissioning phase.

Commenting on the proposed operations and maintenance building is premature given the lack of details provided. A few questions the Emergency Services Department does have are:

1. What type and quantity of materials will be kept in the storage buildings? 3.12 of the Design and Operations Report references hazardous materials and lubricant storage. What are the hazardous materials and quantities that will be stored? Also, what are the type and quantity of lubricants?
2. Although the building is subject to a building permit, the Fire Prevention Officer should be consulted to ensure that the maintenance and storage portions of the building comply with Part IV of the Ontario Fire Code, and in particular they need to know the type and quantity of materials being stored.
3. The recommendation to have this building monitored at all times (24/7 basis) would greatly enhance the Emergency Services' ability to respond to emergencies at this facility.
4. 3.13 of the Design and Operations Report deals with a storage shed. It states a gravel floor, therefore a list of what is to be stored in this building is required (difficult to contain liquid spills on a gravel floor).

The height of the towers means that the Emergency Services Department cannot respond to an aerial emergency because it lacks the appropriate training and equipment. Access roads to turbines must be maintained at all times.

A fire safety plan will be required for all facilities.

Groundwater

Regarding groundwater, the construction plan has no mention of groundwater. Besides the comment made earlier in this report by reference to AECOM, what the writer finds problematic is that three (3) ground water studies have found some or all of this area to have a high vulnerability to contamination. These studies include the Loyalist Township Groundwater Study, 2001; the Western Cataraqui Region Groundwater Study, 2007; and the Cataraqui Source Protection Area's Assessment Report Water Characterization Report 2011.

The proponent notes the potential for spills and makes the point that any spills will be addressed quickly but the study fails to recognize the high vulnerability to groundwater contamination, particularly the existence of rock fissures/karstic formations.

The proponent should be required to review and reference these documents, and to specifically articulate how and if the concerns can be mitigated further than already discussed.

The proponent should also be required to do some groundwater assessment and monitoring to ensure wells in the area are not affected, particularly as many wells

are shallow.

Section 4.6 of the Design and Operations Report states that no groundwater or surface water supplies will be used by the facility, except perhaps well water for washroom purposes. The concern is that no mention is made in any study regarding water needs for the batching plant, i.e. the source being either surface or groundwater source, and the volume needed. What is the water source and how is the site being controlled when mixing is occurring?

Pertinent By-laws

The construction phase of the wind energy project must adhere to the Township's noise by-law.

The noise by-law should be also referenced in the decommissioning report.

In terms of applicable by-laws, besides the building and noise by-law, the proponent must adhere to the Township's entrance permit, excavation, trees, sign, fill/site alteration, half loads, and fence by-laws.

Compatibility

The proponent is proposing a concrete batching plant during the construction phase, to be situated approximately 750-800 metres south west of the Amherst Island Public School. While the Province has been addressing wind farms as energy approvals, they are actually a land use and should be treated as such to address compatibility, or as the Ministry describes as managing adverse effects.

If the batching plant needed planning approval under the Planning Act, the municipality would analyze the various operational aspects of the plant to determine compatibility. In particular, the municipality would use the Ministry of Environment Land Use Guideline called "D6 Compatibility Between Industrial Facilities and Sensitive Land Uses." In this guideline, a batching plant would likely be deemed to be a Class 3 industry with an influence area of 1,000 metres. A Class 3 industry facility means:

"A place of business for large scale manufacturing or processing characterized by: large physical size, outside storage of raw and finished products, large production volumes and continuous movement of products and employees during daily shift operations. It has frequent outputs of major annoyance and there is a high probability of fugitive emissions."

Fugitive emissions may include noise, odor, vibration and particulate such as dust. Typically a proponent would have to prepare various reports outlining the potential compatibility issues and any adverse effects and determine a mitigation strategy and whether this strategy could be effectively implemented or not. Such technical information is not provided.

At a minimum there is concern over noise, dust, fumes, use of water, etc. Also, there have been thoughts raised whether a batching plant can be deemed as part of a renewable energy undertaking/project. Given the remoteness of the construction site and the broad definition of a renewable energy undertaking/project, the proponent has reasonable arguments. If Council wants to pursue this matter further, then a legal opinion would be necessary.

The writer has concerns with four individual turbine locations, namely S06, S17, S30 and S01.

Turbine S06 is placed a distance of 550 metres from Amherst Island Public School, and the radius from the base of the tower actually encompasses a portion of the building (see Appendix D). The concern is the possibility that the turbine in operation will impact the cognitive function of some students and thus the turbine site should be eliminated as a precautionary solution.

Turbine S17 is situated approximately 395 metres from a house. The proponent has deemed this property as a participant even though the property is not a turbine site. Instead, a small storage shed of 48m² is proposed during the construction and possibly the operation stage. The writer is concerned about the sound levels that will be endured by the homeowners and therefore, asks that turbine location S17 not be approved.

Turbine S30 is located on vacant property owned by a participant. The lot is actually slated to host two turbines and the placement of S30 leaves little to no viable building envelope available outside of 550 metres. While this property technically does not adhere to this separation requirement, the writer highly recommends that the Ministry require turbine S30 to either be moved southerly to enable an appropriate building envelope or deny the location altogether.

Turbine S01 is very close to the 550 metre minimum distance from a noise receptor and the Ministry if asked to verify whether the 550 metre radius is met or exceeded.

In terms of shadow flicker concerns, both the Association to Protect Amherst Island (APAI) and the proponent have studied the issue and the latter has determined effects greater than APAI. While not an expert in this issue, the writer notes that the APAI study cites legislation from Denmark and Germany and that the amount of flicker would appear in some cases to exceed the international criteria. It is recommended that the Ministry be alerted of this concern via the consultation form. While it has no legal bearing on the issue, wind energy policies in the Township Official Plan did require a review of shadow flicker and did cite the German maximum of 30 hours of shadow flicker per year.

Decommissioning

A decommissioning plan was submitted. Roads and emergency services issues were already raised. In addition, Amherst Island is a remote site and has logistical constraints that increase the cost to decommission. The concern is whether the

Province or the proponent should provide some sort of financial assurance in the form of security. The Township should raise this concern and the proponent should commit to timing the decommissioning, i.e. within six (6) months of closing and take no more than one (1) year to complete.

The proponent should be aware that, at the end of the life of the project, the Township believes the various components of installation do not gain legal non-conforming rights and, therefore, must be fully removed or the Council of the day, through a planning approval, may give authority for some features to remain, like the operations and maintenance building.

Consultation

The application was circulated to municipal departments, the Township's Heritage Committee and the CRCA, and the following have responded:

1. Director of Engineering Services
2. Fire Chief
3. Cataraqui Region Conservation Authority (CRCA)
4. Loyalist Township Heritage Committee

The Cemeteries Committee remarks were already discussed.

Link to Strategic Plan

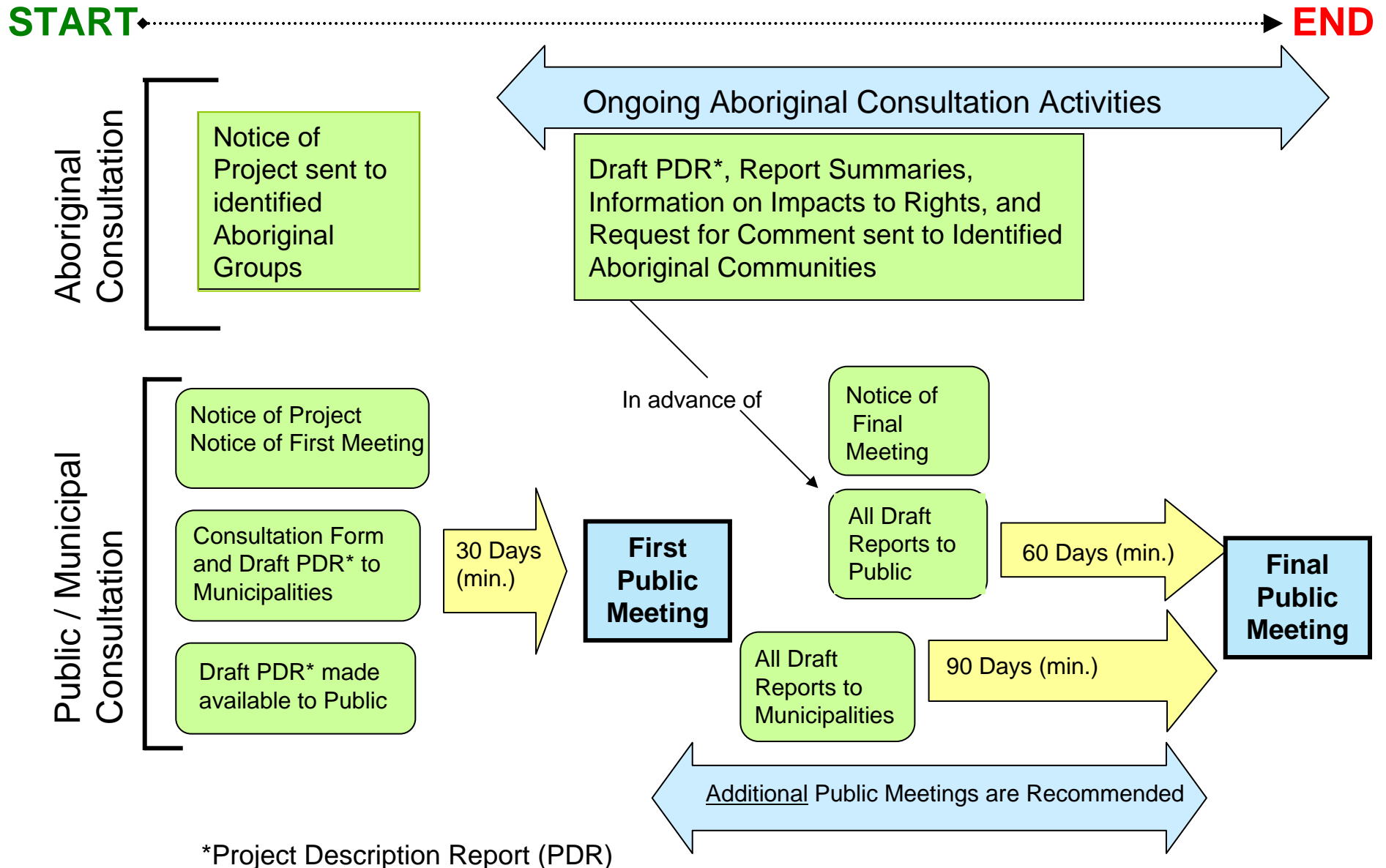
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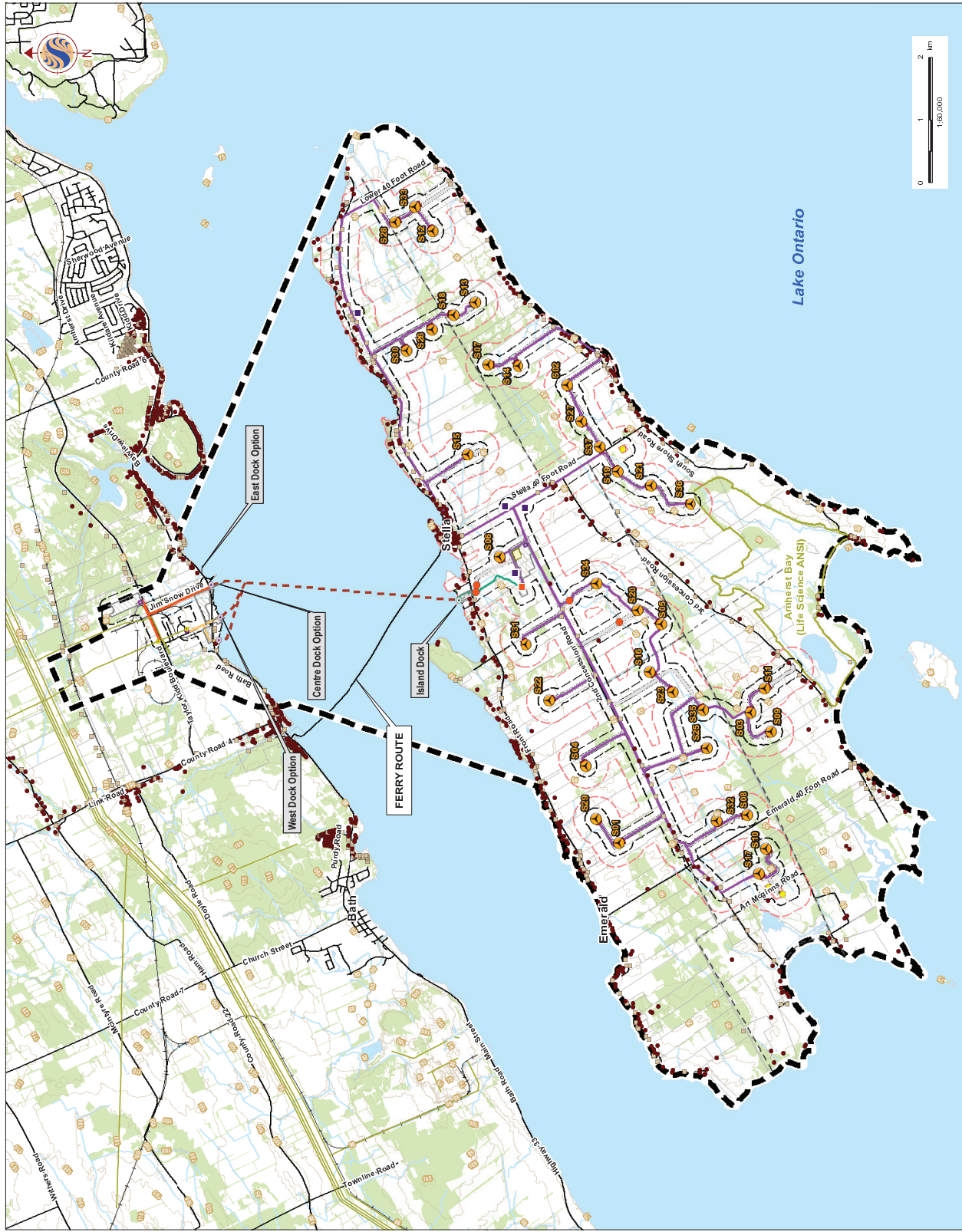
Attachments

Ministry staff flow chart;
Various site plans;
Draft Renewable Energy Approval Municipal Consultation Form;
AECOM Peer Review;
CRCA Peer Review;
Loyalist Township Heritage Committee comments;
Cemeteries Committee Report; and
A Cultural Heritage Landscape–Nicholas Holman, Architect and Heritage Consultant

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Consultation Requirements for Renewable Energy



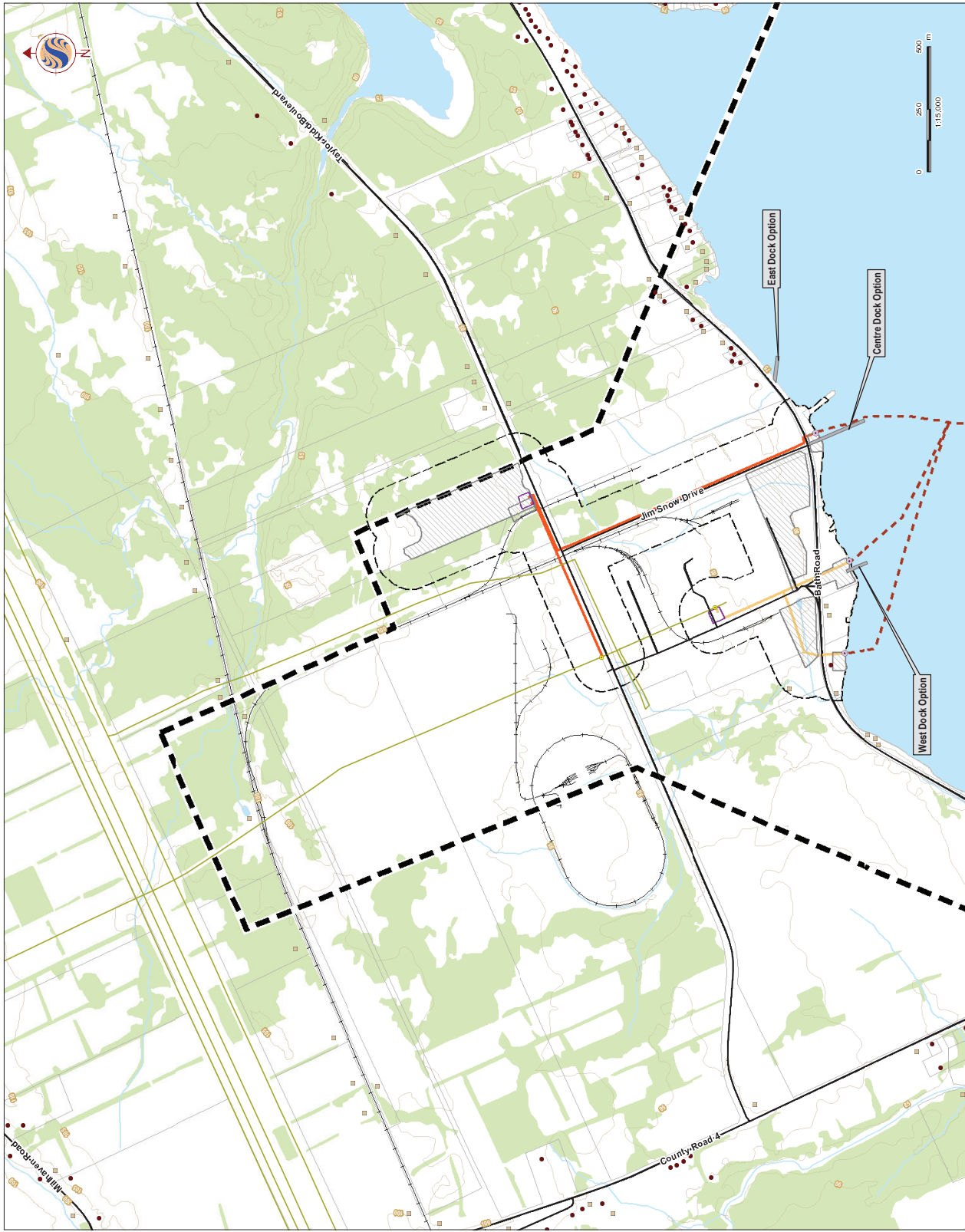


- ### Legend
- Project Study Area
 - 300m Zone of Investigation
 - 1200m Zone of Investigation
 - Project Components
 - Turbine
 - Substation (Potential Location)
 - Access Road
 - Collector Lines
 - Submarine Cable Path
 - Laydown Area and Crane Path
 - Operation and Maintenance Building (Potential Location)
 - Potential Culvert Location
 - Point of Common Coupling
 - Mainland Cable Vault (Potential Location)
 - Island Cable Vault
 - Constructible Area
 - Mainland Dock (Potential Location)
 - Island Dock
 - Batch Plant (Potential Location)
 - Site Office (Potential Location)
 - Storage Shed
 - Transmission Lines
 - Mainland Option 1
 - Mainland Option 2
 - Island Transmission Line
 - Land Use
 - Central Staging Area
 - Switching Station (Potential Location)
 - Noise Receptors
 - Existing
 - Vacant
 - Existing Features
 - Road
 - Unopened Road Allowance
 - Railway
 - Elevation Contour (metres ASL)
 - Hydro Line
 - Watercourse
 - Waterbody
 - Wooded Area
 - ANSI Boundary
 - Property Boundary

- ### Notes
- Coordinate System: UTM MAD 83 - Zone 18 (N)
 - Base features produced under license with the Ontario Ministry of Natural Resources & Forestry (MNR) in 2012.

Client/Project
 WINDLECTRIC INC.
 AMHERST ISLAND WIND ENERGY PROJECT
 December 2012
 202002020

Project Location & Study Area



Legend

- Project Study Area
- 300m Zone of Investigation
- 120m Zone of Investigation
- Project Components
 - Turbine
 - Met Tower (Potential Location)
 - Substation (Potential Location)
 - Access Road
 - Collector Lines
 - Submarine Cable Path
 - Laydown Area and Crane Path
 - Operation and Maintenance Building (Potential Location)
 - Potential Culvert Location
 - Point of Common Coupling
 - Mainland Cable Vault (Potential Location)
 - Island Cable Vault
 - Constructible Area
 - Mainland Dock (Potential Location)
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 - Batch Plant (Potential Location)
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 - Storage Shed
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 - Mainland Option 1
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 - Vacant
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 - Elevation Contour (metres ASL)
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 - Watercourse
 - Waterbody
 - Wooded Area
 - ANSI Boundary
 - Property Boundary

Notes

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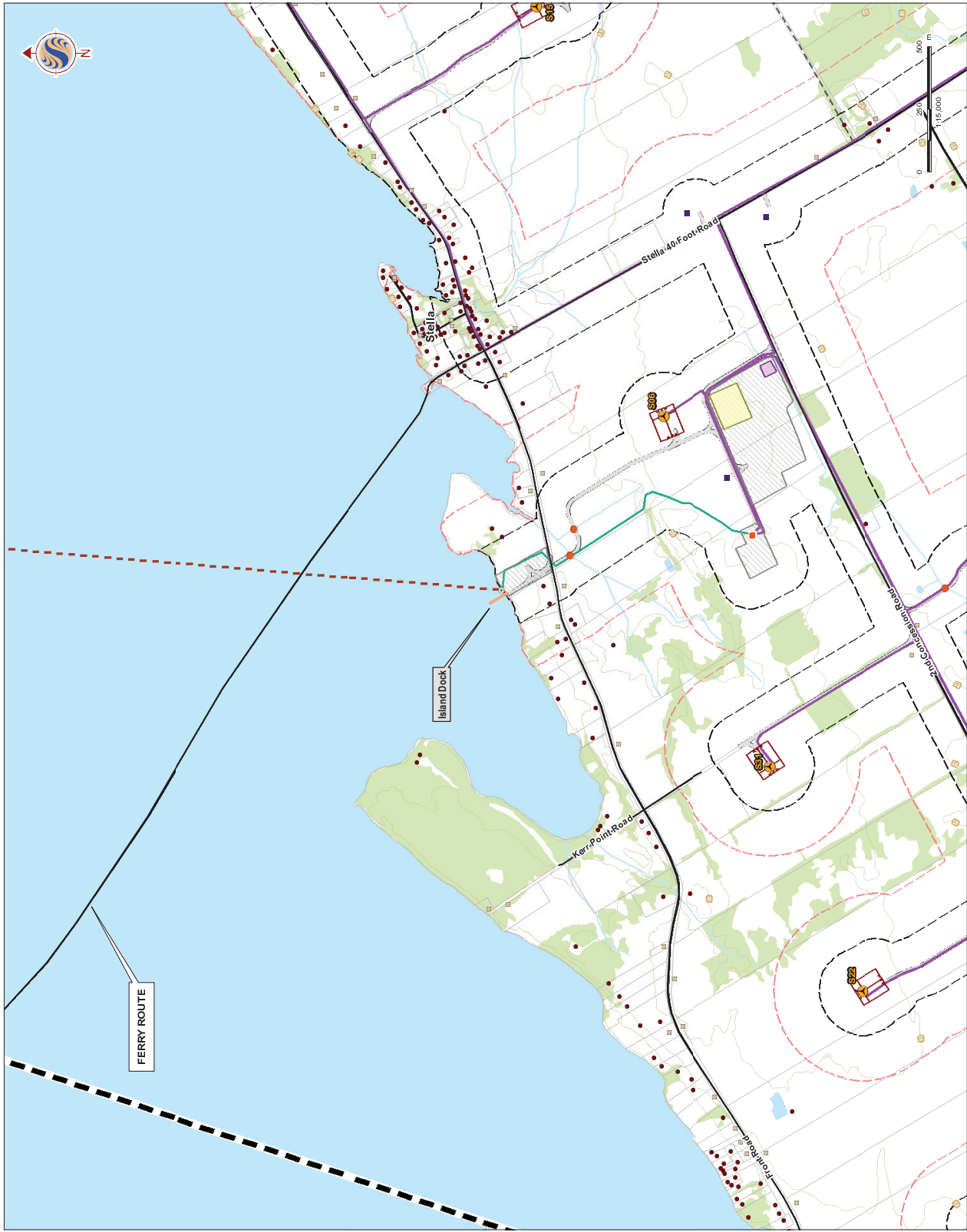
Client/Project

December 2012
20200305

WINDLECTRIC INC.
AMHERST ISLAND WIND ENERGY PROJECT

Figure No. 1.1
Title

Project Location & Study Area



- ### Legend
- Project Study Area
 - 300m Zone of Investigation
 - 120m Zone of Investigation
 - Project Components**
 - Turbine
 - Met Tower (Potential Location)
 - Substation (Potential Location)
 - Access Road
 - Collector Lines
 - Submarine Cable Path
 - Laydown Area and Crane Path
 - Operation and Maintenance Building (Potential Location)
 - Potential Culvert Location
 - Point of Common Coupling
 - Mainland Cable Vault (Potential Location)
 - Island Cable Vault
 - Constructible Area
 - Mainland Dock (Potential Location)
 - Island Dock
 - Batch Plant (Potential Location)
 - Site Office (Potential Location)
 - Storage Shed
 - Transmission Lines**
 - Mainland Option 1
 - Mainland Option 2
 - Island Transmission Line
 - Land Use**
 - Central Staging Area
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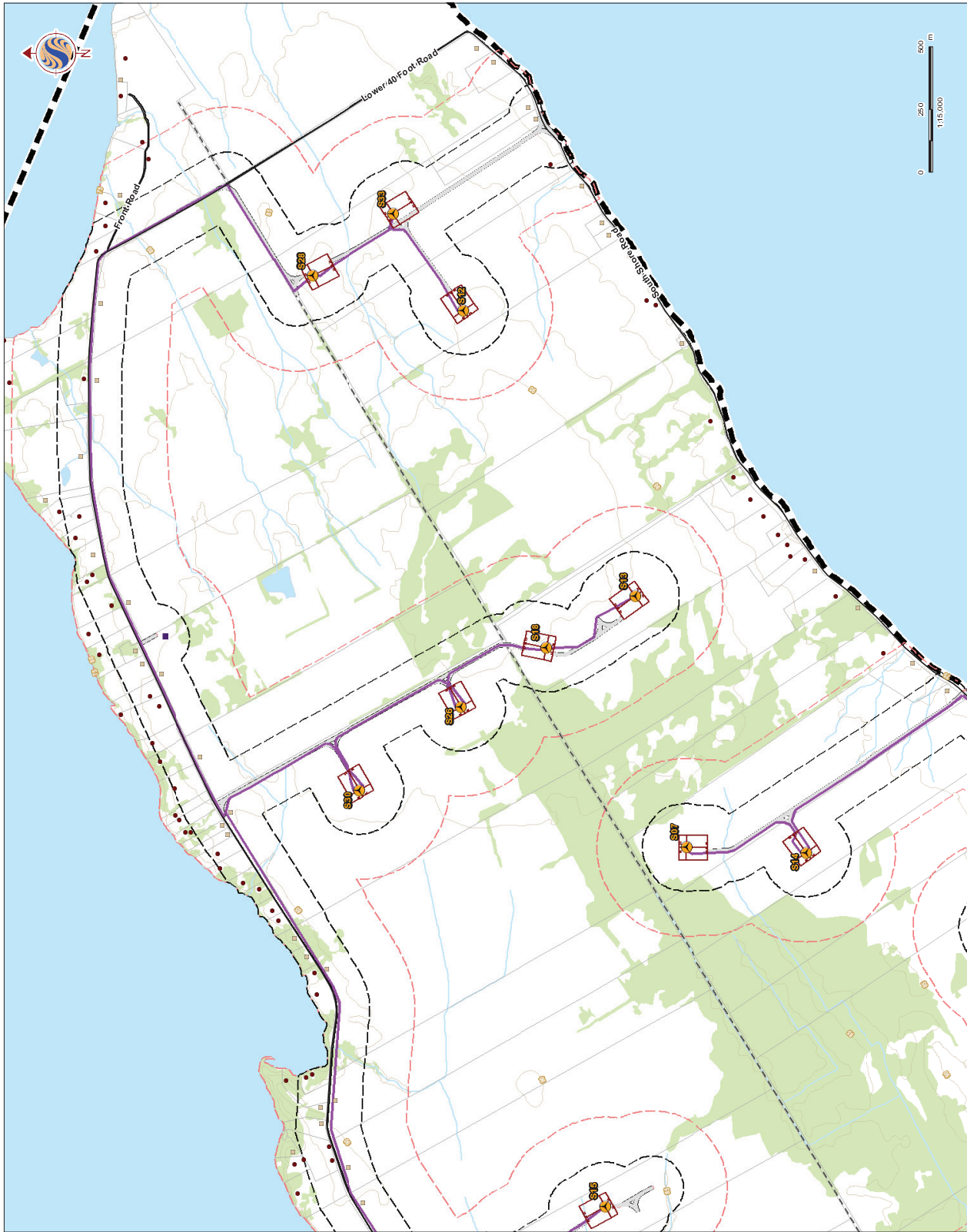
Client/Project
WINDLECTRIC INC.
AMHERST ISLAND WIND ENERGY PROJECT

December 2012
 20200202

Figure No.
1.2

Tiles
DRAFT

Project Location & Study Area



- Legend**
- Project Study Area
 - 300m Zone of Investigation
 - 120m Zone of Investigation
 - Project Components**
 - Turbine
 - Met Tower (Potential Location)
 - Substation (Potential Location)
 - Access Road
 - Collector Lines
 - Submarine Cable Path
 - Laydown Area and Crane Path
 - Operation and Maintenance Building (Potential Location)
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 - Mainland Cable Vault (Potential Location)
 - Island Cable Vault
 - Constructible Area
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Notes

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 **Stantec**

Client/Project
WINDLECTRIC INC.
AMHERST ISLAND WIND ENERGY PROJECT

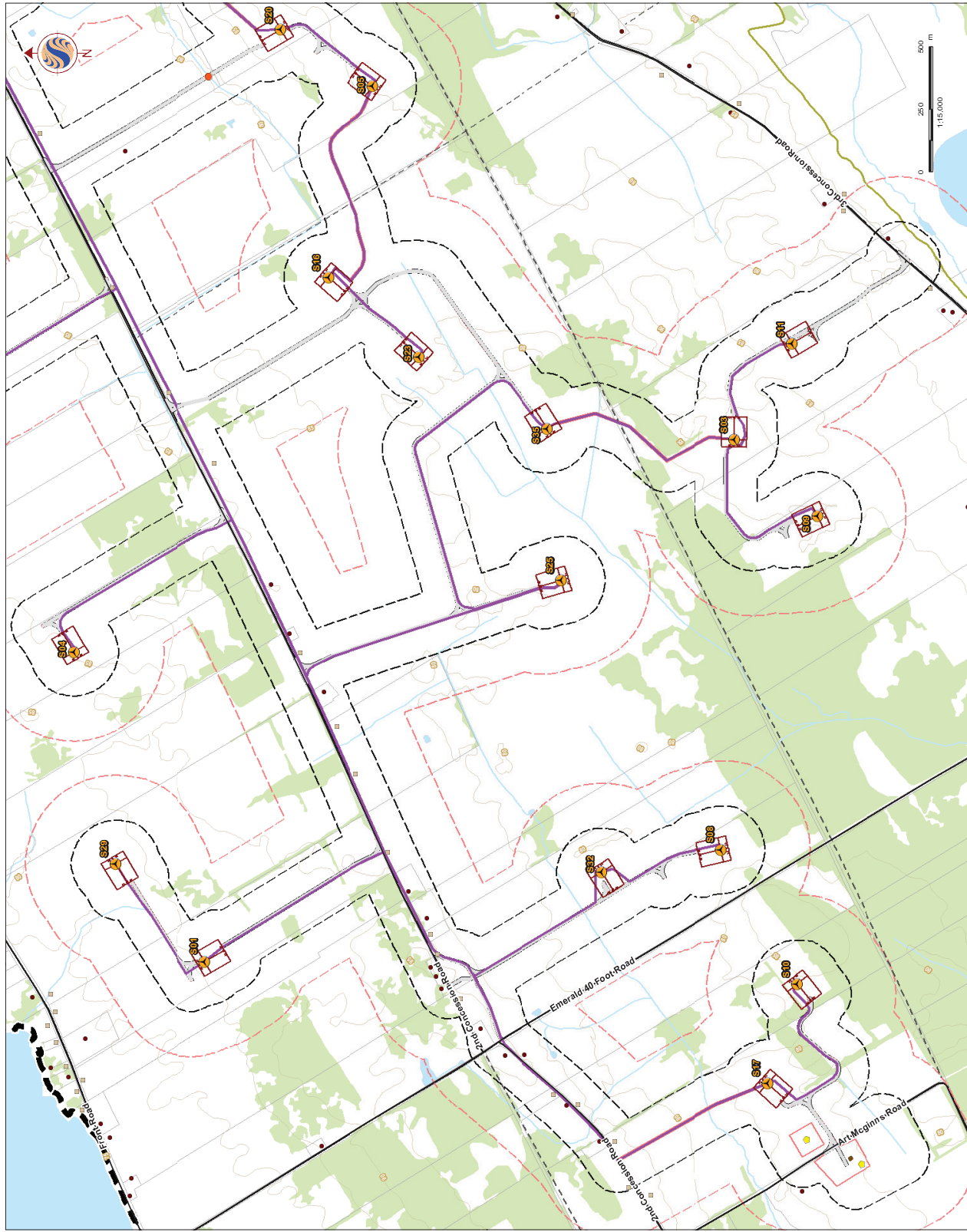
December 2012
20200505

Figure No.
1.3

Revision
DRAFT

Page
13

Project Location & Study Area



Legend

- Project Study Area
 - 300m Zone of Investigation
 - 1200m Zone of Investigation
- Project Components
 - Turbine
 - Met Tower (Potential Location)
 - Substation (Potential Location)
 - Access Road
 - Collector Lines
 - Submarine Cable Path
 - Laydown Area and Crane Path
 - Operation and Maintenance Building (Potential Location)
 - Potential Culvert Location
 - Point of Common Coupling
 - Mainland Cable Vault (Potential Location)
 - Island Cable Vault
 - Constructible Area
 - Mainland Dock (Potential Location)
 - Island Dock
 - Batch Plant (Potential Location)
 - Site Office (Potential Location)
 - Storage Shed
 - Transmission Lines
 - Mainland Option 1
 - Mainland Option 2
 - Island Transmission Line
 - Land Use
 - Central Staging Area
 - Switching Station (Potential Location)
 - Noise Receptors
 - Existing
 - Vacant
 - Existing Features
 - Road
 - Unopened Road Allowance
 - Railway
 - Elevation Contour (metres ASL)
 - Hydro Line
 - Watercourse
 - Waterbody
 - Wooded Area
 - ANSI Boundary
 - Property Boundary

Notes

- Coordinate System: UTM MAD 83, Zone 18 (N).
- Base features produced under license with the Ontario Ministry of Natural Resources © Queen's Printer for Ontario, 2012.

Client/Project

December 2012
20200302

WindlecTrc Inc.

AMHERST ISLAND WIND ENERGY PROJECT

Figure No.

1.4

Drawn By

1.4

Check By

1.4

Project Location & Study Area

PART A: TO BE COMPLETED BY THE APPLICANT BEFORE SUBMITTING TO MUNICIPALITY OR LOCAL AUTHORITY

Section 1 - Project Description

1.1 - Renewable Energy Project
Project Name <i>(Project identifier to be used as a reference in correspondence)</i>
Amherst Island Wind Energy Project

Project Location					
Loyalist Township in the County of Lennox and Addington in eastern Ontario.					
Same as Applicant Physical Address? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (If no, please provide site address information below)					
Civic Address- Street information <i>(includes street number, name, type and direction)</i>					Unit Identifier <i>(i.e. apartment number)</i>
Survey Address <i>(Not required if Street Information is provided)</i>					
Lot and Conc.: used to indicate location within a subdivided township and consists of a lot number and a concession number.		Part and Reference: used to indicate location within unorganized territory, and consists of a part and a reference plan number indicating the location within that plan. Attach copy of the plan.			
Lot	Conc.	Part		Reference Plan	
See attached map	See attached map				
Location Information <i>(includes any additional information to clarify physical location)(e.g. municipality, ward/ township)</i>					
Geo Reference <i>(e.g. southwest corner of property)</i>					
Map Datum	Zone	Accuracy Estimate	Geo Referencing Method	UTM Easting	UTM Northing
UTM, NAD83	18N	+/- 2 metres	ESRI/ArcGIS	363293.35	4889790.6

Project Phasing <i>(outline construction, operation and decommissioning activities)</i>
The Project phasing activities are located in Table 4.1 (Section 4.1) in the attached Draft Project Description Report.

1.2 - Environmental Context
Describe any negative environmental effects that may result from engaging in the project <i>(consider construction, operation and decommissioning activities.)</i>
Please see Appendix B in attached Project Description Report for identified potential environmental effects.
Propose early avoidance/prevention/mitigation concepts and measures.
Avoidance through proper siting of the Project has been the most important preventative measure used for the Project including adherence to regulated setbacks. Please see the attached Draft Project Description Report for additional measures.

1.3 - Renewable Energy Generation Facility

Type of Facility / Operation (select all that apply & complete all appropriate sections)

<input checked="" type="checkbox"/>	Wind Facility (Land Based)	<input type="checkbox"/>	Biofuel Facility
<input type="checkbox"/>	Wind Facility (Off-Shore)	<input type="checkbox"/>	Solar Photo Voltaic Facility
<input type="checkbox"/>	Biogas Facility (Anaerobic Digesters)	<input type="checkbox"/>	Other Describe :
<input type="checkbox"/>	Biomass Facility (Thermal Treatment)	<input type="checkbox"/>	Class (if applicable) :

Name Plate Capacity	Expected Generation	Service Area	Total Area of Site (hectares)
56 - 75 MW	56 - 75 MW	IESO Controlled Grid	9,278

Provide a description of the facilities equipment or technology that will be used to convert the renewable energy source or any other energy source to electricity.

Wind turbines capture the kinetic energy in surface winds and convert it into electrical energy in the form of electricity. In addition to the tower, wind turbines are comprised of four basic parts: blades, a main drive shaft, a gearbox and a generator. As wind moves over the turbine's blades it causes "lift", the same effect used airplane wings. The lift force causes the blade assembly to rotate. The rotational energy resulting from the movement of the blades is directly transferred to the main drive shaft. The rotating shaft transfers the energy through a gearbox and into an alternating current generator which then converts the mechanical energy into useable 60 Hz electricity.

The basic components of the proposed Project include up to 36 Siemens wind turbines. The turbine model proposed utilizes the same 36 turbine pad locations that have been subject to the assessment required under REA. The layout includes 34 Siemens SWT-2.3-113 2300 kW and two (2) Siemens SWT-2.3-113 2221 kW model wind turbines. The final layout will result in a total installed nameplate capacity of approximately 56 - 75 MW. The number of wind turbines will be dependent upon final selection of the model of the wind turbine most appropriate to the proposed Project. The proposed Project will also include a 34.5 kilovolt (kV) underground and/or overhead electrical power line collector system, fibre optic data lines from each turbine and/or wireless technology for the communication of data, a transmission line, truck turnaround areas, a submarine cable, an operations and maintenance building, permanent dock, a substation, a switching station, an un-serviced storage shed, one connection point to the existing electrical system, cable vault areas, meteorological tower(s) (met tower(s)), access road(s) to the met tower site(s), and turbine access roads with culvert installations, as required, at associated watercourse crossings.

Temporary components during construction may include staging areas for the turbines, access roads, met tower(s), collector lines and transmission line as well as crane paths, a temporary dock, site office(s), batch plant, central staging areas, and associated watercourse crossings. The electrical power line collector system would transport the electricity generated from each turbine to the substation, along the submarine cable to the mainland and then to a switching station located near to an existing Hydro One Networks Inc. (HONI) 115 kV transmission line.

The Proponent has elected to assess and seek approval for some alternative Project configurations. The Renewable Energy Approval (REA) application process will consider:

- two alternative mainland transmission line routes;
- two alternative switching station locations and corresponding point of common coupling with the HONI line;
- three alternative mainland temporary dock locations along the mainland;
- a submarine cable with three alternative submarine cable routes near the mainland;
- three alternative mainland submarine cable landing locations and corresponding cable vault locations;
- up to three alternative met tower locations; and,
- up to four potential locations for an operations and maintenance building.

Final selection of the sites to be used would be based on the results of consultation activities, detailed design / engineering work, and the conditions experienced during construction.

1.4 – Renewable Energy Generation Activities

Describe the activities that will be engaged in as part of the renewable energy project

Project activities are detailed in Table 4.1 (Section 4.1) in the attached Draft Project Description Report.

Section 2 – Supporting Documents

2.1 – Requirement	Name of Draft documents distributed for consultation	Date available to Municipal or Local Authority Contact
DRAFT Project Description Report	DRAFT Project Description Report	Draft made available December 3, 2012
DRAFT Construction Plan Report	DRAFT Construction Plan Report	Draft made available December 3, 2012
DRAFT Design and Operations Report	DRAFT Design and Operations Report	Draft made available December 3, 2012
DRAFT Decommissioning Plan Report (including DRAFT Acoustical Assessment)	DRAFT Decommissioning Plan Report (including DRAFT Acoustical Assessment)	Draft made available December 3, 2012
DRAFT Wind Turbine Specifications Report	DRAFT Wind Turbine Specifications Report	Draft made available December 3, 2012
DRAFT Natural Heritage Assessment and Environmental Impact Study	DRAFT Natural Heritage Assessment and Environmental Impact Study	Draft made available December 3, 2012
DRAFT Water Body Report and Environmental Impact Study	DRAFT Water Body Report and Environmental Impact Study	Draft made available December 3, 2012
DRAFT Protected Properties Assessment	DRAFT Protected Properties Assessment	Draft made available December 3, 2012
DRAFT Heritage Assessment	DRAFT Heritage Assessment	Draft made available December 3, 2012
DRAFT Stage 1 Archaeological Assessment Report	DRAFT Stage 1 Archaeological Assessment Report	Draft made available December 3, 2012
DRAFT Stage 2 Archaeological Assessment Report	DRAFT Stage 2 Archaeological Assessment Report	Draft made available December 3, 2012
DRAFT Underwater Archaeological Assessment	DRAFT Underwater Archaeological Assessment	Draft made available December 3, 2012

Location where written draft reports can be obtained for public inspection *(physical location for viewing and the applicants project website if one is available):*
N/A – reports will be revised after consultation with the Township and County and made public 60 days before the Final Open House.

Section 3 – Applicant Address and Contact Information

3.1 - Applicant Information (Owner of project/facility)				
Applicant Name (legal name of individual or organization as evidenced by legal documents) Windlectric Inc.			Business Identification Number 85768 6299 RT0001	
Business Name (the name under which the entity is operating or trading - also referred to as trade name) Algonquin Power and Utilities Corporation			<input type="checkbox"/> same as Applicant Name	
Civic Address- Street information (includes street number, name, type and direction) 2845 Bristol Circle, Oakville, ON L6H 7H7			Unit Identifier (i.e. apartment number)	
Survey Address (Not required if Street Information is provided)				
Lot and Conc.: used to indicate location within a subdivided township and consists of a lot number and a concession number.		Part and Reference: used to indicate location within an unsubdivided township or unsurveyed territory, and consists of a part and a reference plan number indicating the location within that plan. Attach copy of the plan.		
Lot	Conc.	Part	Reference Plan	
Municipality	County/District	Province/State Ontario	Country Canada	Postal Code L6H 7H7

PART B: TO BE COMPLETED BY THE MUNICIPALITY OR LOCAL AUTHORITY

Section 4 - Municipal or Local Authority Contact Information (check the one that applies)

Local Municipality <i>(include each local municipality in which project location is situated)</i>					<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
Name of Municipality	Address	Phone	Clerk's Name	Clerk's Phone/Fax	E-Mail Address	
The Corporation of Loyalist Township	P.O. Box 70, 263 Main Street, Odessa, ON, K0H 2H0	613-386-7351	Paul Snider	613-386-7351 x 121 FAX: 613-386-3833	psnider@loyalist.ca	
Upper Tier Municipality <i>(include each upper tier municipality in which project location is situated)</i>					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Name of Municipality	Address	Phone	Clerk's name	Clerk's Phone/Fax	E-Mail Address	
Local roads area <i>(include each local roads area in which project location is situated)</i>					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Name of local roads board	Address	Phone	Secretary-treasurer's Name	Secretary-treasurer's Phone/Fax	E-Mail Address	
Board Area <i>(include each board area in which project location is situated)</i>					<input type="checkbox"/> Yes	<input type="checkbox"/> No
Name of Local Service Board	Address	Phone	Secretary's name	Secretary's Phone/Fax	E-Mail Address	

Section 5: Consultation Requirement

5.1 - Project Location
Provide comment on the project location with respect to infrastructure and servicing.
<p>The proposed project has extensive impact on Township infrastructure on Amherst Island and the mainland. The proponent has not provided enough detail in the design and operations plan or the construction plan to be able to assess this impact, and the municipality believes approval of the REA at this juncture is premature until the detail has been provided and assessed by the Township. The primary impact is on Island roads, which do not meet modern standards. Several kilometres of roads are identified as haul routes. Amherst Island is serviced by a ferry and given its side loading configuration it is not able to accommodate construction traffic.</p> <p>On the mainland, the concern is the presence of a municipal water line, which is within the Highway 33 (Bath Road) and County Road 26 (Jim Snow Drive) road alignments.</p> <p>While municipal water and sewer does not exist on Amherst Island, many private water lines cross the allowance in order to access Lake Ontario shore wells.</p> <p>The proposed batching plant and main laydown area is in close proximity to the Township's Amherst Island Fire Station and the Amherst Island Roads Garage and the proponent's activities must respect and accommodate these operations. While the Township does possess a licensed landfill, it cannot be used for disposal of waste materials during any phase of the development.</p>
5.2 – Project Roads
Provide comment on the proposed project's plans respecting proposed road access.
<p>The proponent needs to acknowledge that Amherst Island roads have evolved slowly from the original carriage roads to roads that, due to limited access to the Island, have not been developed to standard typical for the rest of Ontario. The owner needs to complete topographic and geotechnical investigations and detail necessary upgrades. The proponent needs to commit to entering into a Road Use Agreement with the Township. The Township had a peer review conducted by AECOM and its detailed review is attached as Appendix A and elaborates on the concerns in detail.</p>
Identify any issues and provide recommendations with respect to road access
<p>In addition to the above, due to the lack of detail and lack of commitment on behalf of the proponent, the Township believes REA approval is premature. While not an exhaustive list, another key concern (as noted in the attached AECOM peer review) includes:</p> <ul style="list-style-type: none"> a) A significant concern for residents of Amherst Island is impact on the island's single elementary school. The proponent has not adequately addressed issues related to the safety of pedestrians and cyclists accessing the school, particularly as this relates to young children. The proponent has not considered distractions to school children due to construction and operation of wind turbines in close proximity to the school. b) A similar concern exists for the narrow streets in the hamlet of Stella. Safe access to commercial and community facilities is a concern. Proposals to protect heritage features need to be further developed. c) The proponent has not adequately developed emergency plans. The Island road network on the west side of the Island is not well developed; access is limited to one route. Blockages by oversize vehicles or due to rutting by heavy trucks will have serious consequences. d) Drainage is a concern. Amherst Island is relatively flat; water is conveyed long distances by sheet flow. Interrupting sheet flow with new accesses to wind turbine sites, or with upgrades to Township roads, may concentrate or redirect flow to deficient watercourses. This issue has to be addressed. e) Trees and road side vegetation are important elements of the Island aesthetic. More work has to be done to satisfy Island residents that trees will be preserved. To date, there has been no documentation to indicate that tree removals have been considered in the selection of haul routes. f) The proponent has to conduct studies to show that resident's water supplies will not be interrupted. Changes to aquifers as a result of foundation excavations, or damage to shore wells and connecting piping, has to be addressed. g) The proponent has volunteered a Construction Environment Management Plan, but the details of this are significantly deficient. h) The proponent should finalize the number of wind turbines, locations and haul routes before the REA is approved. i) The proponent should commit to a communications plan that is satisfactory to Loyalist Township. <p>Approval of Windlectric's REA application should be held in abeyance until the above issues are addressed.</p>
Provide comment on any proposed Traffic Management Plans
<p>The proponent has not provided any information on a Traffic Management Plan, except to say it will be developed later. The Township believes approval of the proposal is premature at this time until detailed information is provided. For in depth comments please refer to Appendix A, which includes a peer report from AECOM and forms part of the Township's municipal consultation form response.</p>
Identify any issues and provide recommendations with respect to the proposed Traffic Management Plans
<p>The proponent has not provided a Traffic Management Plan and therefore it is premature to comment given the lack of details. Please refer to the AECOM peer review for further discussion.</p>

5.3 – Municipal or Local authority Service Connections
Provide comment on the proposed project plans related to the location of and type of municipal service connections, other than roads.
The Township has a municipal water line along the north side of Highway 33 travelling westerly to County Road 26 (Jim Snow Drive), which then travels north on County Road 26 to County Road 23 (Taylor Kidd Boulevard) and then westerly along County Road 23 (south side).
Identify any issues and provide recommendations with respect to the type of municipal service connections, other than roads.
A construction plan shall be provided to the satisfaction of the Township to ensure the Township's water line is protected. As built information is available from the municipality.
5.4 – Facility Other
Identify any issues and recommendations with respect to the proposed landscaping design for the facility
In terms of landscaping, the ability to mask the appearance of wind turbines is minimal due to their height. However, the substation and the operations and maintenance building will have prominent appearances on the landscape and the proponent should be required to prepare a landscape plan to minimize visual intrusion. The plan should be prepared by a Landscape Architect to the satisfaction of the Township. The plan shall use distance and vegetation as buffers, in particular to screen any fencing and outdoor storage. Lighting shall be minimized and focused to the ground utilizing full cutoff devices. One of the laydown areas on the mainland is adjacent to Lake Ontario, and once the construction is completed this site must be re-instated to its former park-like condition.
Provide comment on the proposed project plans for emergency management procedures / safety protocols.
<p>The various documents submitted by the proponent provide little information in this regard and the Township's Emergency Services Department has not been consulted to date by the proponent. On this basis, a conservative approach has been taken to comment. In terms of the construction phase, a Traffic Management Plan was not provided and therefore comments in this regard at this time are premature. The Construction Report does state that turbine delivery may cause interruptions/delays in local traffic. The Township's Emergency Services Department is requesting the opportunity for feedback on the Traffic Management Plan and notes that any excessive delays or a delay resulting from equipment breakdown that blocks any road must be relayed to the Emergency Services Department immediately. In terms of the proposed 1,100 m² or 1,800 m² operations and maintenance building and the small storage shed, until a detailed set of plans and location is available, commenting is premature. A few questions that will need to be addressed are:</p> <ol style="list-style-type: none"> 1. What type and quantity of materials will be kept in the storage buildings? 3.12 of the Design and Operations Report reference hazardous materials and lubricant storage. What are the hazardous materials and quantities that will be stored? What are the type and quantity of lubricants? 2. The Fire Prevention Officer, Derrick Ethridge, should be consulted to ensure that the maintenance and storage portions of the building comply with Part IV of the Ontario Fire Code. 3. A recommendation to have this building monitored at all times would greatly enhance the Emergency Services' ability to respond to emergencies at this facility. 4. 3.13 of the Design and Operations Report deals with a storage shed. It states a gravel floor, therefore a list of what is to be stored in this building is required (difficult to contain liquid spills on a gravel floor). <p>The Emergency Services Department indicates that they do not have the equipment or the training to respond to emergencies on the towers and the proponent will be responsible for addressing such occurrences.</p> <p>Access roads to the turbines shall be maintained and passable at all times.</p> <p>The current response from the Amherst Island Fire Station should be considered as limited to the range of equipment and fire water available. The proponent shall be responsible, at their cost, for any required equipment or fire suppression supply.</p> <p>All components of the Windlectric wind turbine installation shall be monitored on a 24 hour per 7 day basis and a person should be on duty at all times.</p>
Identify any issues and recommendations with respect to the proposed emergency management procedures / safety protocols.
The proponent has not provided any details on proposed emergency management procedures or safety protocols; therefore it is premature to comment.
Identify any issues and recommendations with respect to any Easements or Restrictive Covenants associated with the Project Location
The Township is not aware of any easements or restrictive covenants that impact the project. The Township does note that several maintained and unmaintained municipal road allowances are to be used and most of these are quite narrow.
It is the responsibility of the proponent to stay within the limits of these allowances and the Township is not responsible for any trespass/encroachment onto private lands of non-participating property owners.
Identify any issues and recommendations with respect to the proposed rehabilitation of any temporary disturbance areas and any municipal or local authority infrastructure that could be damaged during construction.
Please refer to the AECOM report regarding any disturbance and damage to municipal infrastructure. Special attention is drawn to Section 2.4.3 (pages 4 and 5) and Table 3-1 (pages 9 and 10).
Identify any issues and recommendations with respect to the proposed location of fire hydrants and connections to existing drainage, water works and sanitary sewers

There are no municipal fire hydrants, water works or sanitary sewers on Amherst Island. On the mainland, the Township has a water line on County Road 26 (Jim Snow Drive), County Road 12 (Taylor-Kidd Boulevard) and on Highway 33. Placement of any infrastructure near Township water lines must be submitted to the Township for review and approval.

Identify any issues and recommendations with respect to the proposed location of buried kiosks and above-grade utility vaults

The Township requests that in the Construction Plan Report, in Table 2.1, that the following text be added:
"Proposed locations and construction details for junction box installations within municipal road allowances will be submitted to the local authority for consideration for approval in advance of construction."

Identify any issues and recommendations with respect to the proposed location of existing and proposed gas and electricity lines and connections.

The proponent has proposed an underground and/or overhead electrical collector system. The Township requests that an underground collector system be utilized to protect Island aesthetics, but proposed locations for collector and data base installations on municipal roads must be submitted to the Township for consideration for approval in advance of construction. The Township may require overhead installations at culvert crossings to avoid interferences with future culvert replacements/repairs.

Provide comment on the proposed project plans with respect to Building Code permits and licenses

Any building or structure with an area in excess of 10m² will require a building permit. Wind turbines are designated structures under the Ontario Building Code for any footings, foundation and tower components. The hub/nacelle and blades are exempt.

An office/maintenance structure of 1,100 m² or 1,800 m² is proposed, but little to no detail has been provided as to what materials and activities will occur in the building. Given this lack of detail, a conservative approach has been taken in the building assessment. Amherst Island is considered to be remote for fire-fighting purposes under the Ontario Building Code. The proponent is strongly encouraged to examine the requirements of Sentence 3.2.5.7(1) of Division B of the Code, which states "an adequate supply for fire-fighting shall be provided to every building." An assessment will be required by a professional engineer with suitable qualifications. Any grade alteration or fill placement is subject to the Township's fill/alteration by-law. The Township also has a tree by-law, noise by-law, entrance by-law, sign by-law and half-load by-law, which must be followed. By-laws can be provided upon request.

Demolition of any buildings or structures in excess of 10m² will also require a demolition permit, in compliance with the Building Code of the time. The installation of a private sewage system is administered by the local Public Health office.

Identify any issues and recommendations related to the identification of any significant natural features and water bodies within the municipality or territory.

The Township has retained the Cataraqui Region Conservation Authority to peer review applicable natural heritage and water bodies reports and their report is affixed as Appendix "B" to this consultation form. This review is deemed to be included as part of the Township's official review response. The Township is in concurrence with the CRCA that there are outstanding items that should be addressed before it can be concluded that the proposal can proceed, without causing substantial harm to the significant wildlife on Amherst Island. REA at this time is premature and the proponent should be required to follow the strategy, as articulated in Section 4.0 of the Authority's peer review.

The comments in the Authority's review are not reported in this box. Please refer to the attached Authority's comments.

Identify any issues and recommendations related to the identification any archaeological resource or heritage resource

The Township's Planning Department and Loyalist Heritage Committee reviewed the Draft Heritage Assessment, Draft Protected Properties Assessment, and parts 1 and 2 of the Draft Archaeological Assessments. There are several concerns, the first is that the Heritage Assessment is incomplete with approximately 50 - 100 houses, barns and outbuildings that are not inventoried and assessed. Of particular concern are the communities of Stella and Emerald. In Stella there are over 25 buildings within 10 metres of a road that is only 12 metres wide, many of the buildings are very old and clearly potentially impacted by construction. The examination of Stella needs more detail to be provided in the list of heritage features and their heritage attributes to be able to assess impact on these elements including buildings and trees. The Township requests that the Draft Heritage Assessment be updated to include these properties.

No consideration was given to looking at the entire Island as a Cultural Heritage Landscape. The proponent should be requested to revisit this concern.

There is potential for significant impacts on the heritage attributes of Stella. The Heritage Assessment Study should be revised to consider alternative haul routes to avoid the hamlet of Stella, or as a second less preferred alternative, a detailed discussion on how to minimize impacts as currently anticipated in Stella.

The construction impacts discussed in the assessment appear to be limited to the potential for shock waves from blasting. There is no discussion of tree cutting, road alteration, rebuilding or corner alteration, vibration from repeated heavy truck trips or oversized loads or vibration from hoe ramming. The impact must be updated to take into account all construction activities.

The consultant did not consult with local residents in preparing this report and key historic books and reports were not reviewed. The literature review must be updated.

The location of the proposed operations and maintenance building, near the Pentland Cemetery, represents an inappropriate intrusion into a heritage area and this site should be eliminated.

The heritage buildings and structures (such as stone fences) need an evaluation pre construction, during construction and post construction and in the case of the dry stone fences, the evaluation needs to be completed by a heritage mason with experience in dry stone fences.

The Designated Property Assessment only identified three properties, but a fourth property (consisting of nine (9) dry stone fences) should be included, as the Township is in the designation process under the Ontario Heritage Act.

The batch plant is in proximity to Glenwood Cemetery and there is concern regarding dust and vibration.

Detailed comments from the Heritage Committee (Appendix C) and the Cemeteries Committee (Appendix D) are attached and form part of the Municipal Consultation Form. These relate to serious concerns, and in the latter, about negative impacts on the Pentland and Glenwood Cemeteries.

RENEWABLE ENERGY APPROVAL CONSULTATION FORM

Other Comments

1. Turbine Locations

The Township has particular concern with the placement of four turbines, namely S06, S17, S30 and S01.

Turbine S06 is placed a distance of 550 metres from Amherst Island Public School, and the radius actually encompasses a portion of the building (see Appendix E). Council is concerned that this turbine will affect cognitive function of some students and asks the Ministry to give serious consideration to denying this particular turbine site.

Turbine S17 is placed approximately 395 metres from a house. The proponent has deemed this property as a participant even though the property does not house a turbine. Instead, a small storage shed of 48m² is proposed during the construction and possibly the operation stage in order to “qualify” the turbine. The Township is concerned about the sound levels that will be endured by the homeowners and it is asked that turbine location S17 not be approved.

Turbine S30 is located on a vacant property owned by a participant. The lot is actually proposed to be host for two turbines and the way S30 is situated, there is little to no viable building envelope available outside of 550 metres. While this property technically does not have to adhere to this separation requirement, the Township highly recommends that the Ministry require turbine S30 to either be moved southerly to enable an appropriate building envelope or deny the site altogether.

Turbine S01 is very close to the 550 metre minimum distance from a noise receptor, and the Ministry is asked to verify whether the 550 metre radius is met or exceeded.

2. Batch Plant

The siting of the batch plant is very problematic and little information has been provided in terms of adverse effects resulting from fugitive emissions like noise, dust, etc. The proposed location is approximately 750 metres from the Amherst Island Public School (building) with the play area even closer, and approximately 750 – 800 metres from a non-participating house. The Township requests that the Ministry require the proponent to reconsider the location of the batch plant and that this plant's function be analysed doing a series of studies to address land use compatibility concerns consistent with the Ministry of Environments D6 methodology.

The proponent does not indicate the proposed water source for the batching plant and does not discuss how waste water will be controlled.

3. Laydown Areas

There are two laydown areas proposed on Amherst Island, with the southernmost relatively close to a non-participating house. The proposed operation of this area should be examined in detail to minimize impact during the construction phase.

4. Construction Timing

During the summer, Amherst Island's population grows from 400 to 800 residents, particularly on weekends and holidays. Construction activity on weekends should be reduced to address congestion and noise.

5. Shadow Flicker

The proponent has prepared a report on shadow flicker, which has concluded that several sensitive receptors will be exposed potentially to shadow flicker over and above international standards set in countries like Germany and Denmark. The Ministry is requested to evaluate this concern.

6. Groundwater

The construction plan has no mention of groundwater. Please note the concerns raised in the AECOM report. In addition, it is problematic that the proponent notes the potential for spills and makes the point that any spills will be addressed quickly, but the study fails to recognize the high vulnerability to groundwater contamination, particularly the existence of rock fissures/karstic formations.

The proponent should be required to review and reference these documents, and to specifically articulate how and if the concerns can be mitigated further than already discussed.

The proponent should also be required to do some groundwater assessment and monitoring to ensure wells in the area are not affected, particularly as many wells are shallow.

Section 4.6 of the Design and Operations Report states that no groundwater or surface water supplies will be used by the facility, except perhaps well water for washroom purposes. The concern is that no mention is made in any study regarding water needs for the batching plant, i.e. the source being either surface or groundwater source, and the volume is needed. What is the water source and how is the site being controlled when mixing is occurring?

7. Decommissioning

Amherst Island is a remote site and has significant logistical constraints, which increase the cost to decommission. The Township requests financial assurances (such as security posting) that will ensure decommissioning will occur and the Township wants the proponent to commit to a timing schedule for decommissioning, i.e. to start within six (6) months of non-operation/closing and take no more than one (1) year to complete.

The proponent should be aware that at the end of the life of the project, the Township's position is that various components of wind energy system installation do not gain legal non-conforming entitlements under the Planning Act.

Memorandum

To	David MacPherson, Loyalist Township	Page	1
Subject	Amherst Island Wind Energy Project		
From	Guy Laporte		
Date	March 18, 2013	Project Number	60286620

Executive Summary

Windlectric Inc. is preparing a Renewable Energy Approval (REA) application for erection of up to 36 industrial wind turbines on Amherst Island. AECOM has been retained by Loyalist Township to provide peer review services specifically related to the use of Township roads. In this regard, staff of AECOM have reviewed Draft Renewable Energy Approval Technical Documents and we have attended recent public meetings.

This memo is a listing of comments on specific technical documents. It is our opinion that REA approval at this time is pre-mature. Our concerns relate to lack of detail and a lack of commitment in the documents being put forward for approval. For example:

- The proponent needs to acknowledge that island roads have evolved slowly from the original carriage roads to roads that, due to limited access to the island, have not been developed to standards typical for the rest of Ontario. The proponent needs to complete topographic and geotechnical investigations and detail necessary upgrades. The proponent needs to commit to entering into a Road Use Agreement with the Township.
- A significant concern for residents of Amherst Island is impact on the island's single elementary school. The proponent has not adequately addressed issues related to the safety of pedestrian and cyclist accessing the school, particularly as this relates to young children. The proponent has not considered distractions to school children due to construction and operation of wind turbines in close proximity to the school.
- A similar concern exists for the narrow streets in the hamlet of Stella. Safe access to commercial and community facilities is a concern. Proposals to protect heritage features need to be further developed.

- The proponent has not adequately developed emergency plans. The Island road network, particularly on the west side of the island, is not well developed; access is limited to one route. Blockages by oversize vehicles or due to rutting by heavy trucks will have serious consequences.
- Drainage is a concern. Amherst Island is relatively flat; water is conveyed long distances by sheet flow. Interrupting sheet flow with new accesses to wind turbine sites, or with upgrades to Township Roads, may concentrate or redirect flow to deficient watercourses. This issue has to be addressed.
- Trees and road side vegetation are important elements of the island aesthetic. More work has to be done to satisfy island residents that trees will be preserved. To date, there has been no documentation to indicate that tree removals have been considered in the selection of haul routes.
- The proponent has to conduct studies to show that resident's water supplies will not be interrupted. Changes to aquifers as a result of foundation excavations, or damage to shore wells and connecting piping, has to be addressed.
- The proponent has volunteered a Construction Environment Management Plan but the details of this are significantly deficient.
- The proponent should finalize the number of wind turbines, locations and haul routes before the REA is approved.
- The proponent should commit to a communications plan that is satisfactory to Loyalist Township.

Approval of Windlectric Inc.'s REA application should be held in abeyance until issue raised in this memo are addressed.

Report

AECOM has been retained by Loyalist Township to provide peer review services for the Renewable Energy Approval application by Windlectric Inc. Our review is scoped to submissions leading to a Road Use Agreement. In this regard we have reviewed in detail the following list of Draft Renewable Energy Approval Technical Documents:

- | | |
|---|---|
| ○ Project Description Report Draft | ○ Decommissioning Plan Report Draft |
| ○ Draft Property Line Setback Assessment Report | ○ Design and Operations Report Draft |
| ○ Construction Plan Report Draft | ○ Protected Properties Assessment Draft |

In preparing our review we have made reference to other documents that exist on the proponent's web site (but are not part of the REA application) and we have participated and reviewed public feedback at public meetings on January 29, March 5, and March 6, 2013. AECOM has completed several infrastructure related projects on Amherst Island and fully understand the rustic nature of the Island's rudimentary road system and the limitations that this road system will have in servicing industrial wind projects of this magnitude.

Our most significant concern is that the proponent has made numerous commitments that are not documented in the REA application. In particular, the proponent has not committed to entering into a Road Use Agreement with the municipality. In the Construction Plan Draft Report the proponent has made passing reference to a Construction Environment Management Plan which is to include:

- a Traffic Management Plan;
- a Hazardous and Non-Hazardous Waste Management Plan;
- a Health and Safety Plan;
- an Emergency Response and Communications Plan;
- a Training Plan; and
- a Complaint Response Protocol.

None of these plans are described in detail in the report, although the proponent has made frequent reference to them at public meetings. To this list the proponent should add the following documents that have been referenced outside of the REA Technical Documents:

- a "Dust, Noise, Lights and Vibration Management Plan"
- a "Protected Properties Protection Plan",
- a "Navigable Waters Traffic Management Plan",
- a "Public Consultation Program," and
- a "Communications Plan."

The documentation that has been provided lacks sufficient detail to provide the appropriate level of engineering assessment of the impact to the Amherst Island public roads system for both the construction and life cycle phases of the Windlectric proposal. The Island roads have evolved slowly from the original carriage roads and many lack the structural foundation materials and surfaces typical of most vehicle roads now in use in Ontario.

In our opinion, approval of the REA application is pre-mature until the above documents have been completed to the satisfaction of Loyalist Township.

Our detailed comments on the REA application begin on the following page.

Source	Commitment	Proposed Change
Project Description Report		
Section 1.1 Project Overview	There is no commitment to the number of turbines or final locations	REA Approval is pre-mature until the proponent identifies the final number and locations of turbines
Section 1.1 Project Overview	There is no commitment to haul routes	REA Approval is pre-mature until the proponent identifies the final haul routes. Haul routes to be utilized have not been provided in the public consultation material.
Section 2.4.3 Municipal	There is no commitment to a Road Use Agreement with the local municipality.	<p>Include a commitment to enter into a Road Use Agreement with Loyalist Township before any construction activity occurs; Agreement to incorporate commitments made at January 29, 2013 meeting including:</p> <ul style="list-style-type: none"> ▪ Island infrastructure must be maintained in the same or better condition after the Amherst Island Wind Project has been constructed. This would include all Township roads and road allowances, including traffic signage, drainage works, fences and mature trees and vegetation within the road allowance. ▪ Include commitments relating to construction, operation and decommissioning. ▪ The project will provide payment for Loyalist Township to hire an independent engineering consultant to conduct the following: <ul style="list-style-type: none"> ▪ Advise the Township on the infrastructure engineering as it pertains to the project affecting roads, drainage, etc. ▪ Review and approve proposed project plans and drawings. ▪ Conduct inspections during construction and advise Township. ▪ Review changes that arise during construction and advise Township regarding acceptance. ▪ Participate in pre and post-construction condition surveys, Township review and consideration of approval of construction plans

		<ul style="list-style-type: none"> ▪ Commit to Geotechnical review of existing roads and upgrades completed in advance of construction ▪ Commit to pre and post-construction condition surveys ▪ Commit to financial securities and warranties ▪ Commit to interim maintenance <ul style="list-style-type: none"> ▪ Safe driving conditions will be maintained throughout construction ▪ Minimize mud and stone with prompt cleaning ▪ Commit to Communication <ul style="list-style-type: none"> ▪ Construction Manager will be available for reporting issues ▪ Recognize authority of Township officials to order remedial work necessary to correct unexpected damage and to stop any work or activities that, in the Township's opinion, present a reasonable risk of damage to Township infrastructure and/or unacceptable disruption and/or inconvenience to Township residents that were not previously contemplated by the approved plans.
Section 2.4.3 Municipal	If required, authorization from the Township/County as necessary for pruning or removal of trees within road allowances.	Commit to compliance with municipal tree by-law and restoration of disturbed vegetative areas including shrubs to the satisfaction of Loyalist Township (Document commitment made at January 29, 2013 meeting to retain a professional arborist.)
Section 4.3.3 Noise	During construction, noise would be generated by the operation of heavy equipment at each of the work areas and associated traffic on-site and on haul routes. The effects are anticipated to be short-term in duration and localized.	Proponent should undertake a noise study to confirm that construction noise levels will be acceptable. This is particularly important for the school. The noise study should recommend mitigation measures.
Section 4.3.6 Stormwater	During construction and decommissioning, proper grading would be conducted and mitigation measure implemented to reduce potential for runoff at the work areas.	A drainage study is required to assess the effects of new development on drainage flows and patterns. Of particular importance will be the concentration of sheet flows at barriers (i.e. access roads) and culverts. Assessment of downstream drainage courses will be required to insure adequate capacity for post development flows.

General (Possible Additions to Project Description Report)		
Final Public Open House Handout	Proponent has committed to reimburse the municipality for costs of third party consultant to review Project REA documents.	Commit to reimbursement of third party costs for ongoing monitoring during construction.
Loyalist Township Meeting on January 29, 2013	Construction Plans Construction Methods	<p>Commit to submission of construction plans for public consultation and consideration for approval by Township.</p> <ul style="list-style-type: none"> Detail required road improvements (permanent and temporary) Commit to retention of independent engineer by Township at Windlectric's expense. Commit to road maintenance program during construction, indicate availability of road maintenance equipment (i.e. graders) <p>Commit to construction methods to minimize traffic disruptions</p> <ul style="list-style-type: none"> Staging areas, timing of movements
Loyalist Township Meeting on January 29, 2013	Consultation program, notices, complaint resolution	Commit to weekly roads update, communication program, advance warnings. Detail availability of construction management and provide contact information. All to the satisfaction of Loyalist Township
Draft Property Line Setback Assessment Report		
Page 1.3	None of the proposed turbine sites are located less than the length of the turbine blades plus 10 metres (i.e. 65 metres) from a property line or public road right of way.	Minimum setback from road allowance should be increased from 65m to the height of a turbine tower (99.5m) to avoid obvious health and safety issues in the unlikely event of a tower collapse.

Construction Plan Report Draft		
Table 2.1 Land Surveying and Geotechnical	A registered Ontario Land Surveyor (or equivalent) will survey and stake all access roads, collector lines, transmission lines and turbine locations as appropriate.	<ul style="list-style-type: none"> ▪ Add "The surveyor will prepare a survey report noting source information for all bars located or placed and make copies of this report available for public review. The proponent is aware that there may be conflicting opinions regarding property line locations – the proponent will resolve property issues to the extent necessary to affect its work." ▪ Add "On completion of construction the surveyor will replace all bars lost as a result of construction activity."
Table 2.1 Land Surveying and Geotechnical	Detailed geotechnical work will be conducted prior to Project construction.	<ul style="list-style-type: none"> ▪ Terms of reference for the geotechnical investigations and qualifications of the geotechnical specialist retained to carry out the investigations will be submitted to the road authority for consideration for approval. ▪ Geotechnical investigations to include an assessment of the bearing capacity of existing roads to support proposed construction traffic and, where capacity is not sufficient, necessary improvements. ▪ Post construction investigation by a geotechnical engineer required to ensure road structures are not susceptible to premature failure.
Table 2.1 Land Surveying and Geotechnical	Develop agreements with utility companies, if required, for the temporary relocation or adjusted location of utilities within the Project Location or transportation routing (i.e. low slung electrical collector lines that impede the flow of equipment may need to be lifted).	<ul style="list-style-type: none"> ▪ Add "Proposals for relocation of utilities within municipal road allowance will be submitted to the road authority in writing for consideration of approval in advance of construction" ▪ Proponent to obtain written approvals from owners of all utilities where lines will need to be lifted or temporally disconnected.
Table 2.1 Site Preparation	Trees that require trimming/removal would be conducted in compliance with the Township tree cutting by-law, if applicable.	<ul style="list-style-type: none"> ▪ Add "Affected trees to be tagged in field and the municipality are to be satisfied that feasible alternatives to tree removal have been considered." ▪ Add commitment to fence off stands of roadside vegetation so that it is not disturbed or commit to restoring disturbed areas

		with similar species.
Table 2.1 Site Preparation	Natural features requiring protection will be marked and silt fencing placed around them.	<ul style="list-style-type: none"> ▪ Add "Natural features and protection will be detailed on construction drawings and the municipality and interested public will have an opportunity to review plans to confirm that all features have been identified and adequately protected."
Table 2.1 Site Preparation	The public roads will be examined to determine if any necessary engineering road upgrades (i.e. load analysis determination and infrastructure improvements, rock anchoring) are required to ensure transportation of the equipment can be maintained safely.	<ul style="list-style-type: none"> ▪ Add "Proposed improvements will be detailed on construction drawings that will be provided to municipality for consideration for approval in advance of construction. Improvements may include, but are not limited to, vertical and/or horizontal realignments, road pavement structure improvements, improvements at water crossings, etc." ▪ Any measures used to compensate for inadequate bearing capacity, such as use of steel plates or other means of weight distribution on roadways (such as, but not limited to culvert crossings) to be confirmed by geotechnical engineer. ▪ Location and protection of private services crossing public road allowances (ie. Pipes and electrical services for shore wells.) to be identified and confirmed through public consultation. ▪ Location and protection of cultural items such as rural delivery mail boxes and fencing to be identified and confirmed through public consultation
Table 2.1 Access Roads	Access roads will be approximately 4-6 m wide and will not require resizing for the operation phase, with the exception of the entrances off Township or County roads that require wider turning radii, of approximately 50 m, during construction.	<ul style="list-style-type: none"> ▪ Add "Municipal requirements for entrance permits will be satisfied for each access off a municipal road, whether permanent or temporary, and permits will be in place prior to construction."
Table 2.1 Culvert Installations	Install culverts along access roads and associated underground collector and data lines that cross watercourses.	<ul style="list-style-type: none"> ▪ Add "Location and sizing of culverts to detailed in drainage plan." ▪ Temporary culvert lengthening and/or ditch realignments at entrances off Township or County roads to be detailed in drainage plan.

Table 2.1 Culvert Installations	The culverts would be appropriately sized to meet flow conditions, embedded within the natural channel and backfilled with gravel to match the final grade of the access road. Other technical requirements may influence culvert size and materials.	<ul style="list-style-type: none"> ▪ Add "Proposed location and sizing of culverts to be detailed in drainage plan. Drainage calculations required for culvert sizing. Adequacy of downstream drainage courses must be confirmed – pre and post development flows must be considered. Channelization of sheet flows due to new barriers (access roads for example) must be assessed and deficiencies in downstream capacity must be corrected. ▪ Proponent should commit to insuring that proper construction phase and post construction erosion protection measures have been constructed on all new and all re-instated water courses. ▪ Features such as sedimentation fences, straw bales and riprap protection should be identified on drawings within the drainage report to be considered by Loyalist Township for approval.
Table 2.1 Culvert Installations	Collector and data cables will be installed below the culverts where associated with an access road crossing, with the design determined by the construction contractor in consultation with the CRCA as appropriate.	<ul style="list-style-type: none"> ▪ Proposed locations for collector and data cable installations on municipal roads must be submitted to the road authority for consideration for approval in advance of construction. The road authority may require overhead installations at culvert crossings to avoid interferences with future culvert replacements/repairs.
Table 2.1 Turbine Foundations	Based on site specific conditions, blasting may be required to assist with excavations. If a significant amount of rock is encountered, the rock removed would be crushed in an on-site crusher and, as appropriate, used for backfill, laydown areas or spread in agreement with the landowner.	<ul style="list-style-type: none"> ▪ Pre-construction condition surveys will be undertaken and vibration monitoring by a qualified firm will be undertaken at nearby residences and sensitive structures.
Table 2.1 Collector Lines and Data Cabling	Underground lines are buried at a minimum depth of 1.2 m so that agricultural production can continue on the lands above the collector lines. The underground trench will be backfilled with sand.	<ul style="list-style-type: none"> ▪ Add "Proposed locations and construction details for collector and data cable installations within municipal road allowances will be submitted to the road authority for consideration for approval in advance of construction. The road authority may require alignments within existing travelled lanes, to avoid interference with ditch maintenance. Installations may require concrete encasement." ▪ Proponent needs to identify how the road surface areas disturbed by the installation of electrical cables will be


		monitored and restored as necessary during the life of the project
Table 2.1 Collector Lines and Data Cabling	Where necessary, partially buried junction boxes will be placed at the junction where the collector line from the turbine meets the collector line in the road allowance.	<ul style="list-style-type: none"> ▪ Add "Proposed locations and construction details for junction box installations within municipal road allowances will be submitted to the road authority for consideration for approval in advance of construction."
Table 2.1 Site Completion and Restoration	Following construction all temporary locations would be rehabilitated to preconstruction conditions.	<ul style="list-style-type: none"> ▪ Add "Final restorations of municipal road allowance will be completed to the satisfaction of the road authority." ▪ Add "Both interim repairs and final restoration of any disturbed areas requiring improvements will be addressed at timeframes that meet the needs of Loyalist Township. "
Section 2.1 Traffic Management Plan	Section 2.1 is a brief description of a traffic management plan.	<ul style="list-style-type: none"> ▪ Add "The Traffic Management Plan will address issues related to: <ul style="list-style-type: none"> ▪ Conflicts with pedestrian and bicycle traffic particularly in Stella. ▪ Disturbance of school functions due to heavy traffic noise in close proximity. The traffic plan should include an estimate of vehicles passing school, types of vehicles and distance of school from various haul routes and also a comparison with normal traffic levels and conditions in area ▪ Safe access and transportation of students to school ▪ Enforcement of speed limits ▪ Interference with agricultural traffic, vehicular and livestock movements ▪ Interference with ferry traffic ▪ Interference with parking requirements on street, particularly in Stella ▪ Impact on school bus schedule ▪ Commitment to education of all contractors (full time, contract, or occasional) on traffic management plan ▪ Contractors working within the road allowance to carry adequate driver and vehicle insurance to the satisfaction of Loyalist Township

		<ul style="list-style-type: none"> ▪ Mitigation of interference with emergency vehicles and emergency response team activity <p>The traffic management plan has to deal with impacts resulting from construction, operation and decommissioning of the wind turbines and construction of underground cabling. The traffic management plan will be available for public review and must be acceptable to the road authority.</p>
Section 2.5 Waste Disposal	<p>"There will be no long-term on-site storage of waste during the construction of the Project and final disposal of waste will be conducted by a third-party contractor at an MOE-approved facility."</p>	<ul style="list-style-type: none"> ▪ Add "off Amherst Island."
Section 4.0 Construction Environment Management Plan	<p>Section 4.0 is a brief description of a Construction Environment Management Plan which includes the following components:</p> <ul style="list-style-type: none"> ▪ Traffic Management Plan. ▪ Hazardous and Non-Hazardous Waste Management Plan ▪ Health and Safety Plan ▪ Emergency Response and Communications Plan ▪ Training Plan, and, ▪ Complaint Response Protocol. 	<ul style="list-style-type: none"> ▪ Add "The Construction Environment Management Plan will be available for public review and must be acceptable to the municipal authority." ▪ Add "Dust, Noise, Lights and Vibration Management Plan" <ul style="list-style-type: none"> ▪ Address dust suppressants, truck speed, protecting stockpiles, vegetation per mitigation strategy ▪ Note commitment to regular construction hours. ▪ Add "Protected Properties Protection Plan" <ul style="list-style-type: none"> ▪ Propose vibration limits, define monitoring program and explain stop work orders ▪ Confirm that work will stop if vibration exceeds limit (not after damage has occurred) ▪ Define "qualified individual" as it relates to inspection of stone walls. Indicate frequency of inspections. ▪ Note commitment to retain a licensed archaeologist to monitor construction impacts. ▪ Add "Navigable Waters Traffic Management Plan" <ul style="list-style-type: none"> ▪ Note commitment to limit construction traffic on ferry, including commitment to have construction workers leave vehicles on mainland.

		<ul style="list-style-type: none"> ▪ Address interference between ferry movements and barge movements ▪ Add "Public Consultation Program" <ul style="list-style-type: none"> ▪ Commit to further consultation during detail design stage regarding Construction Environment Plan, tree removals, impacts on schools, churches and other heritage features ▪ Define role of public liaison committee ▪ Add "Communications Plan" <ul style="list-style-type: none"> ▪ Summarize commitment to notifications, availability of representatives ▪ For the Traffic Management Plan: <ul style="list-style-type: none"> ▪ Address conflicts with pedestrians and cyclists ▪ Accommodate children walking to school ▪ Minimize distractions for children while at school ▪ Propose measures to minimize issues relating to narrow main street in Stella ▪ Propose measures to enforce speed limits ▪ For the Emergency Response Plan <ul style="list-style-type: none"> ▪ Include the commitment to consultations and mock runs (made at Jan 29/13 meeting) ▪ The Complaint Response Protocol must include the means by which persons with authority to effect changes to construction activity (such as authority to stop work) can be contacted and commitments to response times ▪ Complaint Response Protocol to be submitted to the Township Council and accepted on their satisfaction.
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Decommissioning Plan Report Draft		
Section 5.0 Managing Excess Materials and Waste	This Chapter briefly describes how Excess Materials and Waste are to be managed	Add "Suitable disposal facilities for excess materials and waste do not exist on Amherst Island. All excess materials and waste will be removed from Amherst Island for disposal elsewhere."
General	This report does not adequately address road and traffic impacts that will result from decommissioning activities.	Additional detail and commitment to mitigation measures similar to those identified in the Construction Environment Management Plan is required.
General	There is nothing in the Decommissioning Plan Report Draft that addresses the financial ability of the proponent to carry out decommissioning activities.	Add a chapter to identify the source of funding for decommissioning of the works should the owner become insolvent. Address the need for sufficient financial securities. Explain of determination of amount of sufficient financial securities.
Design and Operations Report Draft		
Section 3.5 Water Crossings	"Culverts required for any water crossings are described in the <i>Draft Water Assessment and Water Body Report</i> ."	The Draft Water Assessment and Water Body Report has not been made available for review. The road authority is very concerned regarding the potential for concentration of sheet flow at barriers (i.e. new access roads) and culverts. A detailed drainage plan is required to confirm adequacy of downstream drainage courses.
Section 4.5.1 Waste Management	There would be no on-site disposal of waste during the operation of the facility.	It should be noted that there are no facilities for disposal of industrial wastes on Amherst Island. This statement should be expanded to "there would be no on island disposal of waste during the operation of the facility".
Noise Assessment Report	The noise assessment report has not assessed the impact of construction traffic.	An assessment of noise impacts of construction activities is required.

Memo Prepared by:


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Peer Review for Loyalist Township
Natural Heritage Assessment and Environmental Impact Study
for the proposed
Amherst Island Wind Energy Project

(Prepared by Tom Beaubiah, CRCA Biologist, March 19, 2013)

1.0 Background

Windlectric is proposing a 36 turbine wind energy project on Amherst Island within Loyalist Township. The turbine specifications are summarized as follows

- Tower height 99.5m
- Blade length 55m
- Rotor diameter 113m
- Tip height 154.5m

The project also includes related infrastructure requirements (staging area, roads, construction areas, overhead/underground/submarine collectors/transmission lines, substations, switching stations, docking, met towers, etc.)

Amherst Island is comprised of natural habitats (wetlands, woodlands, meadows and shorelands) and active farmlands. Measuring approximately 20km in length and 7km in width at its widest point, the Island has a relatively flat topography. Agricultural practices are low intensity (restricted primarily by access by the side load ferry).

The proposed project is subject to a Renewable Energy Approval (REA) per Ontario Regulation 359/09 under the *Environmental Protection Act* that is administered by the Ministry of the Environment. A pre-requisite to the approval is that an environmental impact study (EIS) be prepared and submitted to the satisfaction of the Ontario Ministry of Natural Resources (MNR). As outlined by MNR guidelines, the EIS must identify and assess potential environmental effects

and identify mitigation measures designed to prevent or minimize potential effects on a natural feature.

As requested by Loyalist Township, CRCA staff have reviewed the Natural Heritage Assessment Report – Environmental Impact Study for this project that was produced by Stantec Consulting Ltd. (November 2012).

2.0 Summary of Stantec Consulting Ltd. Report

The document outlines an inventory and assessment of natural heritage features that was conducted by the consultant on Amherst Island related to the wind energy application. The natural heritage features were studied for a period of 2 years (2011-12 to establish background data in order to assess the proposed wind turbine locations.

The NHA and EIS outlined the existing conditions on the Amherst Island and summarized the evaluation of potential impacts associated with the proposed development on the following significant features;

- Provincially Significant Wetlands (PSW)
- Provincially Significant Areas of Natural and Scientific Interest (ANSI)
- Significant Valleylands
- Significant Woodlands
- Significant Wildlife Habitats

The authors conclude that the proposed project would not result in negative impacts to the significant features noted above and that development would not occur within the 120m adjacent land area to the development with the notable exception of significant wildlife habitat. As a majority of the Island is stated by the consultant to provide significant wildlife habitat (particularly the grasslands) it was not possible to avoid that habitat.

3.0 Review of the Natural Heritage Assessment and Environmental Impact Study

CRCA staff are of the opinion that the *content* of the NHA-EIS reflects the general requirements of Ontario Regulation 359/09 and the Natural Heritage Assessment Guide for Renewable Energy Projects (MNR, 2011). The report contains the identification and assessment of the natural heritage features, areas and ecological functions; predicts potential impacts of the proposed development; proposes mitigation measures; and summarizes the significance of potential impacts. However, there are outstanding items that should be addressed before it can be concluded that the proposal can proceed without causing substantial harm to the significant wildlife habitat on Amherst Island.

Amherst Island is located in an important migratory corridor and provides important habitat for raptors (birds) on a provincial and perhaps national / continental scale. Given the significance of the habitat, and the potential for the turbines and related infrastructure to interfere with migration, roosting and foraging areas, there needs to be greater consideration as to whether or not a project of this scale is appropriate for this location.

If the project is to proceed, then it is imperative that important habitats (form and function) be conserved to the greatest degree possible through the manipulation of the site plan.

Additional details are outlined below. A summary of 'path forward' recommendations is included in Section 4 below.

3.1 Specific Opportunities for Improvement

It is the opinion of CRCA staff that a NHA-EIS should contain a sufficient level of research, monitoring and discussion such that the conclusions are based on sound knowledge of the form and function of the features present. The following are suggestions for expanding the report such that a clearer assessment of the project can be made.

3.1.1 Natural Heritage Assessment Component

1) Records Review

- a. It is the understanding of CRCA staff that additional information is available that would expand the knowledge of the natural heritage features on the island particularly with respect to the avian and bat populations.
- b. It is recommended that the consultant meet with the Kingston Field Naturalists in order to determine where information gaps can be filled.

2) Records Review Results

- a. Threatened and Endangered Species – while it is acknowledged that threatened and endangered species are addressed through the Ontario Ministry of Natural Resources approval and permitting process under separate legislation, it is understood that a number of such species exist on Amherst Island. The adjacent Wolfe Island Wind Energy site (currently in operation) has been noted by the MNR to have concerns related to Bobolink and Barn Swallow mortality (MNR correspondence, Wolfe Island Wind Turbine Monitoring). To provide a proactive, transparent and comprehensive view of natural heritage matters, the considerations made by the consultant with regard to these species should be presented in the report.
- b. Summary of Natural Features and Boundaries – Table 2.1 should be presented to the Kingston Field Naturalists in order to obtain any data that would fill gaps or expand knowledge beyond the 2 year monitoring period conducted by Stantec.

3) Site Investigations

- a. The reliance on limited historical data and 2 years of monitoring results does not provide confidence in the findings.
- b. Although monitoring was conducted over a period of 2 years, some features were studied for a very limited period of time and potentially missed optimal observation periods.
- c. Alternative Site Investigation Methods – There appears to be no reference to efforts to obtain landowner permission to access interior portions of properties that are not visible from the road side or beyond lands under an agreement. Some bias may exist based on where data was collected/observed from.

4) Results

- a. With respect to winter raptors:
 - i. The report generalizes the significant wildlife habitat to be broadly distributed without an assessment of value within the area identified. “Higher concentrations observed in the western portion of the island along the 2nd concession road, south of Stella, along Front Road and between Marshall 40ft and Lower 40ft Road” (Section 4.2.3 - page 81). This statement indicates an ability to refine the habitat delineation such that tower locations can be assessed further. It is recommended that this information be displayed in order to represent how tower location has been influenced by habitat preferences within the general significant wildlife habitat area identified in the report.
 - ii. The report generalizes significant wildlife habitat to be broadly distributed it is noted in the report that several roost locations for short-eared owls were identified in the open grassland and while there was generally some shifting in ground roosting sites between surveys, some larger sites were relatively consistently used. This indicates an ability to refine the habitat delineation such that tower location can be assessed further. It is recommended that this information be displayed in order to represent how turbine location has been influenced by habitat preferences within the general habitat areas.
 - iii. Numbers of Northern Saw Whet Owls and Long Eared Owls were relatively low on Amherst Island in 2011/2012; as a result, it was acknowledged that roost sightings likely under-represented these species. Use of historical knowledge and signs of past use were substituted by the consultant. This is indicative of the issues related to a short sampling period whereby seasonal and yearly fluctuations cannot be assessed and general assumptions or extrapolations are made.
- b. Migratory Birds – Swallows – Driving transect surveys may have overlooked concentration areas that were not visible from a roadside (e.g. fencerows within fields). The statement that most appeared on hydro wires along roadsides may be an indication of sampling error/bias.
- c. Breeding Birds – Amherst Island is known to host a number of breeding birds. As noted above, species at risk have been excluded from the data being presented. The mortality of endangered Bobolink has been raised as an issue (MNR correspondence, Wolfe Island Wind Energy Yearly reports) with respect to the operation of the Wolfe Island Wind Facility. Response to the mortality has been additional monitoring which unfortunately provides an understanding of the issue, but does not address the negative impact that is being experienced to those species.
- d. Seasonal Concentration Areas – Migratory Butterfly Stopover Area – Data is not of a sufficient period item should be carried forward to an assessment of potential impacts within the Environmental Impact Study.

- e. Bats – bat hibernacula are difficult to assess/find. Migratory movements can be anticipated and presence of bats on the island is confirmed. Anticipated impacts can be foreseen with respect to the local bat population on Amherst however, based on the limited data they cannot be assessed.

3.1.2 Environmental Impact Study Component

Construction and Decommissioning of the Project

The consultant concludes that the construction and decommissioning activities related to the proposed wind energy project will have minimal impacts on the natural heritage features and functions. It is stated by the consultant that the construction and decommissioning of the wind power project can be accomplished with minimal impact or impairment to the natural heritage features, disruptions are temporary and physical occupation of space is limited.

1. While habitat loss is limited, the Natural Heritage Assessment report presents the findings with respect to significant wildlife habitat in a general context and it is not possible to determine if individual towers are being located within areas of high wildlife use within the broadly identified area(s). The document contains reference to observations that imply that this information is available, however it is not demonstrated how this was used.
2. With respect to road construction and fragmentation, edge effects are identified to present possible impacts to the natural heritage features. Consideration of mitigation measures related to the removal of the road is not appropriate as due to the extended lifespan of the project (20 years), the period of impact is long enough to have considerable impact.
3. With respect to Short-eared owl impacts during construction, it is noted that low site fidelity between years was demonstrated in a 2009/2010 study (Keyes 2011). Reliance on a 2 year study is not considered to be strong enough to support the conclusion. Uncertainty is demonstrated in the proposal to conduct additional monitoring after the structures are built. Impacts should be understood and avoided/mitigated prior to construction.
4. With respect to herptile species, the construction and decommissioning phases of the project will have the greatest influences. Vernal ponds and poorly drained depressions (although predominantly dry through the year) should be regarded.

Operational Phase of the Project

1. Raptor Wintering Areas – the consultant notes that “fragmentation and disturbance of habitat as a result of wind energy projects were identified as a potential indirect effect to wintering raptors (Kingsley and Whittam, 2007). Noise levels during operation might also impact hunting raptors, in particular owl species which primarily hunt by sound. Potential results of these disturbances could range from behavioral changes, such as local avoidance of turbines, to abandonment of the wind power project area. Nevertheless,

much of the data collected from wind power developments in Canada and elsewhere indicates that wind turbines have limited effects on raptor activity or abundance in the wind power area”.

Amherst Island is a unique feature, it is noted that out of 17 winter bird survey sites (Environment Canada 2006), Amherst Island ranked number 1 in raptor density. The consultant refers to Environment Canada’s comments that there are very few sites in Southern Ontario that provide suitable habitat. Amherst Island represents a small area; the proposed placement of the wind turbines provides limited relief from either the visual or physical presence of the towers as they are proposed to be distributed throughout the Island.

The consultant should have a greater regard for the potential displacement of species with the potential for displacement from the Island. In speaking with Kingston Field Naturalist members (pers. comm, 2013) there does appear to be a displacement of Short-eared owls from the western end of Wolfe Island (where wind turbines are present) to the eastern end (no turbines present). Foraging activity has also been suggested to have shifted to adjacent islands (Simcoe Island). While this information is anecdotal, the potential displacement and avoidance by raptors on a small island with limited refuge areas with a recognized high density of raptors present is a concern.

Additionally as the natural heritage assessment does not identify which areas are of higher use within the general significant habitat identified. It is not possible to determine if the towers will cause the displacement and or fragmentation within the higher use areas.

The direct impacts of wind turbines (mortality) are also a concern. Raptor density is 2 times that of Wolfe Island (Environment Canada 2006). Turbine strikes are related to density (Environment Canada, Ministry of Natural Resources) therefore it is anticipated that mortality rates will exceed thresholds (provided the thresholds are similar to Wolfe Island).

2. With respect to the Migratory Land Bird Stopover Area aspect, the consultant surmises that disturbance to stopover habitat, or potential barrier effects, are not anticipated to be significant. While some literature supports behavioral modifications (changes in flight path, height and speed) that do not impact bird migration, the cumulative impacts of multiple turbines across a migratory route (Amherst and Wolfe Islands combined) has not been studied.

The barrier effect of multiple wind energy projects is a potential concern. The variability in location, height, design of other wind energy facilities does not allow for a comparison of impacts.

The statement that “overall, turbine within the Amherst Island Wind Energy Project have been sited outside of significant migratory land bird stopover areas” indicates that some may be positioned within significant migratory land bird stopover areas, this statement

should be corrected or consideration made to demonstrate further that all turbines have been sited outside of significant migratory land bird stopover areas.

3. For Open Country Breeding Bird Habitat and Short-eared owls, there are indications that localized avoidances occurs in some species. Short eared Owls are noted to be more vulnerable than other open country breeding birds. Due to this avoidance behavior it is possible that the distribution of wind turbines throughout the island could have an resulting in their complete abandonment of the island. Anecdotal information from the Kingston Field Naturalists (pers. comm. 2013) indicates that short-eared owls may be shifting to areas on Wolfe Island where turbines are not present, and foraging patterns may have been influenced with use of Simcoe Island occurring in greater frequency (as noted above for raptor wintering areas). Amherst Island is small and isolated and therefore there are no adjacent islands or undisturbed areas. Impacts may be much greater than that experienced on Wolfe Island.

It is noted that species at risk have been excluded from the analysis. It is anticipated that the installation of the wind turbines would have some impact either indirect or direct on these (avian) species. It is understood that this is being addressed under a separate process, however its exclusion from comment within the EIS does not allow for review/comment.

Direct Impacts

1. Wintering raptors – the principal direct impact is mortality from collisions with wind turbines. The risk of mortality is related to a number of factors including raptor density (Environment Canada, Ministry of Natural Resources). It has been noted in the comments to the Wolfe Island post construction monitoring that raptor mortality was a concern. With the density of raptors at Amherst Island being greater (2 times) than Wolfe Island, mortality through collisions is expected to be possibly increased.
2. Breeding Birds – the consultant states that “In general, resident breeding birds tend to have lower collision rates than non-residents, at least partially because they become familiar with the turbines and avoid them (Kingsley and Whittam, 2007)” this further supports avoidance behaviors. In a literary search there appears to be great variation in the estimated avoidance distance from the towers. This range is from 0 to 800m, the consultant notes avoidance behavior in short-eared owls appears to be 200m. Reference to the lack of Short-eared owl mortality at operational facilities may be more an indication that avoidance behaviors are having a greater influence than indicated. Avoidance distances should be considered in the assessment of lost habitat and turbine location decisions. Areas within generally identified as significant wildlife habitat should be refined to indicate the critical habitat within those areas.

The consultant states that “Overall, the annual fatality rate for all birds on Wolfe Island is likely a reasonable indicator of fatality rate on Amherst Island. This rate has been higher than average for wind power facilities; 13.4 birds/turbine/year (first year 2009/2010), 10

birds/turbine/year (second year 2010-2011). The higher mortality rates on Wolfe Island can be attributed partially to the high density of grassland breeding birds and the large number of late summer staging swallows; similar risk factors occur on Amherst Island.” This statement does not appear to be supported as the data that suggests that bird densities may be considerably higher on Amherst Island. With higher densities, mortalities rates are anticipated to be higher which could result in considerably higher values than average at Amherst Island.

The consultant includes reference that “monitoring results to date from operational facilities indicate that wind turbines are not a major concern with respect to the sustainability of migratory bird populations in Ontario (Friesen 2011; MNR 2011c) and a small contributor to overall bird mortality when compared to other anthropogenic influences”. Consideration should be given to the fact that Amherst Island has been identified and recognized for its high avian population densities when compared to other sites in southern Ontario.

3.2 Summary of Anticipated Concerns

The consultant indicates that “the application of these protective, mitigation and compensation measures are expected to address any negative environmental effects of construction, operation and decommissioning of the Project on the natural heritage features in the Study Area and their associated ecological functions”.

Island Uniqueness

Amherst Island has unique landscape features that contribute to its value. For a small island, availability of habitats is high. The low profile, windswept nature of the Island contributes to its ability to provide winter habitat for owls. Sites of this nature are considered to be rare in Southern Ontario (Environment Canada 2006). Traditional farm practices that occur on the island contribute to the maintenance and provision of high quality grassland habitat; farming practices are and will likely continue to be constrained by access limitations (side load ferry).

Pre-siting

Proper site selection plays a very important role in limiting the impact of wind farms on nature. In general, current knowledge indicates that there should be precautionary avoidance of locating wind farms in regional or international important bird or bat areas and/or migration routes (Everaert, 2003). At a macro scale, raptor use of a site still appears to be one of the most important factors that can be easily measured and is generally related to risk of collision (Anderson et. al, 2004). Also within one wind farm, the impact can strongly differ between individual turbines clearly showing that ‘site selection’ can play an important role in limiting the number of collision fatalities (Everaert, 2003). Birds may utilize specific areas more than other areas on the proposed wind plant site. Understanding those activity areas and modifying the project commensurately can be very valuable. Avoiding high use areas or areas used by species of special concern can be effective in minimizing impacts (Anderson et. al, Dec 1999)

As is the case with birds, wind project siting is crucial to minimizing impacts to bats. Another mitigation measure to minimize potential impacts to bats is to avoid the siting of projects near open water. Open water is particularly important to bats, especially in arid areas as it not only provides drinking water but is a significant source of insect prey (AWEA, 2008).

Species at Risk

The natural heritage assessment does acknowledge the presence of species at risk although the EIS does not include any discussion on impacts to these species. It is understood that threatened and endangered species is addressed under a separate process, however exclusion from the Environmental Impact Study does not allow for the review of the findings by the public. The Environmental Impact Study should include discussion on the species that are present, the impacts that these species are likely to experience and the proposed mitigation strategies to address those impacts. Particular attention should be made to avian species (e.g. Bobolink, Barn Swallow, Whippoorwill) which have been demonstrated to be substantially impacted by wind energy projects. Avoidance of specific habitat features known to be attractive to threatened, endangered, or species of concern is the best way to minimize habitat impacts (AWEA, 2008).

Avian Mortality

The Ministry of Natural Resources document titled Birds and Bird Habitats: Guidelines for Wind Power Projects (2011) notes that there are three main factors that contribute to avian mortality at wind power projects:

- Density of birds in the area and their behaviours (e.g. flight displays, feeding, etc.)
- Landscape features in the area (especially ridges, steep slopes, valleys and landforms such as peninsulas and shorelines that funnel bird movement); and
- Poor weather conditions.

Density

With respect to the density of birds on Amherst Island, particularly raptors and species at risk (bobolink and swallows), it is high relative to other sites in Ontario and potentially significantly higher than Wolfe Island. Based on recent analysis of limited data by Strickland and Johnson (2006), high raptor use (above 2 birds per 30-minute survey) is correlated with high raptor fatality rates; areas with this high level of raptor use should be studied more intensively to better identify the level of risk to raptors, or the site should be avoided (AWEA, 2008).

Wolfe Island has demonstrated mortality rates that have neared the thresholds set by Environment Canada. It is therefore possible, based on density numbers alone, that Amherst Island will experience mortality rates that will exceed the current thresholds. Based on the information to-date, siting of wind plants appears to be the most significant factor related to bird mortality (Erickson et al, 2001). It appears from the available data that siting wind plants in areas with low bird and raptor use is currently the best way to minimize collision mortality.

It is also probable that for mortality rates to fall within threshold values, either avian density will have to decline or avoidance behaviors will be exhibited, resulting in greater concentrations of raptors within the remaining available habitats. Should avoidance behaviors be exhibited it is unknown if Amherst Island will be able to support an increased density in the reduced area or if bird numbers will decrease according to habitat and food availability.

Poor Weather

Poor weather conditions are known to occur. Amherst Island is located within Lake Ontario near the mainland shore, and snow squalls, heavy fog, and storm events can be experienced. The influence of these effects on migrating species that travel over Lake Ontario is unknown. Birds flying over Lake Ontario see Amherst Island as potentially the first land fall area. Wolfe Island is located closer to the mouth of the St. Lawrence River and therefore the expanse of open water is much less between the north and south shores of the Lake.

Displacement Avoidance and Available Habitat

Displacement and habitat availability can have an indirect effect on bird habitat and behavior. These indirect impacts are a concern identified by the MNR (MNR 2011), and include:

- Displacement from suitable habitat at any stage in their annual cycle (loss of feeding, breeding, or migratory stopover habitat or active avoidance of structures, human activity, noise, or infrastructure; and
- Quality of breeding habitat may also be diminished by fragmentation effects, predation, and parasitism.

Displacement effects have been shown to occur in some species, in response to wind turbine operation. It is possible from the general literature on disturbance in birds to identify some key species which are likely to be sensitive to disturbance caused both by wind farm construction and operation, such as raptors, divers or loons, ducks and waders. For the latter two groups disturbance effects have been recorded up to 800m from turbines (Gill et.al, 1996). Although much of the research is United Kingdom based, behavioral changes around turbines should be firmly understood with respect to the potential impacts to Amherst Island. Many studies conducted at Canadian wind energy projects are of short duration (3 years post construction) and may not be indicative of the long term effect. Displacement is poorly studied compared to the other types of impacts associated with wind energy projects (AWEA, 2008)

This general displacement or avoidance of turbines may also result in the fragmentation of habitats beyond the physical fragmentation as a result of roads and other facilities. As Amherst is a small island, it is possible that the displacement effects could be significant enough to result in the complete avoidance of the island. In particular the effects of avoidance can result in a significant loss of available habitat on Amherst Island (well beyond the physical occupation of the towers and related infrastructure).

Prey Analysis

There has been reasonable research conducted that would indicate that prey availability is also a factor to consider. Habitat is also a function of the quality and quantity of food (Anderson et al, Dec 1999). Availability of prey is an important factor in drawing raptors into the wind plant. Siting turbines in areas of low prey density may reduce raptor collision rates at wind facilities. A high density of small mammal prey and the conditions favorable to high prey densities (Smallwood and Thelander 2004,2005,2008) have often been presumed to be the main factors responsible for the high raptor use, and hence high raptor collision rates at the Altamont Pass wind facility (Kingsley and Whittam 2007;Kuvlesky et al. 2007; NAS 2007). Study of the prey availability would assist in the micro-siting of wind turbines on Amherst Island.

Turbine Design

While turbine design is cited to mitigate potential impacts to nesting and breeding species, the increased height can influence migration. Taller turbines reach higher above the ground, have much larger rotor swept areas and thus further overlap the normal flight heights of nocturnal migrating songbirds and bats (Morrison 2006; Barclay et al. 2007; Johnson et al. 2002; Manville 2009). In addition, the length of the blade changes the rotor swept area, thus potentially changing the opportunity for collisions (Howell 1997).

Cumulative Impacts

Because the cumulative impacts of all mortality factors on birds continue to increase as the human population climbs and resource demands grow, efforts by every industry are important to reverse avian mortality trends and to minimize bird deaths. However, as wind energy facilities become substantially more numerous, fatalities and thus the potential for biologically significant impacts to local populations increases (NAS 2007; Erickson et al. 2002; Manville 2009). The cumulative impacts of multiple wind energy projects within known significant wildlife areas (such as the eastern end of Lake Ontario) should be discussed.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Additional efforts to understand the full impacts of this project on Amherst Island are warranted. While many natural features can be avoided (wetlands, woodlands, watercourses, ANSI's etc.) the project will be placed in significant wildlife habitat including habitats for threatened and endangered species. Impacts as a result of the wind turbine project are anticipated. Some of these impacts cannot be mitigated or avoided and therefore there is reliance on compliance with threshold values (set by Environment Canada). It is anticipated that the placement of the project within the significant wildlife habitat will have potentially significant impacts at a local scale.

It is noted that "appropriate selection of a project location is a key factor in preventing potential negative effects on birds" (MNR, 2011). Amherst Island is unique to Ontario, recognition of its importance to the avian population in Ontario is documented (IBI, Environment Canada 2006, Migratory Research Foundation). Efforts by local organizations such as the CRCA (Owl Woods

Management Plan), Kingston Field Naturalists, and landowners to enhance and preserve the nature of the Island for its avian inhabitants are an indication of local recognition.

We are unable to find reference to sites that could be compared with Amherst Island. In absence of this information reliance is placed on a comparison of Wolfe Island to Amherst Island. However, despite general similarities with respect to the natural inhabitants and some physical characteristics, there are considerable differences in the placement of the towers with respect to the available land mass, and adjacent features. Amherst Island is somewhat isolated, and its avian inhabitants forage, breed, and nest/roost on the Island.

Sites with the representation and density of raptors similar to Amherst Island do not appear to exist in southern Ontario. "Sites that lie in heavily used bird migration paths or have endangered species in the area may not be appropriate for wind power" (University of Massachusetts at Amherst – Community Wind Power Fact Sheet #4), Wind turbine locations with relatively large numbers of protected birds, as in Tarifa and Navarra (Spain), Altamont Pass (California) and Zeebrugge (Belgium), are examples of poorly sited wind farms.

As an acknowledged area of significant habitat it is important that the decision to proceed take into account all relevant aspects of the natural heritage system on Amherst Island. For the reasons noted in detail above, it is the opinion of CRCA staff that:

- There needs to be a greater regard to the significance of Amherst Island within local, Provincial and national/continental contexts.
- The comparison with Wolfe Island (with respect to mortalities) does not represent a true comparison with other Ontario wind facilities. The two islands while having similarities are different in some aspects. Comparisons with other Ontario wind facilities would indicate that both Amherst and Wolfe Island would be among the highest in mortality in Canada.
- The cumulative impacts of the construction and operation of large-scale wind energy projects on Wolfe and Amherst Islands (if constructed) is not addressed.
- Prey analysis studies should be conducted which would assist in the micro siting of wind turbines.
- Existing data should be used to further refine/assess turbine locations based on observed species use, and where data gaps exist with respect to use, additional monitoring should be conducted and or collaboration with local experts/groups to fill gaps.
- A critical analysis of prime versus marginal significant wildlife habitats should be conducted across species preferences with particular attention to threatened, endangered and special concern species to preserve the greatest diversity within the broadly identified significant wildlife areas.
- The mortality rates for Amherst Island may exceed Environment Canada threshold values, unless density is reduced by avoidance or behavioral changes; either would have impacts.

- Displacement/avoidance impacts should be understood prior to proceeding to ensure Amherst Island does not become void of raptors or other species due to the unavailability of suitable habitat away from turbine influence.
- Impacts to endangered and threatened species should be discussed in the Natural Heritage Assessment and Environmental Impact Statement.

5.0 References

(Note: where available, hyperlinks allow direct web access to reference documents)

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Report to: Loyalist Township Council
From: Loyalist Township Heritage Committee
Date: March 26, 2013

RE: Heritage Assessment Amherst Island Wind Energy Project

The Loyalist Township Heritage Committee reviewed the Draft Heritage Assessment (DHA) and the Protected Properties Assessment for the Amherst Island Wind Energy Project both dated November 2012. The Committee also met with Christienne Uchiyama of Stantec Consulting, one of the authors of the reports.

The Committee has a number of concerns with regards to the draft report in the context of:

- a) the analysis undertaken,
- b) the range of potential impacts associated with construction and
- c) the long term impacts of the project.

Analysis undertaken

The Committee is concerned that the existing inventory overlooks the heritage value of a number of additional structures located on the Island (possibly between 50 & 100), including houses, barns, monuments, outbuildings, and burial sites. Some of the missing inventory may have been considered as part of the Cultural Heritage Landscapes (CHL). It's the opinion of this committee that these attributes need to be inventoried as part of the CHL, and their impacts individually evaluated and considered. This is especially critical in the Village of Stella where the impact of the vehicular traffic will be significant, given the proximity of the buildings and trees, to the travelled roadway.

Overall, there appears to have been only minimal consultation undertaken, prior to preparation of the draft report. Our committee, for example, was only approached after the report was prepared. While this opportunity has allowed us to somewhat feed into the analysis, regrettably we know of other interested individuals and/or groups, whose involvement was not actively pursued. This limited connection with the community is unfortunate given the amount of local knowledge and insight available on and around the Island.

Since the draft report's release, it's our understanding that a number of formal submissions have been submitted from members of the community. We would encourage meaningful consideration be given to these submissions.

As prepared, the draft assessment identifies three protected properties on Amherst Island including Neilson's Store Museum and Cultural Centre; Trinity United Church; and Pentland Cemetery. A fourth "property" (Nine Irish stone fences) is in the process of being designated by the township*, and the committee would like its importance and significance reflected. Again, pre-consultation with the Heritage Committee would have flagged this much earlier.

* It is important to note that the initial list of 9 dry stone fences is only the first in a series, and that it is the intention of the Heritage Committee to identify all dry stone fences/walls on Amherst Island and designate as many as possible because of their cultural significance.

The committee would like the Village of Emerald identified as a Cultural Heritage Landscape, rather than simply a couple of buildings within a settlement area. On this site, there is still in existence a mixture of buildings, including a church, a former store, a former cheese factory and to the south, a former school. The Committee feels these attributes justify reconsideration as a CHL.

In light of the above concerns it is important that a second draft of the DHA be prepared to deal with the shortcoming with the first draft? Will the proponent arrange to have the DHA updated? Will the proponent undertake to consult with the heritage groups that were not consulted during the preparation of the first draft? How would such a report be shared with the community, this committee, staff at Loyalist Township and other interested groups?

Potential impacts related to construction

Our concerns with respect to the anticipated impacts associated with construction begin with our observation that the range of impacts are not clearly identified, nor individually examined. For example, impacts associated with vibration arise from blasting, hoe-ramming and the anticipated volume of day trips associated with both truck traffic and other pieces of heavy equipment. To the committee, the focus of the reported impact assessment appears overly focussed on blasting type impacts, with little consideration being given to the anticipated impacts (i.e. noise and vibrations) associated with repeated truck movement.

Many of the Island roads are essentially the same as they were in the early 1800s. They are a significant heritage feature worthy of recognition / protection and need to be included in the inventory and assessed. As written, the assessment would suggest that future land disturbances will be dealt with in the roads-use report, a report not expected to be finalized until just prior to construction. This timing is unacceptable and could result in action that could dramatically affect the heritage landscape of the island.

The report also speaks to the development of a service road at/around the intersection of Emerald Forty Foot Road and Second Concession Road, allowing access to the tower locations without the need to alter the corners or negatively impact the dry stone

fences located along the edges of this road. This scenario begs the question as to whether or not (and if not, why not), an examination was undertaken with respect to the benefits of constructing a service road that would have allowed all construction traffic to bypass the Village of Stella, and hence protect the heritage and community values that it represents?

Given the heritage value of the many stone fences found throughout the Island, we appreciated that the draft report acknowledged the need to have these documented prior to construction. It would be our recommendation that these evaluations be undertaken by a heritage stone mason who has experience with this unique type of wall construction. Equally important is the need to have these reviews ongoing. As construction is proposed over a 18 to 24 month time period it is important that monitoring of all heritage resources take place during regular intervals during the construction phase, when heavy equipment is being used during the operational phase and during decommissioning, to ensure that any issue is addressed as soon as possible and that problems are resolved as they occur.

It is important to not just monitor and repair damage – but to do whatever possible to prevent damage in the first place. This is true of all historic structures on the Island – not just the significant dry stone fences.

The assessment identifies a number of options with respect to the siting of a maintenance building. The committee is of the opinion that the proposed location near the Pentland Cemetery represents an inappropriate intrusion into a heritage area. Other areas, with limited heritage impacts are available and should be utilized.

In light of the above concerns, how can the potential impacts associated with construction be dealt with in the immediate future, within a revised DHA? How will this revision examine alternatives that would avoid the Village of Stella, or greatly minimize the impacts as currently anticipated?

Long term impacts

Our initial concern with respect to the long term impact of this project is the limited recognition given to the Island as a whole. A number of individual heritage features and three areas of CHL were assessed, however the Island from a heritage perspective, was never considered as a CHL. As such, the impact of the project in its entirety on the heritage nature of the Island was not considered.

The definition of a Cultural Heritage Landscape in the Provincial Policy Statement reads as follows:

means a defined geographical area of heritage significance which has been modified by human activities and is valued by a community. It involves a grouping(s) of individual heritage features such as structures, spaces, archaeological sites and natural elements, which together form a significant

type of heritage form, distinctive from that of its constituent elements or parts. Examples may include, but are not limited to, heritage conservation districts designated under the Ontario Heritage Act; and villages, parks, gardens, battlefields, main streets and neighbourhoods, cemeteries, railways and industrial complexes of cultural heritage value.

The Island is a clearly defined geographical area. There are a significant number of individual structures of heritage significance. Many of the landscape features across the Island reflect the fabric of the original settlement including the roads, farm lot layout, farmsteads and villages. Most of these remain almost unchanged over the past 100 years.

As noted above, the unpaved roads have not been significantly altered in appearance, reflecting the original layout of the Island and representing a significant component of the Island's cultural assets.

The CHL definition includes "natural elements" which in this case should include the trees along the fence rows and the world-wide recognized Owl Woods birding location. The vistas across the interior of the Island are not significantly altered by new development, as the vast majority of the new houses have been built along the shoreline. These interior vistas continue to reflect the pattern of the original smaller fields, evident during early settlement days.

There is no question as to the area being highly valued by the community. Residents and visitors comment on the peace and tranquility of the Island and the significant number of houses and farmsteads dating back to the 1800's. The Island shows less impact from 20th and 21st century development than most areas of comparable size. Unlike other suburban or urban areas, the Island is not radically lit at night. With access restricted to the ferry, all residents funnel through Stella creating a cohesive community, and making this Village the heart of the community.

The Island includes an artistic community. These and the broader artistic community have used the Island as inspiration for artistic works including watercolours, fiction and two significant music festivals. Some more historical artworks depict locations on the Island that can still be seen today.

The development of the Wind Energy Project will certainly transform the Island from pastoral, rural and recreational, to one with a more industrial perspective. Individual views of some heritage structures from some angles may remain unchanged and hopefully any impacts / damages to heritage structures can be avoided or repaired, however, without question, the main vistas either from the mainland or any perspective from the interior of the Island, will contain wind turbines. While the assessment shows photos of a number of vistas, both before and after views, every view will contain turbines.

These views also show a static tower. While in operation the tower blades will be rotating creating a feature more likely to capture one's attention than a stationary feature of a similar size. The committee is concerned that the perspective on the simulated photos of the towers may not clearly show the correct scale of the towers. The height of the towers will also have an impact, causing flickering shadows on some heritage resources and their night time lights will eliminate any opportunity to enjoy those activities associated with an area that experiences a dark, night time sky.

The impact on Loyalist Township's Village of Bath economic and tourism development was not addressed at all in this Draft Heritage Assessment. Significant efforts have been made in recent years to develop the Village of Bath's main street and shoreline views to maintain, develop and protect its historic roots. The heritage landscape views across the channel to Amherst Island from the interpretive centre, dock, park, and Fairfield-Gutzeit House would be completely ruined if industrial wind turbines could be seen to the south. The visitor experience would be greatly depreciated and would put into jeopardy the Village's economic development initiatives.

In light of these concerns, we recommend that the DHA adequately reflect the extent of Amherst Island's rich legacy of built heritage resources and landscapes. This can only be accomplished if the Island as whole is assessed as a CHL.

In conclusion the DHA:

- The report fails to look at the Island and its heritage resources in its entirety. The Island as a whole is a CHL and should be assessed as such.
- The report is lacking completeness in its inventory of the heritage resources on the Island. In our opinion, the assessment as written does not meet the standards set out by the Ministry of Tourism, Culture and Sport. The Heritage Assessment needs to be updated to address these shortcomings and must be re-circulated to the public and the Township for additional comment before the final submission to the Province.
- Where/when resources have been identified in the report, there needs to be a comprehensive assessment of the impacts related to the construction process, especially in the Village of Stella. Alternatives need to be put forward.

The Committee is prepared to work with the consultants to assist in identifying any missed heritage resources and further consider the impacts on these resources.

Barbara Monk
Chairwoman
Loyalist Township Heritage Committee

cc:

Members of the Loyalist Heritage Committee

Doris Dumais

Director

Environmental Approvals Access & Service Integration Environmental Approvals

Access and Service Integration Branch Ministry of Environment

Katherine Kirzati

Heritage Planner

Ministry of Tourism and Culture

Culture Division

Culture Programs Unit

Programs and Services Branch

Jim Sherratt

Team Lead

Archaeology Program

Culture Programs Unit

Ministry of Tourism, Culture and Sport

Sean Fairfield

Algonquin Power & Utilities Corp

Homer Lensink

Director, Energy Projects

Rob Rowland

Senior Project Manager

Stantec Consulting Ltd

LOYALIST TOWNSHIP

Cemeteries Committee

Report 2013-01

It is recommended to Council that the attached minutes of the February 28, 2013 Cemeteries Committee be received and approved, and the following motions be adopted:

- 1) That the Cemeteries Committee receive the report from Judith Harrower and Joyce Haines, as presented, and recommend Council that these comments be forwarded through the REA process to the appropriate Ministries and that the Township take into consideration the vibration and stability of the headstones, stone fences at Pentland Cemetery, as part of the road use agreement, including the use of a third party expert to ensure the understanding of the property before, the stability of the property during, and the repair if needed to the property after construction of the wind turbines is appropriate. Motion carried.
- 2) That a condition survey and monitoring be requested for Glenwood Cemetery in addition to Pentland Cemetery to assess the impact of vibrations on the headstones and vault.
- 3) That the minutes be forwarded to staff for inclusion in the Council response to the Renewable Energy Approval (REA).

ORIGINAL SIGNED BY
Cindy Lawson
Recreation Director

ORIGINAL SIGNED BY Diane Pearce,
CAO

APPROVED BY CAO

FOR COUNCIL CONSIDERATION

LOYALIST TOWNSHIP
Cemeteries Committee
Report 2013- 01

February 28, 2013

6:30 p.m.

The Loyalist Township Cemeteries Committee met on February 28, 2013 at 6:30 p.m.

In attendance were Councillor Jim Hegadorn, Alex Kelly, and Deputy-Mayor Ric Bresee

Regrets: Andrea Cross, Robert Hammond

Staff: Cindy Lawson, Recreation Director; Paul Snider, Director of Administrative Services; Bruce Caughey, Cemetery Superintendent; Cathy Scharf, Recreation Clerk.

Delegations: Judith Harrower, Joyce Haines

2013.01 Adoption of Agenda

Moved by Deputy Mayor Bresee and seconded by Councillor Hegadorn that the agenda be adopted with the following revisions:

1. #5, Approval of Minutes of November 24, 2011 to be changed to Minutes of November 24, 2012.
2. Joyce Haines be added as a delegation.

Motion carried.

2013.02 Declarations of Pecuniary Interest

There were no conflicts of interest declared.

2013.03 Elections

The Recreation Director opened the floor to nominations for the position of Chairperson of the 2013 Loyalist Township Cemeteries Committee.

Moved by Deputy Mayor Bresee and seconded by Councillor Hegadorn that Alex Kelly be nominated to the position of Chairperson of the Cemeteries Committee.

Alex Kelly accepted the nomination. Motion carried.

The Recreation Director opened the floor to nominations for the position of Vice Chairperson of the 2013 Loyalist Township Cemeteries Committee.

Moved by Deputy Mayor Bresee and seconded by Alex Kelly that Councillor Hegadorn be nominated to the position of Vice-Chair. Councillor Hegadorn accepted the nomination. Motion carried.

2012.04 Delegation: Judith Harrower and Joyce Haines re Pentland Cemetery/Wind Turbines- Potential Construction Issue

Judith Harrower introduced Joyce Haines, who has worked with her on Pentland Cemetery restoration projects for many years. Ms. Harrower and Mrs. Haines made a presentation requesting support from the Cemeteries Committee to make a recommendation to Council to ensure the wind turbine project does not have an adverse effect on Pentland Cemetery.

- The affects of vibrations (from construction and vehicles) on the headstones and the stone fences;
- The impact of construction and the view of the maintenance building, if it were built across the road from Pentland Cemetery;
- The view and shadowing of the turbines on Pentland Cemetery; and
- The possibility of disturbing bodies buried outside the cemetery fence and near/under the road, if the transmission line was dug in this area.

The report from Stantec recommends that there be an evaluation of the Cemetery before, during and after construction and the delegates recommended these evaluations be conducted by a third party with expertise in stone fences and headstone restoration.

The Cemeteries Committee agreed that Judith Harrower and Joyce Haines combine their reports to be attached to these minutes.

Moved by Deputy Mayor Bresee and seconded by Councillor Hegadorn that the Cemeteries Committee receive the report from Judith Harrower and Joyce Haines as presented and recommend to Council that these comments be forwarded through the REA process to the appropriate Ministries and that the Township take into consideration the vibration and stability of the headstones and stone fences at Pentland Cemetery, as part of the road use agreement, including the use of a third party expert to ensure the understanding of the property before, the stability of the property during, and the repair if needed to the property after construction of the wind turbines, is appropriate. Motion carried.

Deputy Mayor Bresee requested that, given the timelines (a public meeting scheduled for March 5, 2013) that staff prepare these minutes to be on the

Council agenda Monday, March 4, 2013, since this will be the last Council Meeting to formally respond prior to the meeting on March 5, 2013.

2013.05 Approval of Minutes of November 15, 2012

The minutes should be corrected to read **2012.50** Mr. Caughey, not Graham Quick, placed and reset a number of cornerstones in Glenwood Cemetery.

Moved by Councillor Hegadorn and seconded by Deputy Mayor Bresee that the minutes of the November 15, 2012 Cemeteries Committee Meeting, be approved, as amended. Motion carried.

2013.06 Business Arising from the Minutes of November 15, 2012

- i) 2012.52 Letter from W. McNaught re Gravestone of Philip Ball in Union Lutheran Cemetery

The Recreation Director reminded the Committee that Mr. Ball is anxious to get the headstone fixed and asked Mr. Caughey if he had an opportunity to assess the condition and the repair required with Mr. Quick.

Mr. Caughey responded that Mr. Quick estimates the repair to the headstone is approximately \$500.00.

The Recreation Director will advise Mr. McNaught that the estimated cost to repair the headstone of Philip Ball will be approximately \$500.

The Recreation Director recommended a meeting be set up between Mr. McNaught and Mr. Quick at Union Lutheran Cemetery to confirm the repair to be undertaken. The Township will issue the Purchase Order and invoice Mr. McNaught once the work is completed.

2013.07 Business Arising from Minutes Previous to November 15, 2012

Deputy Mayor Bresee reminded the Committee that a few years back, the Committee asked the former Recreation Director to contact the Conservation Authority with regard to identifying areas with significant overburden in the undeveloped geographic region of Amherstview. This information is required when considering the establishment of a cemetery in Amherstview.

ACTION: The Recreation Director will direct this question to Steve Knechtel from the Cataraqui Region Conservation Authority.

2013.08 Reports- Cemeteries Activities

Mr. Caughey stated there have been 3 burials in 2013.

The following items are a concern:

- the steep incline at the east end of Union Lutheran cemetery creates a challenge for casket burials;
- Stump removal at Glenwood Cemetery in a number of areas; and
- Headstone repairs

Moved by Councillor Hegadorn and seconded by Deputy Mayor Bresee that the Cemeteries Superintendent's report on Cemetery Activities be received. Motion carried.

The Recreation Director mentioned that we are no longer selling plots at this Cemetery. However, there are people claiming spots that were purchased previously. It is difficult to know who has interment rights without supporting documentation.

Discussion took place regarding continuing to improve the Cemetery records. Currently we are not selling plots at Union Lutheran, but it is important to ensure new burials are entered into the GIS system and Committee members discussed how to obtain documentation from previous plot purchasers. Members agreed that the priority should be to focus on records management.

Moved by Deputy Mayor Bresee and seconded by Councillor Hegadorn that staff prepare an outline for a work project aimed to update and clean up the existing documentation for all our cemeteries. This work plan will be brought back to the Cemeteries Committee for recommendation to Council. Motion carried.

Mr. Caughey requested office space and easy access to the cemetery records. The Committee discussed the possibility of office space for cemeteries specifically, records, space to meet with clients, etc.

Deputy Mayor Bresee told Committee members that he made enquires at St. Lawrence College to see if they could assist us with the sub surface imaging in the cemeteries. The College does not have this type of equipment, but would be interested in assisting if we undertook the project.

It was suggested the Recreation Director contact Queen's University to request assistance with ground penetrating radar to locate burials. Deputy Mayor Bresee suggested that the Recreation Director contact Steve Knechtel, at the CRCA for a contact person at Queen's.

2013-09 New Business

- i) Letter from Mary Moritz re: Union Cemetery Memorial

The Recreation Director referred to the letter from Mary Moritz regarding her request to have a memorial wall erected in Union Lutheran Cemetery and her offer to contribute financially to the project. The Cemeteries Committee discussed how the scattered pieces of headstones could be put into a memorial wall.

Moved by Deputy Mayor Bresee and seconded by Councillor Hegadorn

- 1) that staff schedule a Committee meeting at Union Lutheran Cemetery later in the spring/summer to discuss options for a memorial wall;
- 2) The Recreation Director respond to the letter indicating that the Cemeteries Committee is considering a potential memorial wall and is investigating options, and also request more information from Mrs. Moritz regarding the contribution she is proposing;
- 3) The Recreation Director will discuss the specifications with the Director of Engineering Services and bring back the response to the next meeting of the Cemeteries Committee on March 28, 2013.

Motion carried.

ii) Biodegradable Urns

Alex Kelly referred to the article regarding biodegradable urns and she explained what she had researched on the website. Committee members agreed that in the future, municipalities will have to look at more non-traditional requests for burials, and will need to ensure their by-laws comply. It was suggested that the Recreation Director contact the funeral home to ask if they have had any requests of this nature to date.

- iii) Councillor Hegadorn expressed concern for the monuments and vault at Glenwood Cemetery, as well as Pentland Cemetery, and requested it be included in the response submitted for Pentland Cemetery.

Moved by Councillor Hegadorn and seconded by Deputy Mayor Bresee that a condition survey and monitoring be requested for Glenwood Cemetery in addition to Pentland Cemetery to assess the impact of vibrations on the headstones, stone fence and vault. Motion carried.

2013.10 Announcements and Enquiries

None

2013.11 Date of Next Meeting

The date of the next meeting of the Cemeteries Committee is March 28, 2013 at 6:30 p.m. in the Library Meeting Room.

2013.12 Adjournment

Moved by Councillor Hegadorn and seconded by Deputy Mayor Bresee that the meeting of the Cemeteries Committee adjourn at approximately 9:45 p.m.
Motion carried.

CHAIRPERSON

SECRETARY

PROTECTED PROPERTY PENTLAND CEMETERY

Community response to Stantec Protected Properties Assessment Report, specifically section 4.1.3 Pentland Cemetery.

The above mentioned report contains errors and omissions which will be clarified in our response as well as recommendations.

Brief background information, as noted in the Assessment report, omits historical facts such as there are approximately 333 bodies, many of which do not have proper markers. Also not noted is the number of bodies outside the enclosed cemetery located on the south side next to Front Road. This information was obtained through dowsing proving the location of the bodies both inside and outside of the cemetery.

The restoration of Pentland Cemetery was approached by the community in two separate avenues, the restoration of the four Irish Stone Fences (not walls) and the restoration of the headstones. In 2004 the Amherst Island Women's Institute undertook the restoration of the Irish Fences and for the next 8 years restored them exactly to Mr. John Crowe's (original stone mason) specifications. Over 100 volunteers gave of their time not just in the rebuilding but in collecting field stone much of which has gone missing over the last 180 years.

The stone fences erected in the 1860s or in the restoration were not built to withstand the force of vibrations and or the bed rock being disturbed by the movement of heavy equipment which may occur during the construction in the cemetery area by the wind turbine company. These fences are of dry construction meaning there is no mortar or cement holding the field stones in place. It is the interlocking rough field stones coupled with Island clay that provides the stability of the fences.

The restoration of the headstones was also commenced in 2004 and Campbells Monuments of Bellville were awarded the project and who have restored headstones every year since. Community involvement has been extensive also in this side of the restoration. This is an ongoing project based on availability of financial funds but nearly half of the headstones have been restored.

Financial estimates regarding the restoration of both the stone fences and the headstones was over \$150,000 of which \$20,000 remains for the restoration of the headstones.

The impact assessment section –

a) Destruction: There is a high probability that there will be an impact from vibrations on the Irish stone fences and the restored and not restored headstones within the cemetery.

b) Shadows: There will be a project related impact on the cemetery due to the location of the turbines placed south of the cemetery which will impact on anyone enjoying the spiritual ambience of the cemetery.

c) Obstruction of significant views: All views to south, southeast, southwest will be impacted by the turbines/shadows /proposed operations and maintenance building.

d) Audio: This was not addressed in the assessment report. Currently tranquility is an asset to those who come to the cemetery. The noise emitted from the operational turbines will impact greatly on this serene location. There will be additional noise created by the activities at the proposed operations and maintenance building.

Conclusions/Recommendations:

While the planting of trees around the proposed Operation/Maintenance building is appreciated, the views will be impacted by the building until 50-60 years later once the trees are mature, unless evergreens (5-8 feet) are planted surrounding the building.

The inspection of the Irish Stone Fences and all headstones must be inspected prior to, frequently during the construction of and a final in-depth analysis at the conclusion of the project. We suggest that the inspection be undertaken by qualified independent individuals approved by Loyalist Township and financed by the proponent. Due to the interlocking method of construction of these fences, once one is disturbed a large section will then be impacted, as in a domino effect.

Should there be any damage to either the Irish Stone Fences or headstones or any other feature of Pentland Cemetery the repairs should be addressed and repaired immediately by the proponent and at their cost at the conclusion of the project.

It is beyond comprehension that anyone would consider placing the Operations/Maintenance Building opposite an historical site of such importance. It is recommended that the Operational and Maintenance Building be relocated away from Pentland Cemetery as the turbines themselves will already be an overpowering influence from the beautiful, peaceful, spiritual setting.

Respectfully submitted by

Judith Harrower

Joyce Haines

Co-Chairmen of the Pentland Cemetery Restoration Committee

Original signed by both



**association to protect
AMHERST ISLAND**

PO Box 4, 5695 Front Road, Stella, ON K0H2S0.

March 6th, 2011

Mayor Bill Lowry and Councillors,
Loyalist Township,
Odessa, ON K0H 2S0

Dear Mayor Lowry and Councillors,

At the Algonquin Power Company Open House yesterday, the consulting company Hatch presented its own analysis of wind-turbine shadow-flicker to be expected at homes on Amherst Island if the wind development is approved and goes ahead. The Hatch report confirms our own analysis and also confirms the dilemma that we face on the island.

The attached report gives some background to the problem of shadow-flicker on the island..

Earlier APAI/SaveAI had requested a shadow-flicker by-law. Although received favourably by Council, it went nowhere. We are asking that Council restart the process, given

- the very large number of island homes that will exceed the European regulations for shadow flicker and the internationally accepted guideline for shadow flicker (30 hours/year under optimal conditions);
- the signals coming from the new Ontario government that there should be more local input into energy infrastructure development.

The requested by-law reads as follows:

Shadow-flicker at receptors from wind turbines shall be limited to 30 hours per year and 30 minutes per day, calculated for ideal conditions: no cloud cover or intervening vegetation; operating turbines; the plane of the rotating turbine facing the receptor.

As you know, we are in the final stages of the Renewable Energy Approval process and therefore there is some urgency to this request.

On behalf of APAI/SaveAI

John Harrison, Vice President, APAI
harrisjp@physics.queensu.ca

Attachment: Request for a By-Law - Wind Turbine Shadow Flicker

Resubmissions with Revisions

Request for a By-Law - Wind Turbine Shadow Flicker

March, 6th, 2013

Shadow flicker is the flickering shadow that results when the sun passes behind a rotating wind turbine. It is most disturbing and nearly impossible to mask with blinds or curtains. Modern turbines are unlikely to induce epilepsy because the blade rotation rate is too slow. Many jurisdictions have recognized shadow flicker as an annoyance and as a distraction when driving.

A recent, although undated, report on shadow flicker was written for the UK Department of Energy and Climate Change¹. The report reviews the current regulations for a number of countries, guidelines for others and recommendations from a number of planning authorities, developers and consultants. Many regulations are based upon an academic survey by a University of Kiel psychologist in the 1990's. The recommendation was for a maximum of 30 hours per year and 30 minutes per day for optimal conditions for shadow flicker². These conditions are full sun, the turbine operating and the plane of the turbine facing the receptor.

Germany has adopted this recommendation, together with an alternate regulation of 8 hours per year calculated on the basis of realistic cloud cover and wind direction. Belgium, England and Northern Ireland have adopted the 30 hour regulation. Ireland has adopted the combined 30 hours and 30 minutes per day, stating also that a setback of 10 blade diameters is generally sufficient. The general rule in Scotland is a setback of 10 blade diameters. Spain has no regulation claiming that turbines are located far from populated settlement. The Netherlands has a strict limit of 5h 40min with a clear sky. Denmark has a limit of 10 hours per year with average cloud cover. The USA has no regulation; generally, the regulation of wind turbines is left to local municipalities. Ontario has no regulation or guideline on shadow flicker.

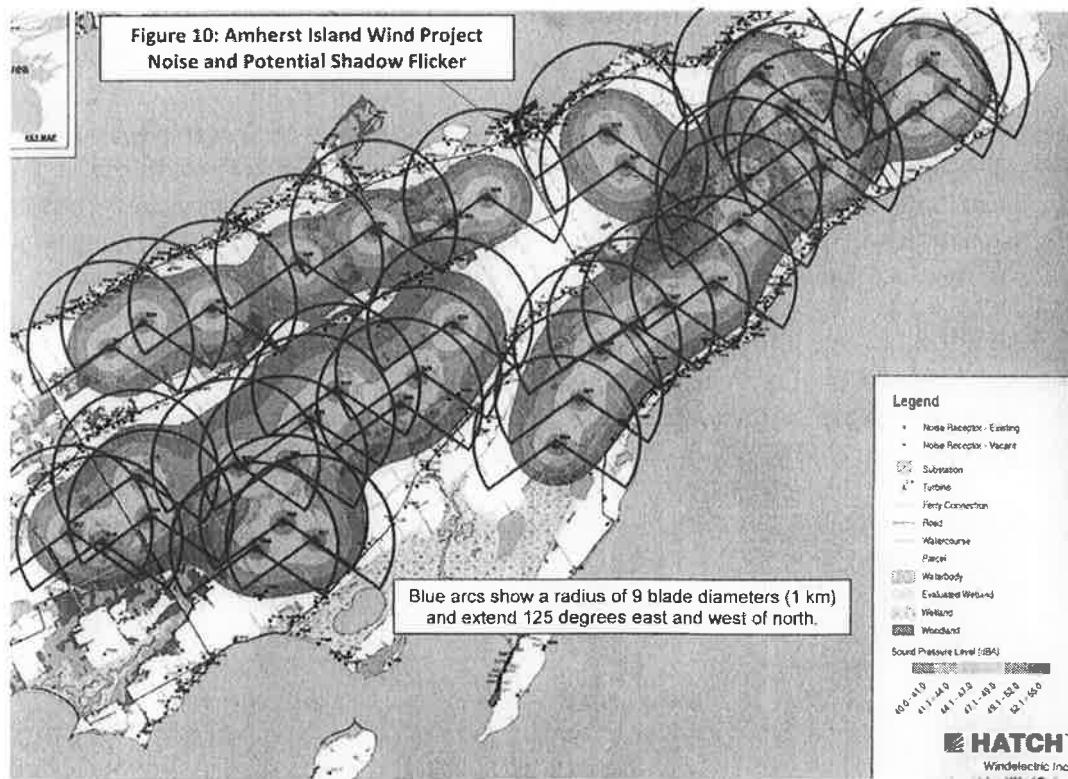
From the survey of developers and planners a common rule of thumb was to use a setback of 10 blade diameters, extending from 130 degrees east to 130 degrees west, or if that was not possible to perform an assessment for homes within 10 blade diameters. A typical blade diameter is 90 metres.

The Algonquin Power Co. 2011 Draft Site Plan made it clear that we have the potential for a significant shadow flicker problem on Amherst Island. The high fixed cost of laying an underwater cable has resulted in a project larger than the island can bear. Therefore the turbines are being packed too close to each other and to homes. The marginal wind resource has resulted in Algonquin Power

¹ Parsons Brinkerhoff "Up-Date of UK Shadow Flicker Evidence Base"

² Unless otherwise stated, all hours in this report will refer to this optimal condition.

resorting to massive turbines with 113 metre blade diameters and 99.5 metre hub heights. The problem can be visualized with the attached map.



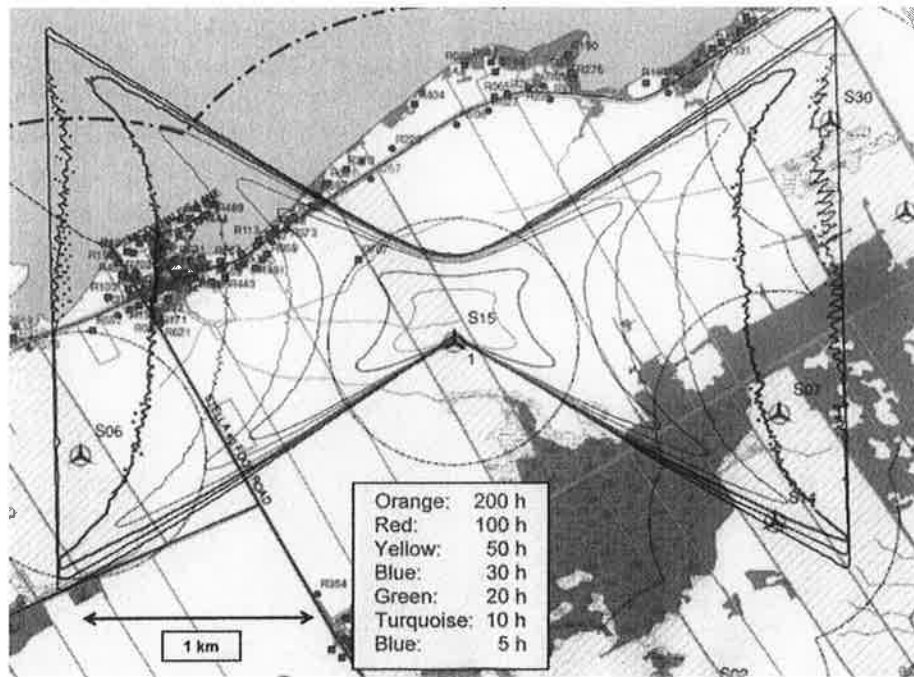
Fixed to each turbine on the map is a pie-shaped figure. It is an arc with a radius of 9 blade diameters (900 metres) extending from 125 degrees east to 125 degrees west. The suggested 10 blade diameter setback for Northern Europe has been reduced to 9 blade diameters to allow for our lower latitude (44° versus 51° for London). On the other hand, the large 99.5 metre hub height will compensate for the lower latitude in throwing a shadow.

Note: the number of homes within the arcs, in some cases well within the arcs; half the homes in Stella; the school; some homes are within two arcs; the potential impact on drivers using Front Road between the Emerald Forty and the Marshall Forty.

At the December 2011 Open House, Algonquin Power was asked to perform a formal shadow-flicker analysis to confirm or allay our worst fears. The promise to do so was made but nothing was forth-coming. By May 2012 we had lost hope that Algonquin would adhere to their promise and so APAI contracted with its own consultant, the Danish company EMD, and to use the recognized WindPRO software. Not having the financial resources for a full analysis, we asked for a single shadow-flicker contour map for a Siemens 2.3-113 turbine on flat ground at the latitude of Amherst Island. There was some correspondence back and

forth because EMD seemed not to have dealt with such a scaled back request and we had to appreciate exactly what EMD can do.

The result was exactly what was needed and we used ingenuity to compensate for our financial resources. First, Wayne Gulden added the turbines to the Google-Earth map of the island and then overlaid the EMD contour map onto every turbine on the Google-Earth image. He counted 50 homes or home-sites on lots of record (together now written as homes) with more than 30 hours/year of shadow flicker. Later John Harrison started with the latest draft site plan and had it enlarged. The EMD contour map was transferred to a transparency with the identical scale. Then it was merely a matter of moving the transparency to every turbine in turn and counting the homes. Counting conservatively he found 45 homes above 30 h/y³ and 8 with more than 50 h/y⁴. It is the view of APAI, SaveAI and many islanders that developing a plan with such large numbers of homes with more than 30 hours/year of shadow flicker is immoral!



Algonquin Power was again asked if they would be doing their own analysis and would the analysis be released during the 60 days for public consultation. The answers were yes and no respectively. At the March 5th Open House, Algonquin Power did have a full shadow-flicker analysis. They also used the Danish company EMD and again the recognized WindPRO software was used. Their

³ The Harrison number was smaller than the Gulden number because by then one turbine had been removed from the draft site plan.

⁴ The above numbers are for non-participating homes. One participant has over 100 hours/year of shadow-flicker; such is the morality of this company.

full analysis showed 48 homes with 30 or more h/y and 9 with 50 or more h/y. This confirmed the (conservative) analysis by APAI.

I have never see numbers like this. Shadow-flicker should have been addressed when developing the site plan, as was the noise analysis, not as an afterthought. Now, more than ever, we need help from Loyalist Township to protect islanders from shadow flicker. We ask Council to resubmit the earlier municipal shadow flicker by-law worded as follows⁵:

Shadow-flicker at receptors from wind turbines shall be limited to 30 hours per year and 30 minutes per day, calculated for ideal conditions: no cloud cover or intervening vegetation; operating turbines; the plane of the rotating turbine facing the receptor.

The earlier request for a by-law was favourably received by Council. However, we understand that the Ontario government did not respond to Council on the matter of approval of the by-law, despite several promptings.

It is possible that the new government will be more favourably inclined. First, we had the opportunity to bring the by-law request to the attention to Kathleen Wynne in her role as Minister of MMAH. Secondly, now Premier, Kathleen Wynne has mentioned on several occasions her desire to allow a larger voice for local government in energy infrastructure decision-making. One example is an email received yesterday by an islander (see the Appendix B):

For APAI/SaveAI
John Harrison, Vice President, APAI
harrisjp@physics.queensu.ca

⁵ The second part of the earlier request has been deleted; some Councillors were uncomfortable with it and I was not able to sway those Councillors; I respect their opinion.

Appendix A: Note the following from the Municipal Act of Ontario (2001 with updates):

Health, Safety and Nuisance

Public nuisances

128. (1) Without limiting sections 9, 10 and 11, **a local municipality may prohibit and regulate with respect to public nuisances**, including matters that, in the opinion of council, are or could become or cause public nuisances. 2001, c. 25, s. 128 (1); 2006, c. 32, Sched. A, s. 68.

Comment: There has been no consideration of shadow flicker in the Ministry of the Environment regulations accompanying the Green Energy Act. This by-law will therefore not contravene any MOE regulation and is in concordance with internationally accepted standards and less constrictive than some.

Appendix B: Thank you for your email to the Ministry of Health and Long-Term Care requesting clarification of the ministry response with the reference HLTC2966MC-2013-148 and the Subject Line: Email to MOHLTC, 13-148, mm. The January 25, 2013 response from the ministry was written in reply to your correspondence dated January 3, 2013, with the Subject line: Health Impact of Wind Turbines - Sworn Testimony of Dr. Jerry L. Punch before the Ohio Power Siting Board - Nov. 5th 2012.

Further to the information that was provided to you in the January 25, 2013 response, you may be interested to know that in the February 19, 2013, Ontario's Throne Speech, there was the following highlight from Premier Wynne's government, "Ensuring municipalities and families have input on the location of energy infrastructure in their communities, while continuing to protect the environment and encourage conservation". The Ministry of Health and Long-Term Care is currently awaiting further details on this implementation of the initiative.

Again, thank you for your email. I do apologize for the confusion that was caused by the ministry correspondence reference methodology.

Sincerely,

M. MacPhail, Correspondence Services
Ministry of Health and Long-Term Care

1.0 Summary

- A Study should be undertaken, as outlined in Part V of the Ontario Heritage Act, to consider designating Amherst Island a Heritage Conservation District; this for the following reasons and as described in this text.
- Ontario Provincial Policy Statement, 2005 Section 2.6.1 states: *“Significant built heritage resources and significant cultural heritage landscapes shall be conserved.”*
- Amherst Island, in eastern Ontario, is a significant Cultural Heritage Landscape (CHL), with a clearly defined boundary, namely the waters of Lake Ontario.
- The island falls into all 3 defined categories of a CHL: designed, evolved and associative.
- The **intangible cultural heritage** of the island, including the extraordinary absence of industrial noise and the close-knit fabric of the community, are highly significant.

2.0 Amherst Island

Disembarking from the Millhaven ferry dock one begins a journey rich in prospects and in anticipation. And disembarking at the Stella dock, one arrives at Amherst Island. Things are subtly but palpably different, for this is a beautiful place: magical, unique and commensurately precious.

Amherst Island might, from afar, be described as long, thin, flat and small, but such a description is misleading, even deceitful. Just as a crucial moment may seem an eternity, so a finite place may seem infinite. Such a place is Amherst Island, and such a moment is this.

Canada is a vast and diverse country often defined by imposed orthogonal and inherited contradictions, a country in which this beautiful island proves an exception to the general rules. Context is everything, perception may be nine tenths of reality and Amherst Island is rare, spectacular and unique. All I know who have visited this place - from North America, Europe, Asia, the Caribbean and beyond - all make the same simple observation: “This place is special.” Special, unique, peaceful, precious, beautiful, rare or even magical; all are applicable here.

Philosophers, poets, theoreticians and academics have spent centuries trying to define the essence of beauty, all generally without success; and magical is even harder to define. Beauty may be recognized but somehow cannot be fully understood. Governments and NGOs working in the cultural heritage field have tried to do the same, and so have agreed upon the concept of the Cultural Heritage Landscape. It is accepted that there are three such landscapes, as defined in the Ontario Provincial Policy Statement 2005, Section 2.6.1, namely “designed, evolved and associative.” This island falls into all three categories, and is uniquely beautiful in so many ways; or magical.

3.0 Amherst Island - The Cultural Heritage Landscape

Returning to the surveyor’s arbitrary grid – something foreign to many lands – Amherst Island is a world-class local exception, a well-kept secret in southern Canada, and in eastern Ontario.

Here the grid does not sit comfortably on meandering shorelines, gentle hills and low-lying wetlands.

After the anticipatory pleasures of the ferry ride – towards a seemingly low land with the occasional rocky outcrop and a verdant skyline punctuated by the occasional silo, one disembarks to discover an unexpected variety of stunning cultural heritage landscapes. That which seemed flat is now hilly, that which seemed small is now large, and that which perhaps seemed ordinary proves instead to be extraordinary. When stopping – the car, the iPhone, the CD player, and the excited chatter – perhaps Saint Paul's Cemetery by the old Manse, where Lake Ontario suddenly reappears, there is a remarkable and most-rare stillness, even a silence. Instead of the general dull background roar of industrialized southern Ontario one instead hears the natural sounds of against background silence: birds, crickets, frogs, distant cows, and even rustling leaves or nearly field grasses and crops; all so rare, so unexpected and so valuable.

The straight-but-undulating Stella 40-Foot is the main transverse road of the island; with the Lower 40-Foot to the east and the Emerald 40-Foot to the west being the less-used transverse counterparts. These three are designed grid-roads. In contrast, the often tree-lined Front (north) Road, the South Shore Road and the Third Concession Road are rare and wonderful exceptions to a dull Canadian orthogonal rule. These latter three are, equally, both designed and evolved roads, and so are cultural heritage landscapes even in themselves.

The two shore-roads generally follow the shorelines, sometimes with immediate open views out over the last of the Great Lakes to one side, but often with diverse collections of fields, barns, houses, gardens and the occasional clutch of old cars between road and water. And on the inland side of these roads are larger fields, often framed by woven-wire fences hung off eastern-cedar posts, then cattle, crops, fallow fields, pastures, ponds, barns beyond. And throughout are the heritage homes built by ancestors of those who still live within, or next door, or down the road but typically still on this isle. These homes and farmsteads point to the often-unacknowledged aspect of intangible cultural heritage, which is the essence of community: the importance of those who created, and who have for centuries lived both on and off (i.e. as farmers), this special land of rare communal interest.

The isolation of Amherst Island has produced an extraordinary, caring, safe and close-knit community. In Canada, and throughout the world, we often know not of and speak not to those who live around, near or even next to us. The convenience of modern transportation has brought the consequence of modern isolation; whereas the inconvenience of the island's isolation created a community of extraordinary closeness and co-operation, support and security. This intangible but palpable cultural aspect must not be overlooked, nor be undervalued: beyond just beautiful, this place is indeed magical.

Returning to more-tangible connections, and moving from the periphery to the centre, the Third Concession takes the heritage high-road. This both is and affords access to the cultural heritage heartland of the island. It provides another unpredictable and ever-changing, interconnected

sequence of vistas, and so is probably the most remarkable of these designed, evolved and associative cultural landscapes. The Third departs westward from the Stella 40-foot some 300 metres north of where it should, thus avoiding marshy land. It runs southwest more than a kilometer, under canopy of old sugar-maples and past ancestral homes, barns, silos and outbuildings, then deviates briefly from the maple-avenue where a perilous zig-zag was removed some decades ago, to two right-angle bends – there to keep the road on the higher ground. At the latter of these turns is the highest point of all roads on the island and, remarkably, the one place where the Third aligns with the surveyor's ignored right-of-way.

Here, as the road again heads southwest, are spectacular views, especially southwards, over farm fields down to Lake Ontario, which extends to the horizon. This glorious prospect, and the landscapes that precede, follow and surround it, are paragons of this province. Continuing southwest, through trees and fields, past old houses, barns and farmsteads and, in summer, one is accompanied by swooping birds, buzzing bees, grazing cattle and idle horses, basking snakes and so much more. We descend gradually towards a great marsh with placid pond on the left and, soon thereafter, another sharp bend prevents one from driving into the water. Here is a long shingle beach, generally of limestone pebbles 450 million years old, formed when this land was near the Equator and deep beneath a tropical sea. Beyond lies a little isle, containing and enhancing the view, an integral if separate part of Amherst Island.

The present cultural heritage landscape is far removed from that last ice age, but the event created this topography. Millennia later the toil and enterprise of Northern European immigrants reshaped and created this landscape, and formed a community, and their descendants, among others, have maintained and enhanced it since. The Third Concession provides further wonderful prospects and experiences over several more kilometers: a stunningly beautiful path through a remarkable landscape, one of few provincial roads so felicitously free from the surveyor's arbitrary and, in this case, must unsuitable intent.

4.0 Conclusion and Recommendation

Amherst Island, with its spectacular location, topography and constantly changing unique vistas – including the roads just described and the adjacent glorious prospects are a provincially significant cultural heritage landscape of both real (tangible) and intangible heritage value. This island is the product of the lives and works of some two centuries of inhabitants who have, since their births collective births created, lived in (and off), and looked after this most-special place.

In the event that the integrity of the island should be compromised – whether physically, socially, culturally, aesthetically or otherwise – that will be a sad day for the Province of Ontario, locally, provincially, nationally and even internationally. The eyes of many watch over Amherst Island and if the magic of this beautiful place, and the associated tangible and intangible cultural heritage values, are irrevocably compromised, the blame will rest in perpetuity on those who permitted such a significant cultural-heritage loss, or destruction, to occur.

A Study should be undertaken, as outlined in Part V of the Ontario Heritage Act, to consider designating Amherst Island a Heritage Conservation District. Please see also some of the relevant government policies as noted below.

Nicholas Holman M.A. (York, UK), OAA, OAQ, CAHP, RIBA, B.Arch and B. Sc. Arch (McGill), BA (Toronto)

Relevant Documents:

Ontario Heritage Act (OHA) especially Part V

Ontario Regulation 9/06

Ontario Provincial Policy Statement, 2005 (especially Part V, Section 2.6.1)

Ontario Heritage Tool Kit (a.k.a. **Heritage Resources in the Land Use Planning Process, 2005**), especially Info Sheet #2 and #5.