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ROMNEY
wind energy centre

ROMNEY WIND ENERGY CENTRE

Summary of REA Technical Reports

Romney Energy Centre Limited Partnership

Document No.: 10021083-CAMO-R-05
Issue: B**, Status:** FINAL
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List of abbreviations

Abbreviation	Meaning
ANSI	Life Science Area of Natural and Scientific Interest
APRD	Approval and Permitting Requirements Document
ARA	Archaeological Research Associates Ltd.
CEAA	Canadian Environmental Assessment Act
DFO	Department of Fisheries and Ocean Canada
DNV GL	GL Garrad Hassan Canada Inc.
EDF EN	Électricité de France Energies Nouvelles
ESA	Endangered Species Act
EPA	Ontario Environmental Protection Act
Hydro One	Hydro One Network Inc.
IBA	Important Bird Areas
IESO	Independent Electricity System Operator
LTVCA	Lower Thames Valley Conservation Authority
MNRF	Ontario Ministry of Natural Resources and Forestry
MOECC	Ontario Ministry of Environment and Climate Change
MTCS	Ontario Ministry of Tourism, Culture and Sport
MTO	Ontario Ministry of Transportation
MW	Megawatt
NIA	Noise Impact Assessment
OEC	Ontario Electrical Code standards
OGSR	Oil, Gas and Salt Resources
OEB	Ontario Energy Board
O. Reg	Ontario Regulation
PDR	Project Description Report
PSWs	Provincially Significant Wetlands
REA	Renewable Energy Approval
SCADA	Supervisory Control and Data Acquisition
SARA	Species at Risk Act
TC	Transport Canada
WTG	Wind Turbine Generator

1 PREAMBLE

Romney Energy Centre Limited Partnership (the "Proponent") is proposing to develop the Romney Wind Energy Centre (the "Project") which is subject to *Ontario Regulation (O. Reg.) 359/09* (Renewable Energy Approvals [1] under Part V.0.1 of the *Ontario Environmental Protection Act* (EPA)), as amended. The Proponent was awarded a contract for this Project in March 2016 from the Independent Electricity System Operator (IESO) under the Large Renewable Procurement (LRP), and is seeking a Renewable Energy Approval (REA) from the Ontario Ministry of the Environment and Climate Change (MOECC). The Project will be owned and operated by Romney Energy Centre Limited Partnership, a partnership Électricité de France Énergies Nouvelles Canada (EDF EN)a and Aamjiwnaang First Nation. The Municipality of Chatham-Kent has also been provided with an option to participate in the Project.

This Project with a total nameplate capacity of up to 60 megawatts (MW) is considered to be a Class 4 wind facility. A total of 18 wind turbine locations are being permitted for the Project.

This report was prepared in accordance with *Ontario Regulation 359/09* and support from the MOE's Draft Aboriginal Consultation Guide [2].

This report provides a summary of the following documents to be submitted as part of the REA application to the MOE:

- Project Description Report;
- Construction Plan Report;
- Design and Operations Plan Report;
    - Archaeological Assessments;
    - Cultural Heritage Assessment;
    - Natural Heritage Assessment and Environmental Impact Study;
    - Water Body Report;
    - Noise Impact Assessment; and
- Decommissioning Plan Report.

2 GENERAL INFORMATION

2.1 Location of Project

The Romney Wind Energy Centre is located in southwestern Ontario, within the Town of Lakeshore and the Municipality of Chatham Kent, Ontario. More specifically, the Project is located south of Highway 401, extending along Richardson Sideroad and Wheatley Road near the community of Wheatley, Ontario. It has a total Project study area of approximately 5,093 ha.

Project components will be mostly installed on privately-owned agricultural lots within this area. It is anticipated that the electrical collector lines including junction boxes will be partially located within public road allowances. The Project will connect to the existing 230 kV transmission line located within the Town of Lakeshore and close to Richardson Side Road. There is a short section of transmission line (less than 1 km) proposed for the Project to be built by either the Proponent or Hydro One Networks Inc. (Hydro One) from the Point of Common Coupling (PCC) to the Point of Interconnect (POI).

The proposed Project study area is located on private and public lands; the geographic coordinates of the extreme points of the Project study area are provided in Table 2 1. Figure 2-1 presents the location of the Project study area.

Table 2-1: Geographic Coordinates of Project Study Area

Site Location	Easting	Northing
North	378764	4678793
East	386458	4665518
West	376264	4669394
South	379094	4662491

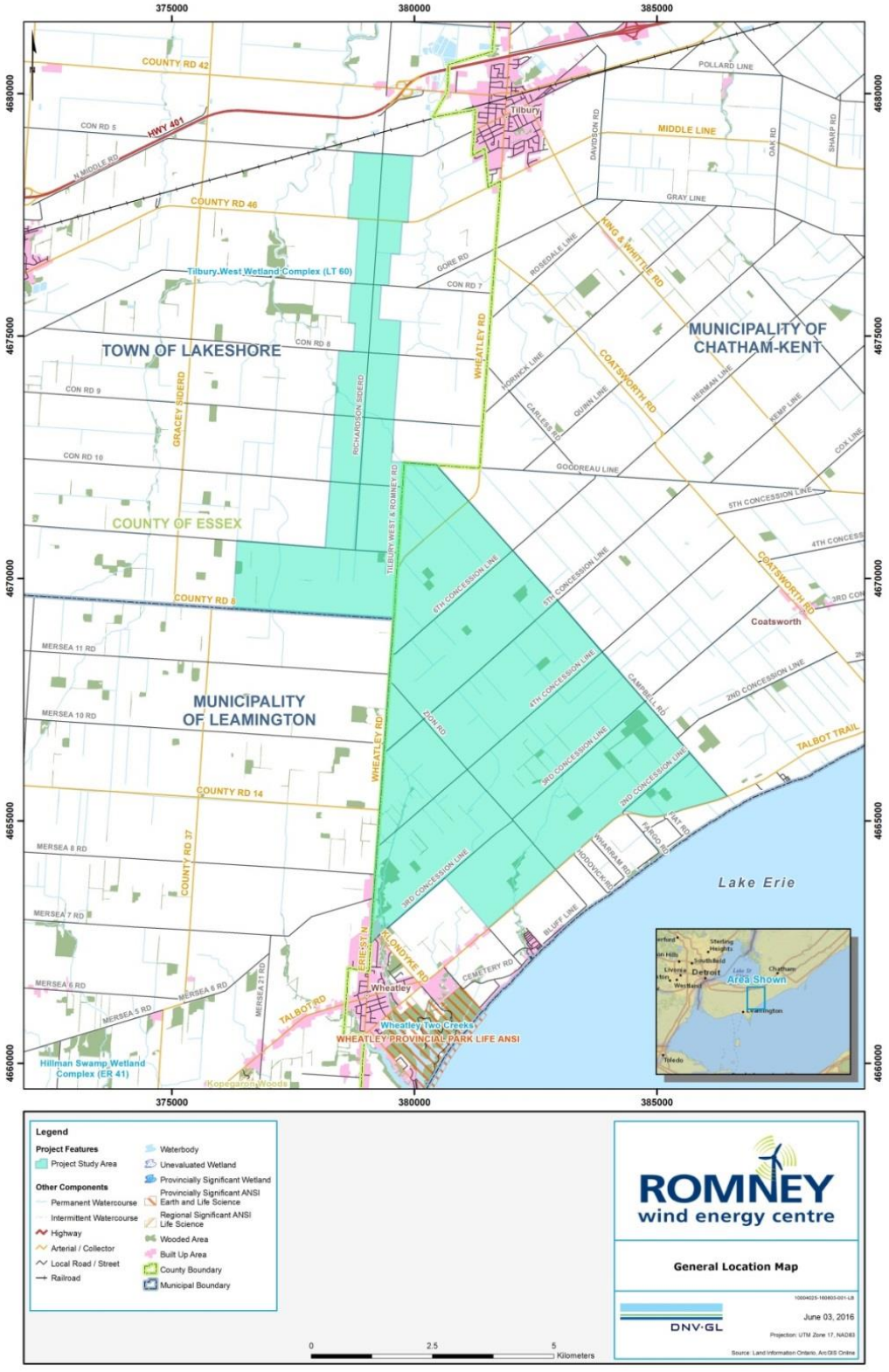

Figure 2-1: General Project study area

2.2 Contact Information

2.2.1 Project Proponent

The Proponent is Romney Energy Centre Limited Partnership, a partnership between EDF EN Canada and Amjiwnaang First Nation. The primary contact for this Project is:

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2.2.2 Project Consultant

GL Garrad Hassan Canada Inc. (hereafter referred to as "DNV GL"), a member of the DNV GL Group and part of the DNV GL brand, has been retained to lead the REA for the Project. The Environmental and Permitting Services team of DNV GL has completed mandates throughout Canada, the United States and in many other parts of the world. These mandates include permitting management, permit applications, environmental impact assessment, and various environmental studies for more than 15,000 MW of wind and solar-PV projects.

DNV GL's environmental team is composed of over 20 environmental professionals, including environmental impact specialists, planners, GIS, technicians and engineers. DNV GL has no equity stake in any Project. This rule of operation is central to its philosophy, distinguishing it from many other players and underscoring its independence.

DNV GL's contact information is as follows:

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3 DOCUMENT SUMMARIES

3.1 Project Description Report

The below section provides a summary of the Project Description Report (PDR) [3], which is the main summary document for a REA application.

3.1.1 Facility Components

The wind turbine generators of the Project will convert the wind's energy into electricity to feed into the Ontario IESO transmission system. This Project with a total nameplate capacity of up to 60 megawatts (MW) is considered to be a Class 4 wind facility. A total of 18 wind turbine locations are being permitted for the Project. The proponent is currently evaluating different wind turbine technologies for the Project. The Project will be made up of the following main components:

- Wind turbine generators;
- Meteorological towers;
- Access roads and crane pads;
- Electrical collector system, junction boxes substation and interconnect;
- Operation and maintenance building; and
- Laydown and storage areas (including temporary staging areas).

The main components are described in greater detail in section 3.1 of the PDR.

3.1.2 Project Activities

A wind energy project consists of three main phases: (i) site preparation and construction, (ii) operations, and (iii) decommissioning.

3.1.2.1 Site Preparation and Construction Phase

The Site Preparation and Construction Phase includes all activities from initial work planning to site rehabilitation which can extend past commissioning. The Proponent will obtain all required approvals, undertake sites surveys, conduct a geotechnical assessment, preliminary and detailed engineering and secure equipment procurement (wind turbines, substation) during the pre-construction period. The Proponent will continue to engage with First Nation and Aboriginal communities as well as local landowners, the surrounding community, federal, provincial and municipal authorities.

The main activities that will be undertaken during the Site Preparation and Construction Phase include:

- Mobilisation on site;
- Clearing and grubbing of vegetation within construction limits;
- Site grading;
- Preparation of the construction staging area;
- Construction of new private access roads or upgrading existing public roads, if necessary;
- Trenching and installation of electrical collector lines;

- Excavation and pouring of concrete turbine foundation;
- Construction of crane pads;
- Delivery of equipment (turbines, cables, substation) and vehicles;
- Wind turbine assembly and installation;
- Application of erosion mitigation measures;
- Construction of the substation;
- Construction of the O&M building;
- Installation of the permanent meteorological tower;
- Installation of the microware tower (if applicable);
- Clean-up and reclamation of agricultural lands; and
- Turbine commissioning.

More specific details about the Site Preparation and Construction phase is provided in the Construction Plan Report [4], as part of the complete REA package.

3.1.2.2 Operations Phase

The Project will require full-time technical and administrative staff to maintain and operate the facility. The primary workers will be wind turbine technicians along with a site supervisor. The wind turbines will be operating and generating electricity when the wind speed is within the operating range for the turbine and there are no component malfunctions or maintenance activities.

Each turbine has a comprehensive control system that monitors the subsystems within the turbine and the local meteorological conditions to determine whether the conditions are suitable for operation. If an event occurs which is considered to be outside the normal operating range of the turbine (such as low hydraulic pressures, unusual vibrations or high generator temperatures), the wind turbine will immediately take itself out of service and report the condition to the Operations Centre. A communication line connects each turbine to the Operations Centre which closely monitors and, as required, controls the operation of each turbine. The wind turbine system will be integrated with the electric interconnection Supervisory Control and Data Acquisition (SCADA) to ensure that the Project critical controls, alarms, and functions are properly coordinated for safe, secure, and reliable operation.

The main activities that will be undertaken during the Operations Phase include:

- Operation of wind turbines and substation;
- Routine turbine maintenance;
- Unplanned turbine maintenance;
- Conduct natural heritage and noise compliance surveys;
- Follow-up with any complaints from neighbors;
- Transportation of Project staff; and
- Meter calibrations.

More specific details about the Operations phase is provided in the Design and Operations Report [5].

3.1.2.3 Decommissioning Phase

The anticipated life of the Project is estimated to be a minimum of 20 years as per the IESO power purchase agreement however modern wind turbines are very reliable and the major components are designed to operate for approximately 25 years. If the facility is to be decommissioned and the turbines are to be

removed at the end of its service life or during construction, the procedures will be similar to the construction phase, but in reverse sequence.

The procedures will include:

- Mobilisation on site;
- Preparation of temporary staging areas;
- Upgrading access roads to allow access to dismantling equipment;
- Dismantling or removal of Project components (wind turbines, substation, meteorological towers, microware towers and operation and maintenance building);
- Removal of wind turbine foundation: The top 1 m of the turbine foundations will be removed and replaced with clean fill and stockpiled topsoil. This will be contoured to allow cultivation in the case of agricultural lands;
- Underground electrical collector lines will be de-energized and cut, the ends buried to 1 m below grade, and left in place;
- Overhead electrical lines and poles, if any, that are not shared with Hydro One will be removed and the holes will be filled with clean fill;
- Transportation of equipment and material: all materials will be recycled, where possible, or disposed off site at an approved and appropriate facility; and
- Reclamation of agricultural lands (conditional to approval from landowner).

More specific details on the Decommissioning Phase are provided in the Decommissioning Plan Report [6] as part of the complete REA application package.

3.1.3 Land Ownership

Turbines and substation will be located entirely on private land and the Proponent currently holds an "option to lease land" agreement for the properties on which Project components are proposed. Public road allowances (rights-of-way) will be used in some cases for electrical collector lines. The Project is not located on Crown land.

A legal description of the land parcels will be provided in the final REA application.

3.2 Construction Plan Report

The Construction Plan Report (CPR) describes the activities that will take place during the construction phase of the Project and identifies the measures that will be implemented to mitigate any potential negative environmental effects that will or are likely to occur during this phase.

3.2.1 Timing of Construction

Commencement of the construction phase is anticipated to occur in the winter or spring of 2018/2019 at the earliest. In any scenario, construction activities leading up to Project operations are anticipated to take approximately 10-12 months and will comply with *Endangered Species Act* requirements. The exact calendar dates of construction activities are yet to be determined and will be based on the timing of the REA approval. Upon award of the construction contract, the selected general contractor will be required to provide an updated schedule.

Testing and commissioning will occur over the last few weeks of construction in accordance with the Electrical Safety Authority (ESA) and Hydro One requirements, under their supervision.

3.2.2 Construction and Installation Activities

The construction and installation activities include all activities from initial work planning to testing of the wind energy project before commissioning and site reclamation.

The following main activities will be undertaken during the Site Preparation and Construction Phase.

3.2.2.1 Surveying and Geotechnical Study Activities

Surveys will be required for the micro-siting of the turbines, crane pads, access roads, electrical collector lines, O&M building, meteorological towers(s) and the substation. Crews will drive light trucks to reach sites primarily using existing roads. They will then survey the site on foot and mark the locations using stakes. For the wind farm site, the surveys will typically take one to two days per turbine location. Typically, light trucks and a track-mounted drill rig(s) or excavator(s) (should test pits be required for geotechnical sampling), drills the borehole and collects geotechnical information. These activities will take place prior to construction and are not season-dependent. This operation typically uses two operators and requires one to two hours per site.

3.2.2.2 Culvert Installations

To the extent possible, Project infrastructure will be sited to minimize the number of water crossings. The Water Assessment and Water Body Reports, describe all water crossings and associated mitigation measures, as part of the complete REA package.

Where instream work is required (i.e. installation of culvert), timing windows and permitting requirements will be discussed with the Lower Thames Valley Conservation Authority (LTVCA) in advance of any work taking place. This construction task would utilize one or more excavator(s), dump truck(s) and compaction equipment. These activities will take place during construction and in some cases, will be subject to timing restrictions associated with in-water works.

3.2.2.3 Access Roads, Crane Paths and Crane Pads

This activity generally involves the planning of roadway surfacing and road limits, as well as the stabilizing of backfill, excavated material, and stripped soil. Whenever possible, new road construction and upgrades will use existing material on-site, such as excavated material from turbine sites. The required amount and type of gravel will be the responsibility of the general contractor; an effort will be made to obtain gravel locally, if feasible. Typically trucks, graders, and bulldozers will be required for these activities as a minimum. This activity will preferentially be completed in late spring or summer to take advantage of typically drier weather.

3.2.2.4 Transportation

Transportation of the turbine parts and sections will be done using trucks. Up to thirteen heavy-load hauling trucks will be required for each turbine installed, i.e. one truck for each tower section (up to seven), one for the nacelle, one for the hub, one for the cone, and one for each blade (three). Trucks or heavy-load hauling trucks will also be used to bring to the site concrete for foundations, cranes, electrical components, and other equipment.

All proposed transportation routes will be discussed with the appropriate municipal engineering departments prior to construction. This activity will preferentially be completed in late spring, summer, fall or early winter to take advantage of typically drier weather and avoid load restrictions.

3.2.2.5 Wind Turbine Foundations

A spread footing foundation design will be used at each of the proposed turbine locations. This activity includes the excavation of soil at each of the turbine sites, preparation of the excavation base which may include the placement and compaction of gravel fill, the installation of reinforcing steel (rebar) and the pouring of concrete foundations. For typical spread footing foundations, the anticipated dimensions of the foundation excavation are approximately 20-25 m diameter with a depth of approximately 3 m.

Typical equipment required for this activity includes flatbed trucks (four to six) for the delivery of rebar, turbine mounting assembly and forms. Truck mounted crane or rough terrain forklift for unloading and the placement of rebar and forms. Concrete trucks for delivery of concrete (60-80 loads). Construction trucks (three to four vehicles with multiple visits). Dozer, loader, excavator, vibratory compactor, and dump trucks to backfill and compact foundation and remove surplus excavated materials. This activity will preferentially be completed in late spring, summer, fall or early winter to take advantage of typically drier weather and avoid load restrictions.

3.2.2.6 Wind Turbine Assembly

Tower assembly will be decided by the general contractor based on the final wind turbine technology. Blades may be lifted one at a time, or a fully assembled rotor with all three blades may be elevated to the nacelle. The latter case would require a larger footprint area at the base of the tower and this assembly area would consist of the permanent turbine, the crane pad, and any laydown area. At a minimum, service trucks, two cranes, graders, and bulldozers will be required for this activity. This will preferentially be completed in summer or early fall to take advantage of typically drier weather Total assembly time will be four to five days per turbine depending on the wind.

3.2.2.7 Installation of Electrical Collector Lines

All electrical installation work will meet or exceed Ontario Electrical Safety Code regulations**.**

Underground cabling will be placed underneath the concrete tower foundations and buried, linking the turbines to the Project substation. While construction or environmental constraints may require that the electrical collector lines to be installed in conduits (via directional drilling) or overhead on wooden poles, it is expected that the electrical collector lines for the Project will be directly buried through either a trench or cable plow installation method. Typical equipment required for this activity consists of, at a minimum, trucks, graders, backhoes, track excavators, cable plow and drill rig. This activity will preferentially be completed in late spring or summer to take advantage of typically drier weather.

3.2.2.8 Substation and Grid Interconnection

Components required for the substation and interconnection are likely to be prefabricated and transported to site. The components will be supported by either cast-in-place concrete foundations/slabs-on-grade or structural steel piers and the entire substation area will be graded and overlaid with a clear stone granular material. Typical equipment required for this activity consists of earthworks equipment, small trenchers,

crane(s), forklifts, and concrete trucks and a bulldozer. This will preferentially be completed in late spring or summer to take advantage of typically drier weather.

3.2.2.9 Construction Staging and Laydown Areas

During construction of the staging and laydown areas, topsoil will be stripped, stockpiled and reused to the extent possible for site landscaping and reclamation. Gravel will be laid and compacted, the depth of gravel will vary dependent upon site conditions/requirements at the time of construction. Once construction is complete, the areas will be restored to a condition acceptable to the landowner. Any topsoil that is removed and/or stockpiled during construction will be redistributed as appropriate, during site clean-up and restoration. This will enable the land to be returned to its prior use following the construction of the Project. Typical equipment required for these activities consists of earthworks equipment, small trenchers, a crane, forklifts, compactors and concrete trucks and a bulldozer. This will preferentially be completed in late spring or summer to take advantage of typically drier weather.

3.2.2.10 Operations and Maintenance Building

If the construction of a new O&M building is determined to be required, it may require a new permanent access road. A small permanent parking area may also be constructed adjacent to the O&M building to accommodate staff vehicles. To prepare for construction of the O&M building and parking area, topsoil will be stripped, stockpiled and reused to the extent possible during site reclamation and landscaping. Excavations of approximately 1-2 m depth will be required for building foundations and for placing underground utilities. Concrete would be necessary for the building foundations. Excavations will be backfilled using granular fill and excavated materials. Typical equipment required for these activities consist of earthworks equipment, small trenchers, crane(s), forklifts, compactors and concrete trucks and a bulldozer. This will preferentially be completed in late spring or summer to take advantage of typically drier weather.

3.2.2.11 Permanent Meteorological Tower

The permanent meteorological tower(s) will be installed using cranes and secured to a concrete (monopole) foundation or with guy wires tied off to anchors, depending on the tower type that is selected for the Project. Local geotechnical conditions will be considered in the foundation design. Details on tower location, height and lighting will be submitted to NAV Canada and TC for review and approval prior to installation. Typical equipment required for this activity consists of small trenchers, crane and concrete trucks and a bulldozer. This will preferentially be completed in late spring or summer to take advantage of typically drier weather.

3.2.2.12 Clean up and Reclamation Strategy

Waste and debris generated during the construction activities will be collected and disposed of at an approved facility. All reasonable efforts will be made to minimize waste generated throughout construction. During construction, industry best practices for spill prevention will be utilized. In the highly unlikely event of a spill, it will be cleaned up immediately and any impacted soils will be removed from the site and disposed of at an approved facility in accordance with the applicable regulations. At the conclusion of construction, vehicles and construction equipment will be removed from the site.

High-voltage warning signs will be installed at the substation and elsewhere, as appropriate.

Where it is no longer required, gravel will be removed from crane pads, turbine assembly areas, and access roads. The gravel will likely be placed as a top layer on the new project roads, or in parking areas. Those disturbed areas will then be de-compacted, and returned to their prior use. Any remaining stock piled material generated from excavation will be handled in an approved and appropriate manner.

3.2.2.13 Turbine Commissioning

Turbine commissioning will occur once the wind turbines and substation are fully installed and Hydro One is ready to accept grid interconnection. The commissioning activities will consist of testing and inspection of electrical, mechanical, and communications systems.

Temporary portable generator sets may be used to electrically commission the turbines prior to connection to the grid. The generators are required for approximately two days per turbine. Typical equipment required for this activity consists of support trucks which will be driven to the construction site and temporary portable generators.

3.2.2.14 Water Wells

The Project will not negatively affect water wells in proximity to the Project as a result of aquifer disturbance from driving piles, as none are required for the proposed foundation type. The majority of dwellings located within the Project study area have been confirmed to be supplied potable water by the local municipality. Appendix B of the CPR report presents the existing water distributions system for the Municipality of Chatham Kent and Town of Lakeshore. This map also presents the local geological formations (Hamilton Group and Dundee Formation).

The Project turbines are confirmed to be located outside of the Designated Vulnerable Areas (DVA) identified in the Source Protection Plan (SPP) [15]. Any construction activities proposed in proximity to surface water will also be permitted through and in consultation with the MNRF and the LTVCA.

A hydrogeological assessment of the turbine locations will be conducted based on geotechnical data to evaluate the potential for construction impact. Any residents that may be supplied by private wells within the vicinity of a proposed turbine that are identified after generating a spatially accurate well database for the Project will be assessed. Based on this assessment, and if required, a qualified firm will prepare a well testing and monitoring plan.

3.2.3 Summary of Potential Environmental Effects

The following potential environmental effects have been addressed in the Construction Plan Report and appropriate mitigation measures have been provided:

- Cultural Heritage (Protected Properties, Archaeological and Heritage Resources);
- Terrain and soils;
- Aquatic Resources;
- Wildlife;
- Air;

- Noise; and
- Local and Provincial interests, land use and infrastructure.

The Environmental Effects Monitoring Plan for the construction phase of the Project are explained in further details in Section 5 of the CPR.

3.3 Design and Operations Plan Report

The Design and Operations Report (DOR) describes the design considerations and activities that will take place during the operation phase of the Project and identifies the measures that will be implemented to mitigate any potential negative environmental effects that will or are likely to occur during this phase.

3.3.1 Facility Components

The Project will be made up of the following main components:

- Wind turbine generators;
- Meteorological towers;
- Access roads and crane pads; and
- Electrical collector system, junction boxes, substation and interconnect;
- Operation and maintenance building; and
- Laydown and storage areas (including temporary staging areas).

Facility components have been clearly depicted in the site plans included within Appendix A of the DOR and are described in greater detail within Section 4 (Facility Design Plan) of the DOR.

3.3.2 Facility Operations Plan

The Project's Operations Phase is not resource intensive. Typical activities pertain to computer-controlled operation of turbines and maintenance.

Each turbine is connected to a Supervisory Control and Data Acquisition system (SCADA) which monitors a large number of meteorological and mechanical parameters in real time. If this system detects any condition outside of the normal operating conditions of the turbine (i.e. high wind speeds, overheating of the generator, short circuits, etc.), the turbine will be immediately stopped.

Routine preventative maintenance activities are scheduled at six-month intervals with specific maintenance tasks assigned to each interval. Maintenance is done by removing the turbine from service and having two to three technicians climb each tower and spending the necessary time to carry out the maintenance activities.

It is anticipated that the Operations Phase's activities will mainly be routine maintenance activities with scheduled maintenance tasks. Maintenance may consist of the following activities:

- Routine turbine maintenance;
- Electrical system maintenance, as necessary;

- Access road maintenance, as necessary.
- Waste management, as necessary.

Modern wind turbines are very reliable and the major components are designed to operate for approximately 25 years. In the very unlikely that a component failure occurs despite the high reliability of the turbines fleet-wide, the turbine will be taken out of service until the faulty component is replaced. These repairs can usually be carried out by a 2-3 technicians.

Unscheduled events involving the replacement of a major component such as a gearbox or rotor are rare. In the very unlikely event they do occur, the use of large equipment, sometimes as large as that used to install the turbines, may be required. Typically, only a small percentage of turbines would need to be accessed with large equipment during their operating life.

3.3.3 Features of the Project Area

Desktop and field studies were undertaken to identify and describe the features in the area that may be affected by the construction, decommissioning and/or operation of the wind energy facility. The following sections summarize the results of these studies.

3.3.3.1 Cultural Heritage (Archaeological and Heritage Resources)

Detailed archaeological assessments have been prepared and submitted to the Ministry of Tourism, Culture and Sport (MTCS) for acceptance and recommendation. A copy of the complete reports and confirmation letter from the MTCS will be included in the complete REA application package for this Project.

Archaeological Features

Stage 1 and 2 archaeological assessments [7] were conducted by Archaeological Research Associates Ltd. (ARA) and will be submitted to the MTCS for review.

The results of the studies indicated that one site (Site 7), containing an isolated fragment of Pre-Contact lithic debitage, was located within the Project location. The artifact did not possess any significant diagnostic value. The reports concluded that no further archaeological assessments are recommended for the Project location. All archaeological field work was conducted according to the MTCS's 2011 Standards and Guidelines for Consultant Archaeologists [8]. One or more of the identified areas of archaeological potential within the project locations of T2, T6/O&M, T9, T10, T11, T14, T17, T19, the O&M and the POI were not subject to Stage 2 survey due to inappropriate field conditions. All remaining field work will be completed during the 2017 season and documented in a separate report.

Copies of the Stage 1 and 2 archaeological assessments are provided in Appendix D of the Design and Operations Report (DOR). These reports will be accepted into the Ontario Public Register of Archaeological Reports by the MTCS prior to the complete REA application package being submitted to the MOECC.

Heritage Features

A heritage assessment for the Project was conducted in February 2017 [5] by ARA. The assessment concluded that there are no Protected Properties within or abutting the area of the proposed transmission line. Forty-eight Built Heritage Resources (BHRs) and two Cultural Heritage Landscapes (CHLs) were found to have known or potential cultural heritage value or interest (CHVI), as per the Ontario Heritage Act. Among these, five BHRs and one CHL were located on participating properties, while the others were located

on properties abutting participating properties and/or electrical collector line. None of these resources are recognized through a designation or listing in the Municipal Heritage Register. In respect to the six identified cultural heritage resources, the change in land use from agricultural land to renewable energy production will require minimal land to be removed from agricultural use during construction (approximately 2 ha) and during operations the affected land will be reduced to approximately 0.1 to 0.2 ha. All affected land will be returned to its former use at the end of the Project's life.

One identified cultural heritage resource could potentially be impacted by vibrations related to the installation of collector cables as it falls within the construction vibration zone of influence (ZOI). If possible, construction activities will be setback such that the heritage feature is not within the ZOI. If this avoidance measure cannot be implemented, vibrations will be minimized using smaller equipment. If this minimization measure cannot be implemented, a more detailed vibration analysis will be undertaken by a qualified engineer to better understand potential impacts.

Assuming the implementation of the planned mitigation measures and a cultural heritage contingency plan (if necessary), significant impacts to these heritage features are unlikely [5]. A copy of the Heritage Assessment Report is provided in Appendix C of the DOR.

3.3.3.2 Natural Heritage and Environmental Impact Study

A Natural Heritage Assessment (NHA) as per the requirements in the NHA Guide for Renewable Energy Projects [10] was prepared in four separate reports (Records Review, Site Investigation, Evaluation of Significance and EIS) and will be submitted to the MNRF for review and comment prior to submission of the REA applications. These NHA reports are part of the complete REA application package for this Project [11].

The Project area lies within the Municipality of Chatham Kent and the Town of Lakeshore. The NHA suggests that the Project effects on natural heritage features will be limited and will generally be avoided, provided that the Project design follows REA setback regulations and that proper mitigation measures are applied. The majority of the habitat in the Project study area is composed of deciduous, mixed, and coniferous forest, a watercourse, and the occasional wetland.

The NHA indicates that there are no known Provincially Significant Wetlands (PSWs), Provincially Significant Life Science Areas of Natural and Scientific Interest (ANSI), Important Bird Areas (IBAs), Bird Sanctuaries or National Wildlife Refuges within the Project study area.

A detailed evaluation of significance of all potentially significant natural features and wildlife habitats within 120 m of the Project Location was completed. Of those evaluated as significant, three Significant Wildlife Habitats (SWHs) required detailed consideration as part of the EIS. The three SWHs include a rare vegetation community, bald eagle (Haliaeetus leucocephalus) habitat and shellbark hickory (Carya laciniosa) habitat. Bald eagle surveys were conducted at the 1 candidate bald eagle habitat, BAL-001, in 2016. Surveys were conducted from March to mid-August to assess whether the nest was active and to record the behaviour and habitat use of the bald eagles, including any successful juveniles, to support the delineation of habitat zones surrounding the nest in accordance with the Bald Eagle Habitat Management Guidelines (OMNR 1987). The behavioural study focused on the flight patterns, sight lines, perching habitat, and foraging habitat of the nesting eagles and any juveniles in order to refine the habitat zones around the nest. Following the delineation of the habitat zones, project infrastructure was sited well outside of the primary and secondary zones for the eagles. All wind turbines have been sited outside of the primary, secondary and tertiary zones and are located greater than 800 m from the nest. No construction activities

will be permitted to occur within the tertiary zone from March 1st to May 15th, during the critical period for bald eagles.

In addition to wildlife habitats that were confirmed to be significant throughout the evaluation of significance, several other wildlife habitats that have potential to be considered significant have been identified. For the purpose of the NHA EIS submission, these habitats have been presumed to be significant. Wildlife habitats that have been presumed to be significant for the purpose of the EIS and require pre-construction surveys include the following: four eastern wood-pewee (*Contopus viren)* habitats, four louisiana waterthrush (*Parkesia motacilla)* habitats, two cattail Sedge *(Carex typhina)* habitats, two pumpkin ash *(Fraxinus profunda)* habitats, two shumard oak (*Quercus shumardii*) habitats and one amphibian breeding habitat (woodland).

Assuming the implementation of the planned mitigation measures, monitoring programs, and contingency plans (if necessary), there is not expected to be any significant impacts to natural heritage features, including wetlands, or SWHs [11].

3.3.3.3 Water Bodies

The Water Body and Water Assessment Reports that characterize the aquatic natural features and habitats in the Project area can be found as part of the complete REA application package.

Comprehensive site investigations for the Project were undertaken by NRSI biologists between 4 October 2016 and 6 October 2016. These site investigations included site-specific habitat assessments of water bodies that are situated throughout the Project area.

Throughout the completion of these studies, NRSI biologists confirmed that a total of 32 permanent or intermittent water bodies are located within the Project area, 18 of which have been identified as overlapping the Project location in one or more locations. The additional 14 confirmed permanent or intermittent water bodies are situated within 120 m of the Project location, ranging in distance from >0.10-110 m but without any direct overlap with the Project components. A total of 36 non-WB stations were assessed during the waterbody evaluation. No lakes, lake trout lakes or seepage areas were identified to be within the Project area.

Water takings, if required, will be conducted as outlined in the Water Body and Water Assessment Reports.

No significant impacts are anticipated on the identified water body features as a result of the development of the Project following the implementation of the proposed mitigation measures [12].

3.3.3.4 Noise Impact Assessment

The Project study area is considered to be Class 3 (rural) and is defined as a rural area with an ambient noise dominated by natural sounds, with little or no road traffic. Class 3 areas are often the following:

- A small community with a population of less than 1,000;
- An agricultural area;
- A rural recreational area such as a cottage or a resort area; or
- A wilderness area.

As such, ambient sound levels within the study area and on adjacent lands are typical of rural areas of Ontario, with sounds originating from nature, residential activities, agricultural activities (tractors and other machinery), vehicle traffic, and ambient noise induced by wind.

Buildings within 2 km of the Project location are identified in the site plans and for the purposes of preparing the Noise Impact Assessment (NIA), Points of Reception (PoRs) within 1.5 km of the Project Location have been identified by way of mapping, aerial imagery and a site validation [13]. A total of 395 PoRs were identified for the Project, including dwellings, Vacant Lot Receptors (VLRs) and other buildings considered PoRs under the MOECC's noise guidelines [14].

A NIA was conducted to evaluate any noise impacts of the Project on designed receptor locations. The results from the NIA indicate that the Project complies with the applicable MOECC noise limits at all PoRs [13].

The NIA has been included within Appendix G of the DOR.

3.3.3.5 Land Use

Land uses within a minimum of 300 m of the study area will be identified through the REA planning process and in consultation with the Municipalities, Ontario Ministry of Transportation (MTO) and local landowners. Following this identification, any potential effects on the availability of the resource, current land uses, and local and provincial services and infrastructure will be defined and mitigation measures developed.

3.3.4 Summary of Potential Environmental Effects

Given the type of renewable energy project, and due to its low impact nature, environmental effects on the following components have been analysed and provided in the Design and Operations Report:

- Cultural Heritage (Protected Properties, Archaeological and Heritage Resources);
- Terrain and soils;
- Aquatic Resources;
- Wildlife;
- Air;
- Noise; and
- Local and Provincial interests, land use and infrastructure.

The Environmental Effects Monitoring Plan for the Operations, Construction and Decommissioning of the Project are explained in further details in Section 6 of the DOR.

3.3.5 Emergency Response and Communications Plan

Emergency events associated with the operation of a wind project are very unlikely. Romney Energy Centre Limited Partnership is committed to addressing and reacting to any emergency that should arise from an accident or a malfunction during the course of the Project's service life, in order to safeguard the health and safety of its staff, the public and the environment. Romney Energy Centre Limited Partnership commits to implementing an Emergency Response and Communications Plan. The general contractor will be responsible

for establishing and maintaining specific construction and decommissioning related emergency response procedures to be implemented during these phases.

3.4 Decommissioning Plan Report

The Decommissioning Plan Report (DPR) describes the activities that will take place during the decommissioning phase of the Project and identifies the measures that will be implemented to mitigate negative environmental effects that will or are likely to occur during this phase.

3.4.1 Decommissioning After Ceasing Operations

It is anticipated that the Project would have an operational lifespan of 20 or more years. The Project life could be further extended with proper maintenance; component replacement and repowering. For this section of the DPR, it is assumed that the Project will be decommissioned after the 20-year power purchase agreement with IESO, and prior to any substantial repowering efforts however modern wind turbines are very reliable and the major components are designed to operate for approximately 25 years.

The following main steps would be taken to dismantle the various Project components.

3.4.1.1 Procedures for Dismantling

If the facility is to be decommissioned and the turbines are to be removed at the end of their service life the procedures will be similar to the construction phase, but in reverse sequence.

The procedures will include:

- At the end of the Project's life, it will first be de-energized and isolated from all external electrical lines.
- The creation of temporary staging areas. In order to provide sufficient area for the laydown of the disassembled wind turbine components and loading onto trucks, a circulation area of 80 m radius must be cleared, leveled and made accessible. After completion of the decommissioning, temporary staging areas and any associated temporary decommissioning facilities or components used throughout the decommissioning phase (e.g. temporary construction trailer) will be removed.
- The creation of crane pads. The crane pads will typically be 40 m by 40 m in size and will be located within the temporary staging area around each wind turbine. The topsoil at the crane pad will be removed and approximately 600 mm of compacted crushed gravel will be added. Once the turbine disassembly is completed, the gravel area around each turbine will be removed and the area will be restored to prior use using stockpiled topsoil.
- The use of cranes to remove the blades, hub, nacelle and tower segments.
- The use of trucks and heavy-load hauling trucks for the removal of turbines, towers and associated equipment.
- Removal of turbine components will also include the removal of 1 m of the underground foundation below the original grade (prior to construction). Excavated foundation areas will be backfilled with clean fill and stockpiled topsoil to match the original elevations. These areas will also be graded, contoured, and restored to a land use similar to what was present prior to foundation installation in order to allow for prior activities to resume.
- Underground electrical collector lines are expected to remain in place at the end of the Project life; however, at their connection points in the substation or in junction boxes, where the underground

electrical collector lines come to the surface, the electrical collection lines will be de-energized and cut to a depth of approximately 1 m below original grade.

- Overhead electrical lines are expected to be removed at the end of the Project's life; however, the poles on which the collector lines will be installed that are not shared with Hydro One will be cut to a depth of approximately 1 m below original grade or may be completely removed from the ground, where feasible.
- Any electrical collector lines located at directionally drilled watercourse crossing or underneath significant natural features and wildlife habitats will remain in place; however the connection point will be severed at a point located outside of the Lower Thames Valley Conservation Authorities (LTVCA), where possible, and outside of significant natural features and/or wildlife habitats.
- The substation and the Operations and Maintenance (O&M) building will be dismantled and removed in accordance with the standards of the day. Any concrete foundations associated with these facilities will be removed to at least 1 m below original grade. The area will be graded, contoured, and restored to land use similar to what was present prior to foundation installation in order to allow for prior activities to resume. All materials will be recycled, where possible, or disposed offsite at an approved and appropriate facility.
- The Proponent is responsible for decommissioning of the electrical connector line from the substation up to the PCC, after which point the infrastructure is owned by Hydro One.
- Removal of access roads will dependent on the requirements and agreements in place with the individual landowner. Impacted lands will be restored to land use in place prior to access road construction, at the discretion of landowners.
- Meteorological tower(s) will be removed unless otherwise requested by the Municipality of Chatham-Kent or local aviation groups (and agreed to by the Proponent and the property owner) for it to remain in place. Any concrete foundation would be removed to at least 1 m below original grade or to the depth originally installed if less than 1 m below original grade. The area will be graded, contoured, and restored to land use similar to what was present prior to foundation installation in order to allow for prior activities to resume.

3.4.2 Restoration of Land

Once the dismantling procedures have been completed and the turbines and other ancillary facilities have been removed, the restoration of land will occur.

Decommissioning will not result in any impacts to surface or groundwater quality. After the decommissioning process has been completed, the land will be returned to previous conditions in consultation with the landowner, local municipality and local MNRF office.

This will be accomplished by removing the foundations (or part of the foundation) to a depth of approximately 1 m below grade, the granular material from roadways and the culverts. The natural environment will be restored by re-vegetation. If there is insufficient material onsite, topsoil and/or subsoil will be imported from a source acceptable to the landowner, local municipality or local MNRF office.

Although strict spill prevention procedures will be in place, there is a highly unlikely potential for spills of solvents or fuels to occur during decommissioning. The soil conditions of the turbine areas will be surveyed per current standards to determine if any impacts have occurred. Should soil impacts be noted, the impacted soils will be delineated, excavated and removed, per applicable standards, from the site for disposal at an approved and appropriate facility.

3.4.3 Summary of Potential Environmental Effects

The following potential environmental effects have been addressed in the Construction Plan Report and appropriate mitigation measures have been provided:

- Cultural Heritage (Protected Properties, Archaeological and Heritage Resources);
- Terrain and soils;
- Aquatic Resources;
- Wildlife;
- Air;
- Noise; and
- Local and Provincial interests, land use and infrastructure.

The Environmental Effects Monitoring Plan for the decommissioning phase of the Project is explained in greater detail within Section 10 of the CPR.

4 REPORT VIEWING LOCATIONS

The full Draft REA package has been provided along with this summary document for your review and comment. Alternatively, the reports are anticipated to be available for public viewing on the Project website at http://www.edf-en.ca/projects/project_display/romney-wind-energy-centre around April 4, 2017 and in hardcopy at the following locations:

- Town of Lakeshore town office;
- Municipality of Chatham Kent, municipal office; and
- County of Essex, county office.

5 REFERENCES

[1] Ontario Regulation 359/09, made under the Environmental Protection Act, Renewable Energy Approvals under Part 1.0 of the Act.
[2] Ministry of the Environment, Aboriginal Consultation Guide for preparing a Renewable Energy Approval (REA) Application, Fall 2013.
[3] DNV GL, Romney Wind Energy Centre Project Description Report, 24 February 2017.
[4] DNV GL, Romney Wind Energy Centre Construction Plan Report, 24 February 2017.
[5] DNV GL, Draft Design and Operations Report, Romney Wind Energy Centre, 24 February 2017.
[6] DNV GL, Draft Decommissioning Plan Report, Romney Wind Energy Centre, 24 February 2017.
[7] Archaeological Research Associates Ltd., Stage 1 and 2 Archaeological Assessment, Romney Wind Energy Centre, L-006356-WIN-001-060, 31 January 2017.
[8] Standards and Guidelines for Consultant Archaeologists, Ontario Ministry of Tourism, Culture and Sport's, January 2011.
[9] Archaeological Research Associates Ltd., Draft Cultural Heritage Assessment, Romney Wind Energy Centre, L-006356-WIN-001-060, 13 February 2017.
[10] NHA Guide for Renewable Energy Projects, Ministry of Natural Resources, December 2010.
[11] Natural Resources Solutions Inc., Natural Heritage Environmental Impact Study Report, Romney Wind Energy Centre, 13 February 2017.
[12] Natural Resources Solutions Inc., Draft Water Bodies Assessment, Romney Wind Energy Centre, 15 February 2017.
[13] DNV GL, Renewable Energy Approval Application – Noise Impact Assessment, Romney Wind Project, 18 January 2017.
[14] MOECC Noise Guidelines for Wind Farms, May 2016.
[15] Thames-Sydenham and Region Source Protection Committee 2015. Source Protection Plan. http://www.sourcewaterprotection.on.ca/approved-source-protection-plan/.

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