Pendleton Solar Energy Centre
Project Description Report

FINAL REPORT

Prepared for:
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Sign-off Sheet

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Abbreviations

AC	Alternating current
ANSI	Area of Natural and Scientific Interest
CIA	Connection Impact Assessment
COD	Commercial Operation Date
DC	Direct current
DFO	Fisheries and Oceans Canada
EIS	Environmental Impact Study
Hydro One	Hydro One Networks Inc.
km	Kilometre(s)
kV	Kilovolt(s)
LRP	Large Renewable Procurement
m	Metre(s)
MBCA	Migratory Bird Convention Act
mm	Millimetre(s)
MNRF	Ministry of Natural Resources and Forestry
MOECC	Ministry of the Environment and Climate Change
MTCS	Ministry of Tourism, Culture and Sport
MWac	Megawatt alternating current
O. Reg.	Ontario Regulation
OEB	Ontario Energy Board
PDR	Project Description Report
PSW	Provincially Significant Wetland
PV	Photovoltaic

REA	Renewable Energy Approval
REA Checklist	REA Checklist: Consideration of Potential for Heritage Resources
SARA	*Species at Risk Act*
SCADA	Supervisory control and data acquisition
SIA	System Impact Assessment
SNCA	South Nation Conservation Authority
Stantec	Stantec Consulting Ltd.
SWH	Significant Wildlife Habitat
the Project	Pendleton Solar Energy Centre
the Proponent	Pendleton Energy Centre Limited Partnership
W	Watt(s)

1.0 INTRODUCTION

1.1 OVERVIEW

Pendleton Energy Centre Limited Partnership (the Proponent), is proposing the development of a 12 megawatt alternating current (MWac) solar energy generating facility, known as the Pendleton Solar Energy Centre (the Project) in the Township of Alfred and Plantagenet, United Counties of Prescott and Russell. A map showing the location of the Project is provided in **Figures 1-4**, **Appendix A**. The Project will require a Renewable Energy Approval (REA) as per Ontario Regulation (O. Reg.) 359/09 - Renewable Energy Approvals under Part V.0.1 of the Act, under the *Environmental Protection Act* (MOECC 2009, amended 2016).

The Proponent is proposing to develop, construct and operate the Project on approximately 53 hectares (ha; 130 acres) of land in response to the Government of Ontario's Large Renewable Procurement (LRP) initiative to promote the development of renewable electricity in the province.

The Proponent has retained Stantec Consulting Ltd. (Stantec) to prepare a REA application, as required under O. Reg. 359/09. The proposed solar PV distribution grid connected system would be considered a Class 3 Solar Facility under O. Reg. 359/09, s. 4.

1.2 REPORT REQUIREMENTS

This Project Description Report (PDR) is one component of the REA application for the Project, and is prepared in accordance with O. Reg. 359/09, the Ministry of Natural Resources and Forestry (MNRF)'s *Approval and Permitting Requirements Document for Renewable Energy Projects* (2009), and the Ministry of the Environment and Climate Change (MOECC)'s *Technical Guide to Renewable Energy Approvals* (2013). **Table 1.1** summarizes the requirements of this report as specified under O. Reg. 359/09:

Table 1.1: Project Description Report Requirements (as per O. Reg. 359/09 – Table 1)

Content	Location within Report
Any energy sources to be used to generate electricity at the renewable energy generation facility.	Section 4.2
The facilities, equipment or technology that would be used to convert the renewable energy source or any other energy source to electricity.	Section 4.3
The class of the renewable energy generation facility.	Section 4.4
The activities that will be engaged in as part of the renewable energy project.	Section 4.5
The name plate capacity of the renewable energy generation facility.	Section 4.6
The ownership of the land on which the Project Location is to be situated.	Section 4.7
Any negative environmental effects that may result from engaging in the project.	Section 5.0 **Appendix B**
An unbound, well marked, legible and reproducible map that is an appropriate size to fit on a 215 millimetre (mm) by 280 mm page, showing the Project Location and the land within 300 m of the Project Location.	**Appendix A**

2.0 CONTACTS

Contact information for the Proponent is as follows:

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Project Website:	http://www.edf-en.ca/project/pendleton-solar-energy-centre/

The lead consultant for preparation of the REA Application is Stantec. Stantec provides professional consulting services in planning, engineering, architecture, interior design, landscape architecture, surveying, environmental sciences, project management, and project economics for infrastructure and facilities projects. The consultant's office and Project contact is:

Name:	Tanya Turk
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3.0 AUTHORIZATIONS POTENTIALLY REQUIRED

The potential provincial and municipal permits, approvals, and agreements (collectively referred to as the Authorizations) which may be required for this Project are discussed below. As the Project studies progress, this information will be updated as required.

3.1 PROVINCIAL AUTHORIZATIONS

The Project must receive a REA from the MOECC. The REA application includes confirmation from the MNRF and the Ministry of Tourism, Culture and Sport (MTCS) that these ministries are satisfied with specific reports included in the application. In addition, at the provincial level there are multiple Authorizations that may be required to facilitate the development of the Project. Their ultimate applicability will be determined during the REA process and based upon the Project's detailed design. **Table 3.1** lists key permits and authorizations that may be required in addition to the REA.

Table 3.1: Key Provincial Permits and Authorizations

Administering Agency	Key Permit / Authorization	Rationale
Ministry of Transportation	Change of Access and Heavy/Oversize Load Transportation Permit	To maintain compliance with provincial highway traffic and road safety regulations for transport of project components to the site.
MNRF	Approvals under the *Endangered Species Act*, 2007	Based on research conducted to date, an ESA permit is not anticipated. Additional species surveys or permitting or registration requirements may be identified through continued consultation with MNRF.
	Approval under the *Fish and Wildlife Conservation Act*, 1997	Not applicable. In-water work is not proposed; therefore, fish collections/relocations are not required.
South Nation Conservation Authority (SNCA)	Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Permit	SNCA regulated areas. Consultation by the Proponent with the SNCA will continue to finalize potential permitting requirements within the Project Location.
Electrical Safety Authority	Electrical Safety Code Certification	Electrical systems and connections will require inspection/Authorization.
Ministry of Labour	Notice of Project	Notify the Ministry of Labour before construction begins.

Table 3.1: Key Provincial Permits and Authorizations

Administering Agency	Key Permit / Authorization	Rationale
Ontario Energy Board (OEB)	Generator license	A license will be needed from the OEB in order to generate electricity.
Hydro One Networks Inc. (Hydro One)	Connection Impact Assessment (CIA)	Technical documentation submitted for review and comment by Hydro One to maintain technical compliance with the Distributed Generation Technical Interconnection Requirements. Upgrades and changes to the utility system will be identified by Hydro One as part of this submission.
	System Impact Assessment (SIA)	Integration of project with the transmission system controlled by the Independent Electricity System Operator.
	Connection Cost Agreement	Recovery of costs to Hydro One of changes to allow connection based on findings from the Connection Impact Assessment.
	Confirmation of Verification Evidence Report	Document to confirm that the Project is designed with the required protections as identified in the CIA and SIA, and verified to function as designed.
	Distribution Connection Agreement	Legal agreement that outlines the project characteristics and operating procedures that are to be maintained while the Project is connected to the Hydro One distribution system.
	Transmission Customer Impact Assessment	Examination of Project impacts on Hydro One and customer's transmission system, and determination of any mitigation measures, if applicable.

3.2 MUNICIPAL

The Proponent has consulted with the Township of Alfred and Plantagenet and the United Counties of Prescott and Russell, and identified key permits and authorizations that may be required in order to proceed with the Project. These are listed in **Table 3.2**.

Table 3.2: Key Municipal Permits and Authorizations

Key Permit / Authorization	Rationale
Road Use Agreement	May be required for use of roads to construct/operate the facility and for works in municipal road allowances.
Building Permit	May be required for compliance with building codes.
Entrance Permit	Required if an entrance from a municipal road is to be constructed.

3.3 FEDERAL INVOLVEMENT

A Federal Environmental Assessment report is not expected to be required for the Project, as the Project is not listed in the Regulations Designating Physical Activities under the *Canadian Environmental Assessment Act*. **Table 3.3** lists key federal permits and authorizations that may be required to facilitate construction of the Project. These requirements will be determined once conceptual plans are complete and additional data has been collected.

Table 3.3: Key Federal Permits and Authorizations

Administering Agency	Key Permit / Authorization	Rationale
Environment Canada	Clearing of vegetation under the *Migratory Bird Convention Act* (MBCA) (1994)	No permit is necessary; however, precautions need to be made so that no breeding birds or their nests are harmed or destroyed during the bird nesting season. Nest sweeps will be required at a maximum of 7 days prior to vegetation removal during the bird nesting season (April 21 to August 14), as per the MBCA.
Fisheries and Oceans Canada (DFO)	Review and authorization under Section 35 of the *Fisheries Act* (1985)	As no in-water works are planned for this Project, Fisheries Act review and authorization are not anticipated; however, a Self-Assessment should be completed for work near water, to document potential impacts and mitigation measures with respect to water bodies within 120 m of the Project Location.
DFO	Permitting under Section 32 of the *Species at Risk Act (SARA)* (2002)	As no in-water works are anticipated for this Project and there are no federally listed aquatic species at risk, a SARA permit for aquatic species at risk is not required.

4.0 PROJECT INFORMATION

The following section outlines the location, energy sources and components pertaining to the proposed Project, as well as details on the Project schedule, activities, nameplate capacity and land ownership.

4.1 PROJECT LOCATION

The Project Location covers an area of approximately 53 ha (130 acres), and is located in the Township of Alfred and Plantagenet within the United Counties of Prescott and Russell. It is situated on one parcel of privately-owned land at the south-east corner of County Road 19 and County Road 2. It is approximately 5 kilometres (km) west of Curran, Ontario and the proposed Point of Common Coupling (PCC) to the distribution grid will be located immediately adjacent to the property, on the west side of County Road 19. A map of the Project Location is provided in **Figures 1-4**, **Appendix A**. A 300 m buffer surrounding the Project Location has been applied to **Figure 1**, as outlined in O. Reg. 359/09 and the MOECC's "*Technical Guide to Renewable Energy Approvals*" (2013). This buffer has been applied for visual purposes only, and does not create any new obligations or change the land use for associated neighboring lands outside the Project Location.

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

> "*a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project and any air space in which a person is engaging in or proposes to engage in the project*" (MOECC 2009, amended 2016).

The current Project Location generally consists of the parcel boundary on which the solar facility will be located and the land associated with the connection line and PCC. The Project Location has been refined to optimize the Project and minimize environmental effects, as determined following field studies and Project layout design.

4.2 ENERGY SOURCES

The proposed Project is a solar facility that would utilize sunlight as a source of energy.

4.3 PROJECT COMPONENTS

4.3.1 Solar Panels and Racking

The Project will include the installation of approximately 35,000 to 60,000 solar panels. The exact make and model of the solar panels will be determined at a later date, but are anticipated to

have a rated power of 300-420 W per panel and measure approximately 2 m long by 1 m wide. Each solar panel will be mounted on a galvanized steel and/or aluminum rack system that is positioned approximately 0.5 to 1.5 m above finished grade either at an angle between 20 and 40 degrees (fixed tilt) or with a +/- 60-degree range of motion (single axis tracking). Fixed tilt panels would be installed in rows facing south and the tracking system would be tracking east/west on a north/south axis.

4.3.2 Access Roads

Existing provincial and county roads will be used to transport project-related components, equipment and personnel to the Project Location. An existing entrance from County Road 19 to the west of the Project is anticipated to be used for permanent access to the site and may be modified as required. A temporary secondary gravel access road from County Road 19, north of the existing primary access road may be required for construction. At the end of construction, the temporary access road will be reclaimed and trees will be planted along the Project Location boundary. Gravel access roads will be constructed on-site to provide access to the facility for the duration of the Project. Section 4.3.7 provides further details on perimeter fencing.

4.3.3 Inverters and Inverter Step-Up Transformers

Six stations, located throughout the Project Location, each with one or more inverters will convert the DC electricity generated by the solar panels to AC electricity. One or more inverter step-up transformers co-located with each inverter will increase the voltage to 27.6 kV before delivering the power to the local distribution grid through the substation.

The specifications of the inverters and inverter step-up transformers will be determined by the Proponent during the preliminary design phase. In accordance with the specifications, the manufacturer of the inverters and inverter step-up transformers will be selected by the Proponent or the general contractor during the detailed design phase.

4.3.4 Substation

A main power transformer will not be required for this Project. The project will require a 27.6 kV substation comprised of circuit breakers, disconnect switch, grounding transformer, surge arresters, auxiliary services transformer, grounding grid, control building and, revenue metering equipment, and will be supported by cast-in place concrete pads or concrete piers. The entire substation fenced area will be graded and overlaid with a clear stone granular material. All of this equipment will be built in a fenced in area except the control building that may be located inside the fenced area of the substation, or may be located outside of the fenced area of the substation (but within the perimeter fence, see Section 4.3.7) to provide office space for maintenance personnel. All of this equipment is likely to be prefabricated and transported to site. The equipment will be supported by either cast-in place slab-on-grade concrete pads or structural steel piers and the entire substation area will be graded and overlaid with a clear

stone granular material. The specific make of the associated electrical equipment will be selected by the general contractor during the detailed design phase and based on the Proponent specifications. The equipment in the substation will also provide a supervisory control and data acquisition (SCADA) system for protection, control and monitoring of the substation and the facility.

4.3.5 Collector System and Connection Line

The 1500 volt (or below) DC electricity generated from the solar panels will be collected via combiner boxes and underground cables to the inverters.

The 27.6 kV AC electricity from all inverter step-up transformers will be collected via underground cables to a single substation.

The underground collector cables would be installed via ploughing or trenching. Data cabling for the SCADA will also be installed in the same trenches.

An overhead 27.6 kV AC connection line, approximately 75 m long, will be required from the substation to the Point of Common Coupling where Hydro One will intertie the project to the existing 27.6 kV distribution grid line adjacent to the Project.

4.3.6 Operations and Maintenance Storage Area

An operations and maintenance building is not currently planned for the site. Small permanent structures, such as storage containers will likely be located in an operations and maintenance storage area. The area would be comprised of compacted gravel and the containers set upon a concrete pad. The storage containers will be used to store equipment and spare parts used for maintenance activities, and spill response and containment materials.

4.3.7 Perimeter Fencing

The facility will be surrounded with a chain link fence topped with barbed wire to prevent unauthorized access. A gate will be installed at the primary access from County Road 19 to provide access for maintenance personnel and emergency vehicle access. A secondary access will be located north of the primary access for access during construction only. Perimeter fencing would be located within the Project Location boundary.

4.3.8 Temporary Staging Areas

Temporary staging areas will be used for storage of Project materials and equipment on site. The temporary staging areas would support construction trailers, portable toilets, waste disposal containers and pick-up areas, parking areas, equipment storage and maintenance area, truck unloading and loading area and laydown area for materials and equipment. The staging area

will be located in the northwest corner of the Project Location. To the extent possible, materials would be delivered directly to the Project Location for their installation.

4.4 RENEWABLE ENERGY GENERATION FACILITY CLASS

The proposed solar PV distribution grid connected system would be considered a Class 3 Solar Facility under O. Reg. 359/09, Section 4. This classification consists of solar facilities with nameplate capacities exceeding 10 kW that are in any location other than mounted on the roof or wall of a building.

4.5 PROJECT ACTIVITIES

A general overview of the activities during construction, operation, and decommissioning phases of the Project are provided in **Table 4.1**.

Table 4.1: Key Project Activities

Project Phase	Activities
Construction	Site grading
	Access road preparation
	Installation of foundations and racking
	Panel installation
	Installation of inverters, inverter step-up transformers, and substation equipment
	Installation of collector cables and connection line
	Reclamation of temporary work areas
	Site landscaping
Operation	Preventative maintenance
	Unplanned maintenance
	Meter calibrations
	Site/ground maintenance

Table 4.1: Key Project Activities

Project Phase	Activities
Decommissioning	Disconnect the connection line from the distribution grid
	Removal of solar panel infrastructure
	Removal of inverters, inverter step-up transformers, and substation equipment
	Removal of fencing, roads and site grading (dependent upon new proposed use)
	Excavation and removal of collector cables and foundations (up to 1 m depth below grade)
	Re-establishment of tile drainage system for agricultural purposes provided that land is intended to return to agricultural production.

4.6 NAMEPLATE CAPACITY

The total nameplate capacity of the solar facility is 12 MWac.

4.7 LEGAL DESCRIPTION & OWNERSHIP OF LAND

The Project would be located on part of Lots 19-20, Concession 8 in the Township of Alfred and Plantagenet, within the United Counties of Prescott and Russell. The Project would be located on privately-owned land, leased by the Proponent for 20 or more years.

4.8 PROJECT SCHEDULE

A preliminary schedule is provided in **Table 4.2** and provides an overview of the key activity dates associated with the Project.

Table 4.2: Project Schedule Overview

Milestone	Approximate Date
Initiate Public REA Process	Spring 2016
REA technical studies	Ongoing through to fall 2016
Public Meeting #1	October 2016
Draft REA Reports to Public	January 2017
Final Public Meeting	May 2017
Submission of REA application to the MOECC	June 2017
REA Approval	January 2018
Start of Construction	May 2018
Commercial Operation Date (COD)	December 2018

Table 4.2: Project Schedule Overview

Milestone	Approximate Date
Repowering/Decommissioning	2038 (20 or more years after the COD)

5.0 DESCRIPTION OF POTENTIAL ENVIRONMENTAL EFFECTS

5.1 METHODOLOGY

The potential negative environmental effects occurring during construction, operating, and decommissioning a renewable energy facility are well understood and can be typically mitigated through well-known and accepted techniques and practices.

In order to identify potential negative environmental effects that may result from construction, operation and decommissioning of the Project, the following was applied:

- Collected information on the existing environment using available background information, consultation with stakeholders, and site investigations.
- Reviewed proposed Project activities in order to predict the potential interactions between the Project and environment.
- Identified potential interactions that could cause an adverse effect on the environment.
- Developed measures to avoid, mitigate, and monitor potential adverse effects.

The REA process focuses on project-specific issues and potential negative effects as per O. Reg. 359/09. Based upon a screening of the existing environment, experience gained during Project planning, and the requirements of the REA process, the following environmental features have been assessed as part of the REA application process:

- Heritage Resources
- Archaeological Resources
- Natural Heritage
- Water Bodies
- Air, Odour, Dust
- Noise
- Land Use
- Municipal Infrastructure
- Waste Management
- Public Health and Safety

The potential effects to these environmental features have been identified in the Construction Plan Report and the Design and Operations Report and mitigation measures developed as required. Detailed analysis of potential effects to some environmental features has been conducted, and is provided in the Stage 1-2 Archaeological Assessment Report, Acoustic Assessment Report, Natural Heritage Assessment & Environmental Impact Study, and Water

Assessment & Water Body Report. A summary of the potential environmental effects as a result of Project activities is provided in **Appendix B**. An overview of key results is provided below.

5.2 OVERVIEW OF KEY RESULTS

5.2.1 General Design and Siting Considerations

The key mitigation strategy used to address potential environmental effects from construction and operation of the facility was avoidance of significant natural and socio-economic features to the extent possible during siting of the Project.

The original Project Location encompassed the entirety of the lands leased by the Proponent and was assessed during technical studies conducted for the Natural Heritage, Water, Acoustic and Archaeological Assessments. Where necessary, the site was modified based on the findings of the technical studies, as outlined below.

In consultation with the SNCA, more than 1000 trees (mostly white spruce, eastern white pine, and eastern white cedar) were planted along County Road 19, south of the primary access road, in fall 2016, outside the Project Location. Written approval was received from the MOECC prior to tree planting. In addition, tree planting within areas disturbed by construction will occur at the end of construction. The locations of the Tree Preservation Area and Tree Planting Areas are provided in **Figure 2, Appendix A**.

Site investigations completed as part of the Water Assessment & Water Body Report identified water bodies (as defined in O. Reg. 359/09) adjacent to the Project Location. As a result, the Project Location boundary has been sited a minimum of 15 m from the water body, and solar panels, inverters and transformers have been set back a minimum of 30 m from water bodies.

In consultation with the landowner south of the Project Location, on the east side of County Road 19), an "inverter/transformer exclusion area" has been added to the Project Location, which extends 100 m beyond the common property boundary between the neighbor immediately south west of the Project Location. A treed buffer extending 35 m from the common property boundary between the neighbor immediately south west of the Project Location was also integrated as part of the project design.

5.2.2 Key Net Environmental Effects of the Project

Construction

Based on a review of existing information on archaeological resources in the area, and based on the completion of the MTCS REA Checklist and Stage 1 - 2 Archaeological Assessment, no known areas of heritage or archaeological resources exist within the Project area. Potential effects are limited to the finding of previously undiscovered artifacts or human remains, therefore, net effects are not anticipated.

Potential net effects on significant wetlands, significant woodlands and Significant Wildlife Habitat (SWH) would be spatially limited. With the implementation of mitigation measures suggested in the Construction Plan Report, no significant adverse residual effects are anticipated. Since no provincial parks, conservation reserves or ANSIs were identified within 300 m of the Project Location, potential effects are not anticipated.

With the implementation of mitigation measures suggested in the Construction Plan Report, significant adverse residual effects to groundwater, water wells, surface water, fish and fish habitat are not anticipated during construction.

Potential effects from odour and dust will be intermittent. Air emissions from construction vehicles and equipment are short-term and intermittent, and will have negligible adverse residual effects on ambient air quality. Noise effects during construction would be frequent, but would be short-term, intermittent, and reversible. Application of the recommended mitigation measures (as outlined in Section 3.2 of the Construction Plan Report) during construction should limit noise emissions to the general vicinity of the work areas. Any net effects are expected to be limited to short-term, intermittent noise increases at the work areas and/or along the haul routes.

Although trees will provide a partial visual screen once they grow to a mature size, surrounding residents may experience a general visual or sensory nuisance from Project construction activities. High wind, heavy rainfall, absence of vegetation and/or ground disturbance may result in surface soil erosion during construction, until ground vegetation is established. If accidental spills occur, they are anticipated to occur infrequently and be spatially limited.

Construction activity has the potential to alter the agricultural capacity of the land following decommissioning of the Project. Improperly stripping, storage and replacement of topsoil can result in topsoil and subsoil mixing, compaction, rutting, and erosion, which can potentially decrease crop yields. The Project will take the current Project Location lands out of agricultural production, but will return those lands to a state similar to the current state at the time of decommissioning (or another state, in accordance with the zoning by-law, as determined by the landowner at the time of decommissioning). With the implementation of the mitigation measures outlined in Section 3.5 of the Construction Plan Report, the agricultural capability of the soil is anticipated to be comparable to the capability prior to construction.

If accidental spills occur, they are anticipated to occur infrequently and be spatially limited.

The general contractor will develop and implement a Traffic Management Plan and the Proponent will negotiate a Road Use Agreement with the United Counties of Prescott and Russell. The Traffic Management Plan would help minimize the risk of accidents along the haul route and on site. The effect of constructing the various Project components is anticipated to have a limited, short term effect on traffic and roads during construction.

With the implementation of the mitigation measures provided in the Construction Plan Report and adherence to safety policies and regulations, a minimal increased or new risk to public health and safety and no significant adverse residual effects to socio-economic or environmental features or conditions are anticipated during construction of the Project.

Additional information regarding potential effects during the construction phase are provided in the Construction Plan Report.

Operation

Through completion of the MTCS REA Checklist, no built resources were identified within the Project Location and no cultural heritage landscapes or protected properties were identified in, or adjacent to, the Project Location. No significant adverse net effects on archaeological or cultural heritage resources are anticipated during operation of the Project.

During operation there may be occasional maintenance activities required, but this will occur outside of all wetland, woodland and Generalized Candidate SWH boundaries. Potential for impacts such as dust, spills are considered low from maintenance activities. Maintenance activities are expected to occur occasionally and will be short term in duration and spatially limited. With the implementation of suggested mitigation measures, no significant adverse residual effects on significant wetlands, woodlands and Generalized Candidate SWH are anticipated.

Negative environmental effects to water wells are not anticipated during operation of the Project. Water taking activities are not anticipated during operation of the Project. Water is not anticipated to be required for solar panel washing as rain water and snow should be sufficient for the cleaning of panels. If required, water for cleaning the panels will be trucked in from an off-site source. With the implementation of mitigation measures suggested in the Design & Operations Report, significant adverse residual effects to surface water, fish and fish habitat are not anticipated during operation.

Some materials, such as fuel, lubricating oils and other fluids associated with the operation phase of the Project have the potential for discharge to the natural environment through accidental spills and thus potentially infiltrate groundwater supplies. In the unlikely event of a spill, they are anticipated to occur infrequently and be spatially limited. With the implementation of suggested mitigation measures, no significant adverse residual effects on groundwater or private wells are anticipated.

During the operational phase of the Project, no substantive emissions of air contaminants are expected. Minor localized air emissions would occur from the periodic use of equipment for general repairs, maintenance of panels and from personnel vehicles travelling to and from the Project Location. The Project has no facilities or equipment that will discharge contaminants or pollutants to the air (e.g., exhaust gases from emergency backup diesel generators) during operation of the Project. Sources of localized emissions during operation are considered

negligible under O. Reg. 419/05. The application of the recommended mitigation measures during operations should limit air emissions to the work areas and limit the magnitude of combustion emissions (e.g., from operations and maintenance vehicles). As a result, any adverse net effects to air quality from air emissions during operation of the Project are anticipated to be short-term in duration and highly localized.

Based on the results of the Acoustic Assessment, the noise levels during the Project's predictable worst case scenario is expected to meet the MOECC criteria at applicable Points of Reception. Further details are outlined in the Acoustic Assessment Report.

Visual nuisance to the community may occur due to the presence of the facility during the operational phase of the Project. Project infrastructure is removable and, as a result, the visual impact is considered temporary and reversible.

Operation activities have the potential to alter the agricultural capacity of the land following decommissioning of the Project. Compaction of topsoil and erosion or surface soil may occur during operation and can potentially decrease crop yields. The agricultural productivity of the Project Location will be lost during construction and operation of the Project, however, the effects to the agricultural soils are expected to be temporary and spatially limited. The Project will take the current Project Location lands out of agricultural production, but will return those lands to a state similar to the current state at the time of decommissioning (or another state, in accordance with the zoning by-law, as determined by the landowner at the time of decommissioning).

With the implementation of the mitigation measures provided in the Design & Operations Report and adherence to safety policies and regulations, no significant risks to public health and safety or adverse residual effects to socio-economic or environmental features or conditions are anticipated during operation of the Project.

Additional information regarding potential effects during the operations phase are provided in the Design & Operations Report.

6.0 REFERENCES

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Ontario Ministry of the Environment and Climate Change (MOECC). 2009. Ontario Regulation 359/09 Renewable Energy Approvals Under Part V.0.1 of the Act under the Environmental Protection Act. Last amended: May 2016. Available online: https://www.ontario.ca/laws/regulation/090359. Accessed: September, 2016.

Species at Risk Act (S.C. 2002, c. 29).

APPENDIX A: FIGURES

Stantec

PENDLETON solar energy centre

Legend

- Project Location
- 300 m from Project Location

Existing / Natural Features

- Major Road
- Minor Road
- Property Boundary and PIN

The Oak Ridges Moraine Conservation Plan Area, the Niagara Escarpment and the Lake Simcoe watershed are not within 300 m of the Project Location

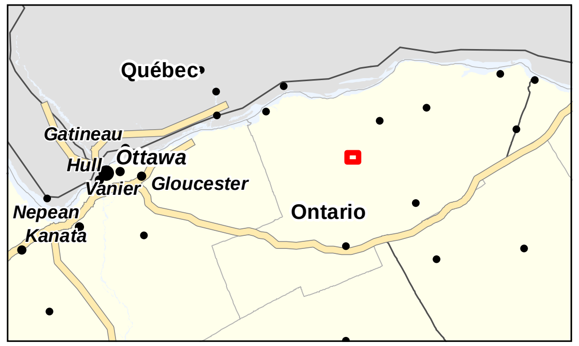
No protected properties, heritage resources or archaeological resources were identified within 300 m of the Project Location

0 200 400 metres

1:7,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2016. Base data modified by Stantec.
3. Imagery Source: Ontario Ministry of Natural Resources and Forestry. Digital Raster Acquisition Project East 2014 (DRAPE2014)



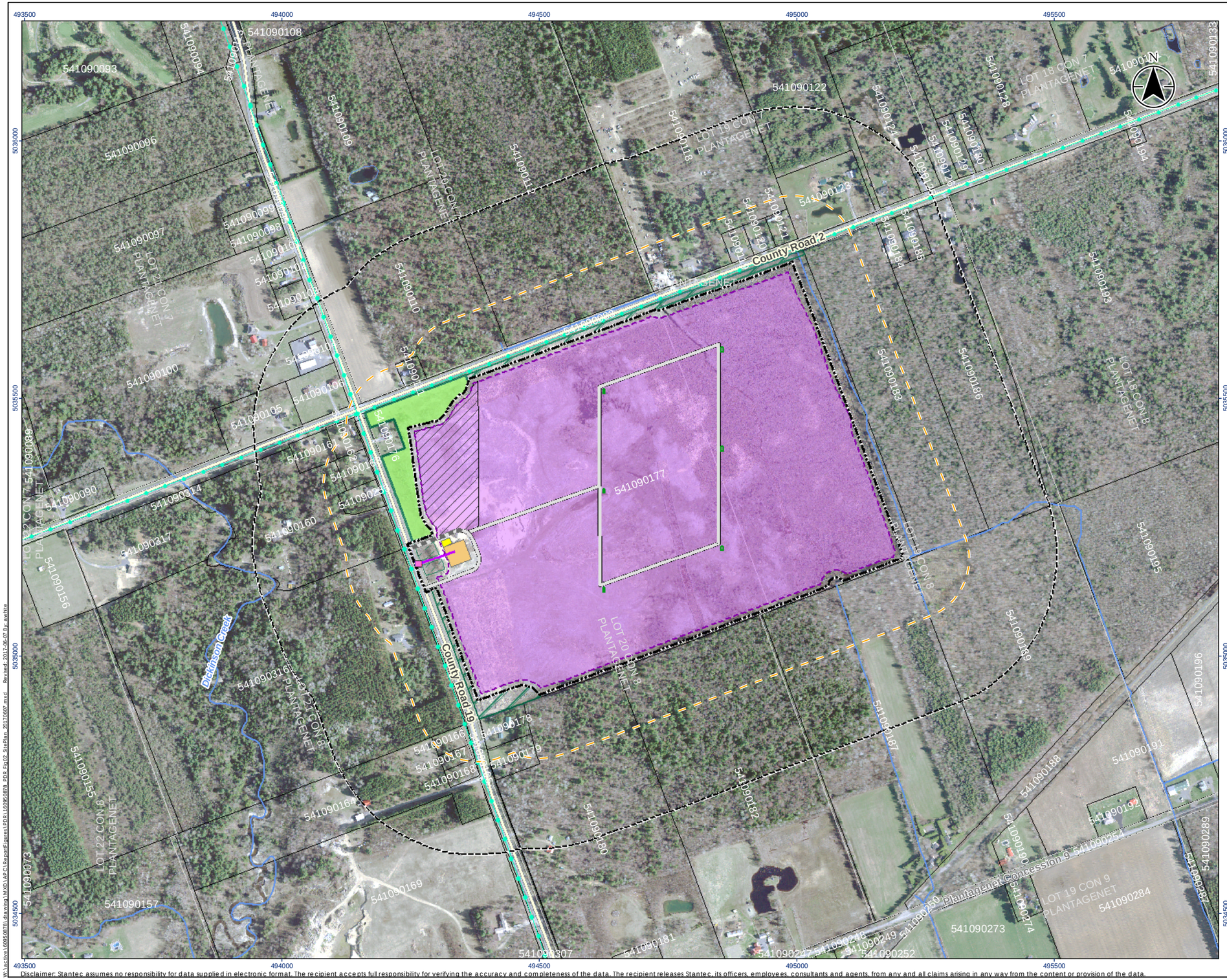
Project Location
United Counties of Prescott and Russell

160950878 REVB
Prepared by SE on 2017-06-07
Technical Review by RN on 2016-12-08
Independent Review by RN on 2016-12-08

Client/Project
PENDLETON ENERGY CENTRE LP
PENDLETON SOLAR ENERGY CENTRE

Figure No.
1

Title
Project Location



Stantec

PENDLETON solar energy centre

Legend

- Zone of Investigation (120 m from Project Location)

Proposed Project Components

- Point of Common Coupling
- Connection Line
- Inverter Step-up Transformer and Inverter
- Permanent Access
- Temporary Access During Construction
- 300 m from Project Location
- Buildable Area
- Operations & Maintenance Storage Area
- Project Location
- Solar Panel Area
- Substation
- Temporary Construction Laydown and Parking Area
- Tree Preservation Area
- Tree Planting Area
- Tree Planting Area (Post-Construction)

Existing / Natural Features

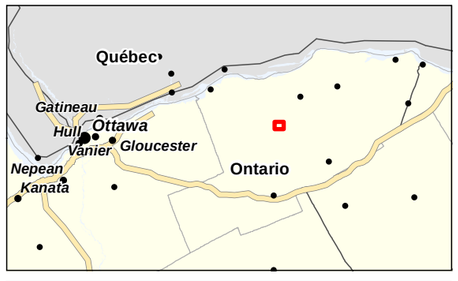
- Major Road
- Minor Road
- Distribution Line (Hydro One)
- Watercourse
- Property Boundary and PIN
- Waterbody

0 200 400 metres

1:7,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2016. Base data modified by Stantec.
3. Imagery Source: Ontario Ministry of Natural Resources and Forestry. Digital Raster Acquisition Project East 2014 (DRAPE2014)
4. Waterbody and watercourse mapping within 120 m of the Project Location has been updated based on field studies completed as part of the REA process under O. Reg. 359/09. See the Water Assessment and Water Body Report for details.



Project Location
United Counties of Prescott and Russell

160950878 REVF
Prepared by SE on 2017-06-07
Technical Review by RN on 2016-12-08
Independent Review by RN on 2016-12-08

Client/Project
PENDLETON ENERGY CENTRE LP
PENDLETON SOLAR ENERGY CENTRE

Figure No.
2

Title
Site Plan: Conceptual Project Component Layout

Stantec | PENDLETON solar energy centre

Legend

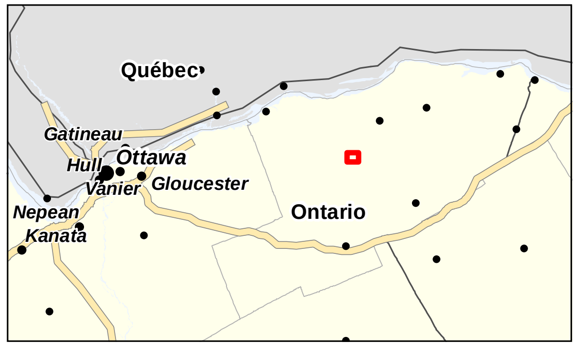
- 300 m from Project Location
- Project Location
- Existing / Natural Features
- Water Well Location
- Contour (10 m Interval, masl)
- Contour (2 m Interval, masl)
- Major Road
- Minor Road
- Watercourse
- Property Boundary
- Waterbody

The Project Location is currently used for agricultural operations. Surrounding lands are primarily forested with residential dwellings and agricultural operations interspersed. The Project Location is within lands designated Rural and Significant Woodland (as per the United Counties of Prescott and Russell Official Plan), however the wooded area within the Project Location was cleared in 2010 for agricultural operations.

0 200 400 metres

1:7,500 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2016. Base data modified by Stantec.
3. Imagery Source: Ontario Ministry of Natural Resources and Forestry. Digital Raster Acquisition Project East 2014 (DRAPE2014)
4. MOECC Water well locations are approximate and have been positioned based on published UTM coordinates © Queen's Printer for Ontario, 2016.
5. Waterbody and watercourse mapping within 120 m of the Project Location has been updated based on field studies completed as part of the REA process under O. Reg. 359/09. See the Water Assessment and Water Body Report for details.



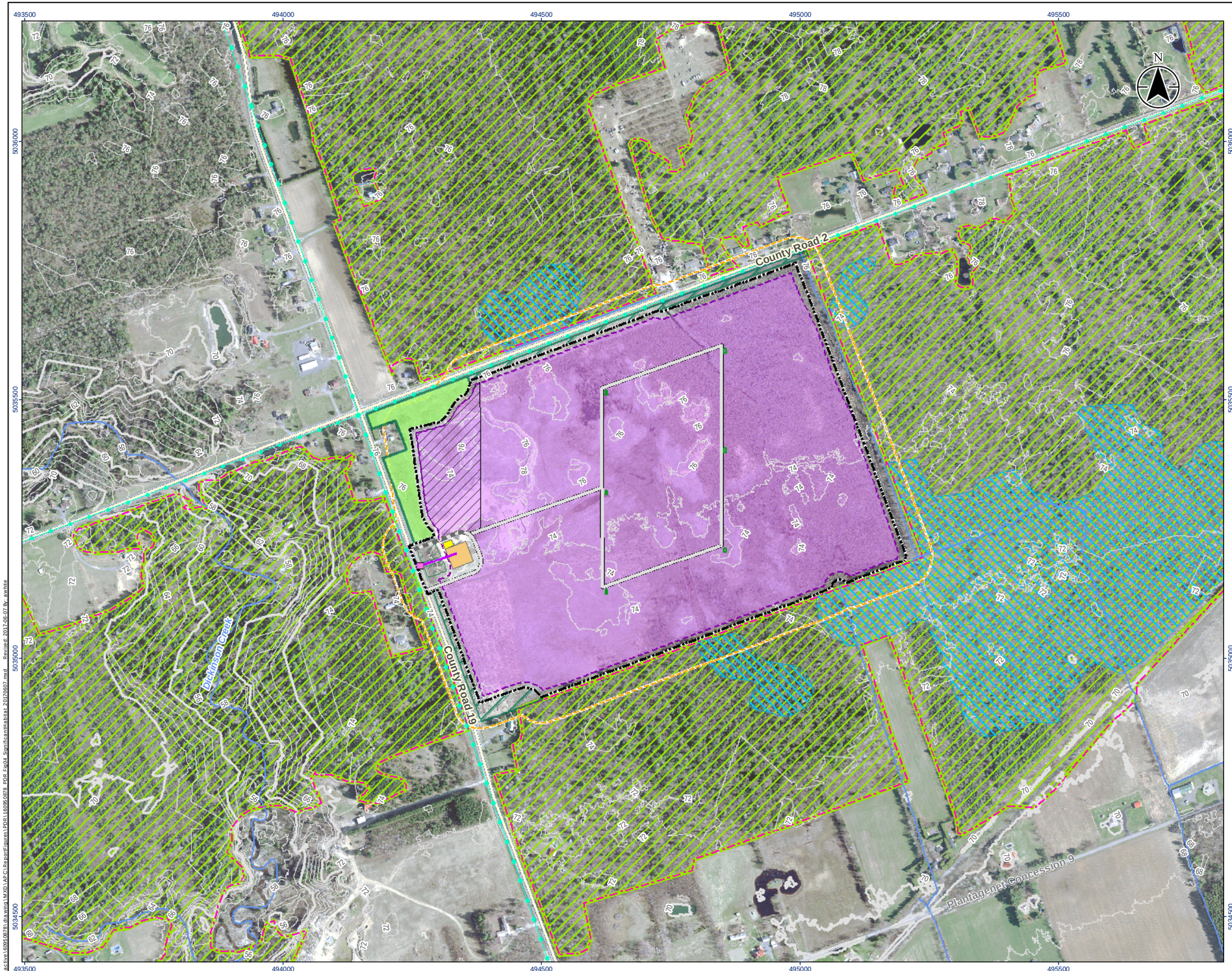
Project Location
United Counties of Prescott and Russell

160950878 REVF
Prepared by AW on 2017-06-07
Technical Review by RN on 2016-12-08
Independent Review by RN on 2016-12-08

Client/Project
PENDLETON ENERGY CENTRE LP
PENDLETON SOLAR ENERGY CENTRE

Figure No.
3

Title
Socio-Economic Features



Stantec

PENDLETON solar energy centre

Legend

- Generalized Candidate Significant Wildlife Habitat
- Significant Wetland
- Significant Woodland
- Zone of Investigation (50 m from Project Location)

Proposed Project Components

- Point of Common Coupling
- Connection Line
- Inverter Step-up Transformer and Inverter
- Permanent Access
- Temporary Access During Construction
- Buildable Area
- Operations & Maintenance Storage Area
- Project Location
- Solar Panel Area
- Substation
- Temporary Construction Laydown and Parking Area
- Tree Preservation Area
- Tree Planting Area
- Tree Planting Area (Post-Construction)

Existing Features

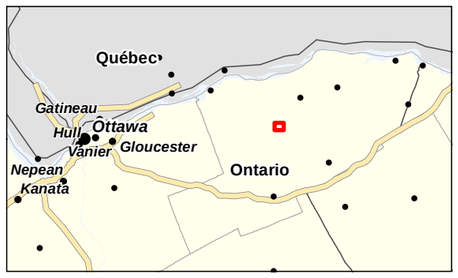
- Major Road
- Minor Road
- Contour (10 m Interval, masl)
- Contour (2 m Interval, masl)
- Distribution Line (Hydro One)
- Watercourse
- Waterbody

0 200 400 metres

1:7,500 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 18N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2016.
3. Imagery Source: © First Base Solutions, 2008 and Ontario Ministry of Natural Resources and Forestry. Digital Raster Acquisition Project East 2014 (DRAPE2014)
4. Waterbody and watercourse mapping within 120 m of the Project Location has been updated based on field studies completed as part of the REA process under O. Reg. 359/09. See the Water Assessment and Water Body Report for details.



Project Location
United Counties of Prescott and Russell

160950878 REVF
Prepared by AMW on 2017-06-07
Technical Review by NK on 2016-11-30
Independent Review by NK on 2016-11-30

Client/Project
PENDLETON ENERGY CENTRE LP
PENDLETON SOLAR ENERGY CENTRE

Figure No.
4

Title
Natural Features and Water Bodies

APPENDIX B: SUMMARY OF POTENTIAL ENVIRONMENTAL EFFECTS, PERFORMANCE OBJECTIVES, MITIGATION MEASURES, AND CONTINGENCY MEASURES (CONSTRUCTION & OPERATION)

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
Section 3.1 Cultural Heritage and Archaeological Resources	• Unplanned discovery of potential artifacts or human remains.	• No impacts to cultural heritage landscapes, protected properties and archeological resources.	• If any artifacts, soil features, or other cultural features of note are discovered during groundwork for the Project: – work in the area of the site or artifacts shall halt immediately and the general contractor notified of the discovery – the area of the site, along with a buffer zone of 5 m (as available) shall be cordoned off using a barrier or stakes and flagging tape – the regional archaeologist from the MTCS shall be contacted to determine the appropriate course of action. – if human remains are discovered during Project activities: o all work shall cease in the immediate area of the discovery and the environmental inspector notified immediately o remains shall be covered as soon as possible o if human remains are discovered in the bucket of heavy equipment, the bucket shall not be emptied and any remains in the bucket covered over as soon as possible o local police and/or coroner shall be contacted immediately.	• Significant adverse residual effects on heritage landscapes, protected properties and archeological resources are not anticipated.	• None required.
Section 3.2.1 Significant Wetlands	• No Project components will be located within the significant wetland boundaries as identified and confirmed through site investigations. • Desiccation or drying of wetland features is not anticipated. • Construction will have little or minimal impact to pervious areas and precludes the potential for effects associated with changes in water balance. • There is a risk of accidental intrusion and vegetation removal outside the work area. • Accidental spills and/or the improper disposal of wastes could also have a negative impact on wetland features.	• No impacts to significant wetland features.	• The edge of Project Location will be flagged or staked in the field prior to construction to assist with the demarcation of the construction area. • Silt barriers (e.g., fencing) will be erected along the edge of the work zone where wetland boundaries are located within 30 m of construction areas. These barriers will be monitored weekly during construction and after periods of high precipitation and bi-weekly following construction and properly maintained during and following construction until soils in the construction area are re-stabilized with vegetation. • Environmental inspectors will ensure construction vehicles and personnel stay within the construction envelope. • Should there be any accidental damage to trees, or unexpected vegetation removal within wetlands, re-planting of similar, native species may be required. If re-planting is required, MNRF will be consulted on the appropriate action(s) to be taken. • All refueling activities will occur more than 30 m from all wetlands. In the event of an accidental spill, the MOECC Spills Action Centre will be contacted.	• Potential net effects on significant wetlands would be spatially limited. With the implementation of the suggested mitigation measures, no significant adverse residual effects on wetlands are anticipated.	• Vegetation clearing activities would be conducted and monitored by the general contractor so that vegetation is cleared only from designated areas and areas outside the Project Location are not disturbed. • Vegetated areas will be monitored and reseeded as appropriate so that native grassland species are propagated within the proposed buffer areas and beneath the proposed solar panels. • Erosion and sediment control measures will be monitored on a regular basis (weekly) and maintained throughout construction. Issues with erosion and sediment controls will be rectified immediately. • In the event of contamination due to an accident spill, monitoring of the spill area should occur as outlined in the Emergency Response and Communications Plan. • The post-construction monitoring program will be reassessed by the MNRF and the Proponent at the end of each monitoring year.

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
			• Any fuel storage and activities with the potential for contamination will occur in properly protected and sealed areas greater than 30 m from a wetland.		
Section 3.2.2 Significant Woodlands	• Direct loss of significant woodlands or function of these features as a result of the Project is not anticipated since the Project Location and construction activities are sited outside of significant woodland boundaries. • Indirect short term, temporary effects resulting from construction activities, include dust generation, sedimentation and erosion. Potential indirect effects resulting from construction activities include degradation of woodlands resulting from dust generation and sedimentation and erosion.	• No impacts to significant woodland features.	• No development will occur within the woodland boundary. • The edge of the work zone (i.e., Project Location) will be flagged or staked in the field prior to construction to assist with the demarcation of the construction area. • Silt barriers (e.g., fencing) will be erected along the edge of the work zone where woodland boundaries are located within 30 m of construction areas and monitored. • Environmental inspectors will ensure construction vehicles and personnel stay within the construction envelope. • All refueling activities will occur more than 30 m from the woodlands. In the event of an accidental spill, the MOECC Spills Action Centre will be contacted and emergency spill procedures will be implemented immediately. • All maintenance activities, vehicle washing, as well as the storage of chemical and construction equipment will be located more than 30m from significant woodlands. • Accidental damage to trees, or unexpected vegetation removal, may require re-planting of similar, native species. • Improper disposal of wastes (fluids, containers, cleaning materials) that could have a negative impact on the feature will be avoided. Wastes would be stored on-site for recycling, where it would be collected on a regular basis. Other waste materials such as fuels and other lubricants would be stored on site for reuse, recycling and/or disposal at an appropriate MOECC-approved off-site facility.	• Potential net effects on significant woodlands would be spatially limited. • With the implementation of suggested mitigation measures, no significant adverse residual effects on significant woodlands are anticipated.	• Contingency measures may include an adaptive management approach that allows mitigation measures to be implemented in the event that unanticipated potentially significant adverse environmental effects are observed, as assessed through a review of annual monitoring reports.
Section 3.2.3 Wildlife and Wildlife Habitat	• As the Project components and all construction and operational activities are sited outside of the boundaries of these features, there will be no direct loss of Generalized Candidate SWH or function to these features • Potential negative effects from construction activities could include habitat avoidance/disturbance caused by noise.	• Minimize impacts to wildlife habitat.	• Mitigation measures for the significant wetland and woodland features will be applied as outlined above, as Generalized Candidate SWH is contained within these features. • To the extent possible, construction activities within 30 m of Generalized Candidate SWH will occur during daylight hours to avoid excessive noise and/or light disturbances.	• Potential net effects on Generalized Candidate SWH would be spatially limited. • With the implementation of suggested mitigation measures, no significant adverse residual effects on Generalized Candidate SWH are anticipated.	• See monitoring and contingency measures provided for Significant Wetlands and Significant Woodlands. • Although species at risk were not identified during site investigation activities, should species at risk be identified, permitting and construction monitoring may need to be undertaken. The exact nature of monitoring will be determined in consultation with the MNRF and will depend on the species present.
Section 3.2.4 Areas of Natural and Scientific Interest	• None. No ANSIs were identified within 300 m of the Project Location.	• No impacts to ANSIs.	• None required.	• No significant adverse residual effects on ANSIs are anticipated.	• None required.

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
Section 3.2.5 Provincial Parks and Conservation Reserves	• None. No provincial parks or conservation reserves were identified within 300 m of the Project Location.	• No impacts to Provincial Parks and Conservation Reserves.	• None required.	• No significant adverse residual effects on provincial parks or conservation reserves are anticipated.	• None required.
Section 3.3.1 Groundwater	• Negative environmental effects to water wells are not anticipated during construction. • Since dewatering activities are not anticipated during construction of the Project, environmental effects associated with dewatering activities on potential groundwater quality or quantity are not anticipated. • Some materials, such as fuel, lubricating oils and other fluids associated with the construction phase of the Project have the potential for discharge to the natural environment through accidental spills and thus potentially infiltrate groundwater supplies.	• No spills. • No impacts to ground water.	• If dewatering activities of more than 50,000 litres per day but less than 400,000 litres per day are required, the Proponent will register the water taking activities on the MOECC EASR.	• With the implementation of suggested mitigation measures, no significant adverse residual effects on groundwater or private wells are anticipated.	• Monitoring of select private water wells will be initialized prior to the start of construction, and confirmed through the REA process. • If dewatering is required, the discharge location(s) should be monitored to avoid erosion, sedimentation or flooding. If any issues are observed, dewatering should cease until proper controls are implemented.
Section 3.3.2 Surface Water, Fish and Fish Habitat	• Potential impacts to water bodies located within 120 m of the Project Location may include: – short-term increase in turbidity from runoff and soil erosion during construction – loss of shade, reduced bank stability – reduction in inputs of organic matter, nutrients and other material originating from the terrestrial environment – water quality and habitat disturbance effects to aquatic habitat – water quality and habitat effects due to entry of deleterious substances into surface water • Some materials, such as fuel, lubricating oils and other fluids associated with the construction phase of the Project have the potential for discharge to the natural environment through accidental spills and thus potentially enter surface water features.	• No erosion, sedimentation of water bodies. • No spills.	• General mitigation measures for construction activities near a water body within the ZOI include: o No in-water work can occur between March 15th and July 15th (work is permitted from July 16th to March 14th. o Operate and store materials and equipment used for the purpose of site preparation and Project construction in a manner that reduces the risk of deleterious substances (e.g., petroleum products, silt, etc.) entering into surface waters. o Implement erosion and sediment control measures prior to construction and maintain measures during the construction phase to reduce the risk of sediment enter the water: - silt fencing and/or barriers shall be used along all construction areas adjacent to water bodies - no equipment shall be permitted to enter any water bodies beyond the silt fencing during construction - all sediment and erosion control measures shall be inspected at least weekly and during and immediately following rainfall events - topsoil stockpiles shall be sufficiently distant from water bodies	• With the implementation of suggested mitigation measures, no significant adverse residual effects on surface water, fish and fish habitat are anticipated.	• Drainage ditches, culverts and general flow patterns will be monitoring during construction to maintain proper site drainage. • Monitoring during the following spring run-off the year after construction (first year of operations), to review the effectiveness of the site stabilization and re-vegetation, to check bank and slope stability, and to ensure surface drainage has been maintained. • Follow-up will occur in the event of an accidental spill. Remedial actions may be developed and implemented if adverse effects are observed. Contaminated soils would be removed and replaced as appropriate. • The entrance culverts should be monitored to check that they are functioning properly. Further restoration activities and subsequent monitoring should be conducted as necessary. • Even with properly installed erosion and sedimentation control measures, extreme runoff events could result in the collapse of silt fencing, overflow or bypass of barriers, and other problems which could lead to sedimentation of watercourses. If sedimentation of a watercourse occurs, immediate action should be taken under the direction of on-site inspection team to install temporary measures that will contain the erosion as quickly and effectively as practical. • Permanent erosion and sedimentation control be reinstalled on erosion susceptible surfaces when site conditions permit. If the erosion and sedimentation results from a construction-related activity, the activity should be halted immediately until the situation is rectified.

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
			- disturbed areas of the construction site shall be stabilized and re-vegetated as soon as conditions allow - sediment and erosion control measures shall be left in place until the construction site has been re-stabilized with vegetation.		
Section 3.4.1 Air & Dust Emissions	• Minor localized air emissions will occur from operating heavy equipment • Traffic delays may result in increased emissions from vehicles traveling slowly through construction zones • Delivery of materials to construction sites can also generate significant amounts of emissions, especially for sites that are relatively far from material manufacturers • Construction related traffic and various construction activities can create short-term nuisance dust effects in the immediate vicinity of the Project Location	• Minimize duration and magnitude of emissions	• Maintaining equipment in good running condition and in compliance with regulatory requirements • Protecting stockpiles of friable material with a barrier or windscreen and in the event of dry conditions and excessive dust • Dust suppression (e.g., water) of source areas (water will be obtained via tanker trucks) • Covering loads of friable materials during transport • Company and construction personnel will avoid idling of vehicles when not necessary for construction activities • Equipment and vehicles will be turned off when not in use unless required for construction activities and/or effective operation • All construction equipment will meet the emissions requirements of the MOECC and/or MTO.	• Net effects are expected to be short-term in duration and highly localized	• All vehicles identified through a monitoring program that fail to meet the minimum emission standards would be repaired immediately or replaced as soon as practicable from the construction area. • Adherence to the Complaint Response Protocol if a concern is submitted with the Pendleton Energy Centre LP • Maintenance records of Project vehicles will be retained and made available for periodic review by the general contractor • All vehicles identified through the monitoring program that fail to meet the minimum emission and noise standards will be repaired immediately or replaced as soon as practicable
Section 3.4.2 Environmental Noise	• Noise will be generated by the operation of heavy equipment and vehicles on-site and from increased vehicular traffic on County Road 19 and County Road 2.	• Sound level of construction equipment to meet MOECC guidelines	• All engines associated with construction equipment will be equipped with mufflers and/or silencers in accordance with MOECC and/or MTO guidelines and regulations and requirements of the Occupational Health and Safety Act. • Noise levels arising from equipment will be compliant with sound levels established by the MOECC. • Construction noise will only occur between 7:00 AM and 11:00 PM in accordance with the Canton/Township of Alfred and Plantagenet Noise Regulations By-law 2007-53, unless permitted by the Township. • A complaint response protocol will be established in the detailed construction plan which would allow for the reporting of questions, concerns and/or complaints regarding noise generated through construction activities.	• Any net effects are expected to be limited to short-term, intermittent noise increases at the work areas and/or along the haul routes	• Monitoring and maintenance of noise abatement devices on construction and support equipment would also take place to keep noise levels within MOECC and Municipal guidelines (if applicable). • Adherence to the Complaint Response Protocol if a concern is submitted with Pendleton Energy Centre Limited Partnership.
Section 3.5 Land Use and Socio-Economic Resources	• No impacts to municipal land use or zoning designations will occur. • Surrounding residents may experience a general visual or sensory nuisance from Project construction activities. • Taking the current Project Location lands out of agricultural production, but will return those lands to a state similar to the current state at the time of decommissioning (or another land use, in	• Minimize nuisance to surrounding landowners. • Preserve quality of agricultural lands.	• Consultation has been initiated, and will continue, with surrounding landowners to identify methods of minimizing disturbance to their property. • Where work is to occur within the SNCA regulated areas, consultation with SNCA will occur and the Proponent will apply for permits under O. Reg. 170/06 as required. • Erosion and sediment control structures should be installed on erosion susceptible surfaces.	• Effects are anticipated to be short-term in duration, temporary, and would be minimized through the implementation of good site practices, transportation planning, and communication with surrounding landowners.	• To the extent feasible, construction activities should occur during drier times of the year. Lands affected by heavy rainfall events should be monitored for wet soil conditions, to avoid the potential for topsoil and subsoil mixing. Construction activities should be temporarily halted on lands where excessively wet soil conditions are encountered. • Where topsoil stripping is undertaken, topsoil and subsoil should be stripped and stockpiled separately to avoid mixing. Topsoil depth should be confirmed prior to stripping so that the proper depth of topsoil is removed and replaced.

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
	accordance with the zoning by-law, as determined by the landowner at the time of decommissioning). • Construction activity has the potential to alter the agricultural capacity of the land following decommissioning of the Project. • Improperly stripping, storage and replacement of topsoil can result in topsoil and subsoil mixing, compaction, rutting, and erosion, which can potentially decrease crop yields. • Impacts to mineral, aggregate or petroleum resources, local hiking or cycling routes, fishing or conservation areas, or parks are not anticipated.		• To the extent feasible, construction activities should occur during drier times of the year. • Where topsoil stripping is undertaken, topsoil and subsoil should be stripped and stockpiled separately to avoid mixing. Topsoil depth should be confirmed prior to stripping so that the proper depth of topsoil is removed and replaced.	• The agricultural productivity of the Project Location will be lost during construction and operation of the Project, however, the effects to the agricultural soils removed during construction are expected to be temporary and spatially limited. • With the implementation of suggested mitigation measures, no significant adverse residual effects on land use or socio-economic resources are anticipated.	
Section 3.6.1 Municipal Infrastructure	• There will be an increase in traffic on municipal roads during construction due to the commuting workforce, the transport of Project components, construction machinery, equipment and supplies, and to remove excess materials and waste from the Project Location.	• Minimize disturbance to municipal infrastructure.	• The general contractor will implement a Traffic Management Plan to identify and address traffic planning issues including the management of traffic and the delivery of materials. • Delivery routes and times will be negotiated in a Road Use Agreement with the United Counties of Prescott and Russell.	• Although the general contractor will develop and implement a Traffic Management Plan and the Proponent will negotiate a Road Use Agreement with the United Counties of Prescott and Russell, the risk of accidents along the haul routes and on-site cannot be totally avoided. • The effect of constructing the various Project components is anticipated to have a limited, short term effect on traffic and roads during construction. • A minor temporary increase in local traffic is anticipated, however, with the implementation of suggested mitigation measures, no significant adverse residual effects on municipal infrastructure are anticipated.	• The Proponent's on-site monitoring team should monitor the general contractors' implementation of the Traffic Management Plan to confirm that property access to residences has been maintained and that traffic is not being unnecessarily interrupted.
Section 3.6.2 Other Utilities and Infrastructure	• There is potential to strike or interfere with a buried or overhead utility which could result in damage to the infrastructure and injury to personnel.	• No interference with utilities and other infrastructure.	• Consultation has been initiated, and will continue, with Hydro One to discuss interconnection to the 27.6 kV distribution line located on the west side of county Road 19. • A contractor will be responsible for locating and marking any utilities on lands which may be affected by the Project. • Machine operators will be informed where electrical lines are present overhead and/or underground. Lines that may interfere with the	• With the implementation of suggested mitigation measures, no significant adverse residual effects on utilities or infrastructure are anticipated.	• None required.

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
			operation of equipment will be aptly identified by the general contractor.		
Section 3.7 Waste Material Disposal & Spills	• Improper disposal of waste material generated during construction may result in contamination to soil, and/or surface water resources on and off Project lands. • Litter generated during construction may also become a nuisance to nearby residences, if not appropriately contained and allowed to blow off the construction site. • Accidental spills of fuels or lubricants could result in contamination of soil and or groundwater if not properly contained.	• No contamination as a result of improper disposal of waste. • No spills.	• Waste materials will be stored in appropriate storage units. • Upon completion of construction activities, waste materials remaining on-site will be collected and properly disposed at an appropriate MOECC-approved off-site facility. • Fuelling of construction vehicles will take place within designated fuelling areas . • Materials kept on-site during construction that may result in an accidental spill or release to the environment are limited to fuel and lubricating oils. Fuel will be stored on site in a double wall tank surrounded with bollards and emergency response equipment at the stations (fire extinguishers, spill kits, etc.). • In the event of a fuel or lubricant spill on-site, the following procedures will be implemented: o Primary action at the spill location - Notify the construction supervisor. - Contain the spill by building earth dikes. - As per s.13 of the Environmental Protection Act, all spills that could potentially have an adverse environmental effect, are outside the normal course of events, or that exceed the prescribed regulatory quantities should be reported to the MOECC's Spills Action Centre. o Secondary action - For a small quantity spill, absorbent pads will be carried in the construction supervisor's vehicle and would be applied. All absorbent pads will be disposed of in plastic bags and placed into a container marked for proper disposal. - For a larger quantity spill, a hazardous waste removal contractor will be mobilized to the site to remove contaminated material with a vacuum truck. - If any hazardous material reaches a waterway or ditch containing water, absorbent booms will be deployed to contain and spill. o Final cleanup	• Accidental spills are anticipated to occur infrequently, if at all, and be spatially limited. • With the implementation of suggested mitigation measures, no significant adverse residual effects from waste material disposal or accidental spills are anticipated.	• Records of waste generation and hauling should be maintained, as appropriate. Where a third party's activities are identified as non-compliant or insufficient, the general contractor would seek out an alternative recycling or disposal solution. • The Proponents on-site inspection team should inspect that the general contractor is following the spill response protocols outlined in this CPR and the Emergency Response and Communications Plan. • In the event that previously unknown materials or contaminated soils are uncovered or suspected of being uncovered, construction in the find location should cease immediately. In such an instance, the Proponent should retain expert advice on assessing and developing a plan for soil sampling, handling, disposal and remediation.

Table B.1 Summary of Potential Environmental Effects, Mitigation Measures, and Monitoring and Contingency Measures for the Construction Phase of the Project

Section	Potential Environmental Effects	Performance Objective	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
			- All contaminated soil or other contaminated materials would be removed and placed into plastic bags or other approved containers and disposed of off-site by an approved hazardous waste contractor. - Backfilling and grading will be performed to restore the spill area, as required. • Waste materials brought to the site that will be removed include equipment packaging, scraps, fuel and other lubricants and would require reuse, recycling, and/or disposal at an appropriate MOECC-approved off-site facility. • Sanitary waste generated during the construction phase would be collected via portable toilets and wash stations supplied by a licensed third party who would be retained prior to the start of major construction activities.		
Section 3.8 Public Health and Safety	• Potential safety concerns exist at locations where residents and vehicles may come in proximity to construction activities, particularly near County Road 19 and County Road 2. • Traffic safety is a concern during installation of the overhead connection line to the Hydro One distribution line located on the west side of County Road 19.	• Zero project related injuries.	• Consultation with surrounding residents will occur in advance of construction commencement. Contact information for a designated Proponent representative will be available prior to and during construction to address questions and concerns. • Safety fence should be installed at the edge of the construction area to keep the public away from the work • The CEMP will include a Health and Safety Plan, Emergency Response and Communications Plan, Training Plan, and Complaint Response Protocol. • A perimeter fence will be installed around the facility to prevent authorized access and provide safety to the public.	• With the implementation of the suggested mitigation measures and adherence to safety policies and regulations, there is minimal increased or new risk to public health and safety from construction of the Project.	• The Proponent should review Project complaints on a regular basis and respond accordingly in a timely manner, in accordance with the Complaint Response Protocol.

Table B.2: Summary of the Potential Negative Effects, Performance Objectives, Mitigation Strategies, Monitoring Plan And Contingency Measures for the Operational Stage of the Project

Feature	Potential Environmental Effects	Performance Objectives	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
Section 5.1 Cultural Heritage and Archaeological Resources	• None. No cultural heritage landscapes, protected properties or archeological resources were identified.	• No impacts to cultural heritage landscapes, protected properties and archeological resources	• None Required.	• None.	• None Required.
Section 5.2.1 Significant Wetlands	• No direct effects on significant wetlands are anticipated during operation of the Project. • Some materials, (e.g., fuel, lubricating oils, other fluids) and waste materials associated with the operation phase of the Project have the potential for discharge to the natural environment through accidental spills and thus potentially enter significant wetlands.	• No impacts to significant wetland features. • Minimize potential for accidental spills.	• Avoidance was the main strategy used to minimize effects to significant wetlands within 50 m of the Project Location. • Mitigation measures for material waste disposal and accidental spills are listed under Waste Material Disposal & Spills.	• With the implementation of suggested mitigation measures, no significant adverse residual effects on significant wetlands are anticipated.	• None required.
Section 5.2.2 Significant Woodlands	• No direct effects on significant woodlands are anticipated during operation of the Project. • Potential for spills and contamination to the woodland.	• No impacts to significant woodland features. • Minimize potential for accidental spills.	• Avoidance was the main strategy used to minimize effects to significant woodlands within 50 m of the Project Location. • Storage of fuel and activities with the potential to cause contamination will occur in properly protected and sealed areas outside the woodland boundaries.	• With the implementation of suggested mitigation measures, no significant adverse residual effects on significant wetlands are anticipated.	• None required.
Section 5.2.3 Wildlife and Wildlife Habitat	• No direct effects on Generalized Candidate SWH are anticipated during operation of the Project.	• Minimize impacts to wildlife habitat.	• Mitigation measures for the significant wetland and woodland features will be applied as outlined above, as Generalized Candidate SWH is contained within these features.	• With the implementation of suggested mitigation measures, no significant adverse residual effects on significant wetlands are anticipated.	• None required.
Section 5.2.4 Areas of Natural and Scientific Interest (ANSIs)	• None. No ANSIs were identified within 300 m of the Project Location.	• No impacts to ANSIs.	• None required.	• No significant adverse residual effects on ANSIs are anticipated.	• None required.
Section 5.2.5 Provincial Parks and Conservation Areas	• None. No provincial parks or conservation reserves were identified within 300 m of the Project Location.	• No impacts to Provincial Parks and Conservation Reserves.	• None required.	• No significant adverse residual effects on provincial parks or conservation reserves are anticipated.	• None required.
Section 5.3.1 Groundwater	• There are no municipal wells within 20 km of the Project Location, and therefore under the Clean Water Act (2006) operation of the facility does not pose a threat to the groundwater drinking supply. • Negative environmental effects to water wells are not anticipated during operation of the Project.	• No impacts to Groundwater.	• The Proponent is in consultation with landowners neighboring the Project to determine appropriate proactive well testing measures to verify that the construction of the Project does not have an impact on well water supply in the area. • Groundwater investigations and/or monitoring requirements will be verified during the REA process. • Spill response and clean up should be conducted in a timely fashion to prevent	• With the implementation of suggested mitigation measures, no significant adverse residual effects on significant wetlands are anticipated.	• None required.

Table B.2: Summary of the Potential Negative Effects, Performance Objectives, Mitigation Strategies, Monitoring Plan And Contingency Measures for the Operational Stage of the Project

Feature	Potential Environmental Effects	Performance Objectives	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
			contamination from reaching the groundwater table. • If adverse effects have occurred due to operation activities, a potable water supply should be provided by the Proponent and the water well should be repaired or restored as required.		
Section 5.3.2 Surface Water, Fish and Fish Habitat	• No direct effects to waterbodies are anticipated during operation of the Project.	• No impacts to surface water, fish and fish habitat.	• General mitigation measures for operation activities near a water body within 50 m of the Project Location include: – refuel and maintain equipment at least 100 m from water bodies – report spills to the MOECC Spills Action Centre – For the duration of the work, keep on-site and readily accessible, all material and equipment needed to contain and clean-up releases of sediment-laden water and other deleterious substances.	• With the implementation of the suggested mitigation measures, no significant adverse residual effects on surface water, fish and fish habitat are anticipated.	• Drainage ditches and general flow patterns will be monitored during operation to maintain proper site drainage.
Section 5.4.1 Air & Dust Emissions	• Minor localized air emissions from periodic use of equipment for general repairs, maintenance of panels and from personnel vehicles.	• Minimize duration and magnitude of emissions	• Use of multi-passenger vehicles where practical. • Avoid idling. • Maintain equipment and vehicles in good working order with functioning mufflers and emission control systems as available. • Ensure all equipment and vehicles meet emissions requirements of the MOECC and/or MTO	• Any adverse net effects are anticipated to be short-term in duration and highly localized.	• Adherence to Complaint Response Protocol.
Section 5.4.2 Environmental Noise	• Noise from operation and maintenance of the Project.	• Predicted sound levels at all non-participating receptors to meet MOECC Guidelines.	• Comply with MOECC environmental noise guidelines. • In the event the project does not operate in accordance with the terms and conditions of the REA, non-compliant components may be shut down until the problem is resolved. • Regular maintenance program to proactively identify operational issues and keep equipment operating in accordance with manufacturer's specifications. • Adherence to Complaint Response Protocol	• No significant net effects are anticipated.	• Noise monitoring (if required), would be conducted in accordance with the REA for the Project. • Routine maintenance and monitoring would also help minimize the likelihood of malfunctioning equipment resulting in excessive noise emissions.
Section 5.5 Land Use and Socio-Economic Resources	• Visual or sensory nuisance to the community may occur due to the presence of the facility and noise created during occasional maintenance activities during the operational phase of the Project. • The Project will take the current Project Location lands out of agricultural production, but will return those lands to a state similar to the current state at the time of decommissioning (or another state, in	• Minimize nuisance to surrounding landowners. • Preserve quality of agricultural lands.	• Trees will be retained along the corner of County Road 2 and County Road 19 to act as a vegetation barrier which will gradually reduce the visual impact during operation of the facility. • Trees were planted in fall 2016 and spring 2017 adjacent the Project Location boundary along County Road 2 (east of the Tree Preservation Area) and County Road 19 (south of the Tree Preservation Area). • Soil compaction will be addressed during the decommissioning phase of the Project and is discussed in the Decommissioning Plan Report.	• Above grade Project infrastructure is removable and, as a result, the visual impact is considered temporary and reversible. • The agricultural productivity of the Project Location will be lost during construction and operation of the Project, however, the effects to the agricultural soils are	• The Proponent should review Project complaints on a regular basis and respond accordingly in a timely manner, in accordance with the Complaint Response Protocol. • The Proponent should monitor compliance with the Emergency Response and Communications Plan.

Table B.2: Summary of the Potential Negative Effects, Performance Objectives, Mitigation Strategies, Monitoring Plan And Contingency Measures for the Operational Stage of the Project

Feature	Potential Environmental Effects	Performance Objectives	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
	accordance with the zoning by-law, as determined by the landowner at the time of decommissioning). • Operation activities have the potential to alter the agricultural capacity of the land following decommissioning of the Project. • Compaction of topsoil and erosion or surface soil may occur during operation and can potentially decrease crop yields. • Impacts to mineral, aggregate or petroleum resources, local hiking or cycling routes, fishing or conservation areas, or parks are not anticipated.			expected to be temporary and spatially limited (i.e., during the life of the project only). It is anticipated that the lands can be returned to agricultural production following the decommissioning of the Project. • With the implementation of the above mitigation measures, no significant adverse residual effects on land use or socio-economic resources are anticipated.	
Section 5.6.1 Municipal Infrastructure	• None.	• None.	• None required.	• None.	• None required.
Section 5.6.2 Other Utilities and Infrastructure	• If utilities are not properly located and marked prior to planned or unplanned maintenance activities, there is potential to strike or interfere with a buried or overhead utility which could result in damage to the infrastructure and injury to personnel.	• No interference with utilities and other infrastructure.	• The contractor will be responsible for locating and marking existing pipelines and utilities on lands which may be affected by Project maintenance. • Machine operators will be informed where electrical lines are present overhead. • Lines that may interfere with the operation of equipment will be aptly identified by the general contractor.	• With the implementation of the above mitigation measures, no significant adverse residual effects on utilities or other infrastructure are anticipated.	• None.
Section 5.7 Waste Material Disposal & Spills	• Wastes such as equipment packaging, wrappings and scraps (wood and metal) will be generated during operation activities and require reuse, recycling, and/or disposal at an appropriate MOECC-approved off-site facility. • Improper disposal of waste material generated during operation may result in contamination to soil, and/or surface water resources on and off Project lands. • Litter generated during operation may also become a nuisance to nearby residences, if not appropriately contained and allowed to blow off the construction site. • Accidental spills of fuels or lubricants could result in	• No contamination as a result of improper disposal of waste. • No spills.	• During operation, the Proponent and/or the operation and maintenance contractor will implement a site-specific waste collection and disposal management program, which may include: • the Proponent and/or contractors will remove all waste materials from Project Location during maintenance activities • labelling and proper storage of liquid wastes (e.g. used oil and solvents) in a secure area that would contain materials in the event of a spill • as appropriate, spill kits (e.g. containing absorbent cloths and disposal containers) will be provided on-site during maintenance activities and at the control building • dumping or burying wastes within the Project sites would be prohibited • non-hazardous waste will be disposed at a registered waste disposal site(s) • if waste is generated that is not solid non-hazardous waste, a Generator Registration Number is required from the MOECC and	• Accidental spills are anticipated to occur infrequently, if at all, and be spatially limited.	• Records of waste generation and hauling should be maintained, as appropriate. Where a third party's activities are identified as non-compliant or insufficient, the Proponent would seek out an alternative recycling or disposal solution. • The Proponent should inspect that the maintenance contractor is following the spill response protocols outlined in this CPR and the Emergency Response and Communications Plan. • In the event that previously unknown materials or contaminated soils are uncovered or suspected of being uncovered, maintenance activities in the find location should cease immediately. In such an instance, the Proponent should retain expert advice on assessing and developing a plan for soil sampling, handling, disposal and remediation.

Table B.2: Summary of the Potential Negative Effects, Performance Objectives, Mitigation Strategies, Monitoring Plan And Contingency Measures for the Operational Stage of the Project

Feature	Potential Environmental Effects	Performance Objectives	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
	contamination of soil and or groundwater if not properly contained.		the generator would have obligations regarding manifesting of waste. Compliance with Schedule 4 of O. Reg. 347 is mandatory when determining waste category • implementation of an on-going waste management program consisting of reduction, reuse, and recycling of materials. • Equipment maintenance and refueling, and other potentially contaminating activities, will occur in designated areas. Large quantities of fuel, lubricating oils, and other fluids associated with maintenance activities will not be stored at the site. The storage of minor quantities of fuels and lubricants on-site do not represent a significant potential adverse effect on the groundwater in the event of accidental spills. Standard containment facilities and emergency response materials would be maintained on-site as required. • If an accidental spill occurs, the response procedures noted in Section 3.7 of the Construction Plan Report will be implemented. Follow-up monitoring /inspections would be implemented in the event of an accidental spill/leak, as appropriate. Remedial actions may be required in the event that follow-up monitoring indicates adverse effects to natural features.		
Section 5.8 Public Health and Safety	• Potential risk of fire associated with an accident or malfunction. • Possible failure of overhead line poles.	• Zero project related injuries.	• The primary method of minimizing potential public health and safety risks will be by installing perimeter fencing to restrict site access and prevent trespassing and vandalism (see Section 3.3.2). • The Proponent will reduce accidents and malfunctions by providing proper training and education of staff operating the control system and maintaining the Project infrastructure. • Solar panels and associated electrical equipment will be installed and maintained in accordance with applicable safety standards. • The primary preventative measure taken to avoid pole failure during operation is at the design stage. Overhead lines will be designed and constructed in accordance with applicable regulatory guidelines. • Should maintenance activities be required within a municipal road allowance, access to residential properties should be maintained at all times.	• None.	• The Proponent should review Project complaints on a regular basis and respond accordingly in a timely manner, in accordance with the Complaint Response Protocol.

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Feature	Potential Environmental Effects	Performance Objectives	Mitigation Measures	Net Effects	Monitoring and Contingency Measures
			• Safety fence should be installed at the edge of the construction area where public safety considerations are required. Traffic controllers and appropriate signage should be utilized as necessary. • An annual meeting and site visit would be arranged with municipal emergency response staff To review site security procedures. • Specialized equipment beyond what is typically required to respond to electrical fires is not required for fires involving solar panels.		