Pendleton Solar Energy Centre Decommissioning Plan Report

FINAL REPORT



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Sign-off Sheet

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Table of Contents

ABBRI	EVIAT	IONS	II
1.0		ODUCTION	
1.1 1.2		erview Ort requirements	
2.0	PRC	BABLE FUTURE USE OF THE FACILITY	2.1
3.0	DEC	OMMISSIONING	3.1
3.1	DEC	COMMISSIONING DURING CONSTRUCTION (ABANDONMENT OF	
)JECT)	
3.2	DEC	COMMISSIONING AFTER CEASING OPERATION	
	3.2.	<u> </u>	
	3.2.		3.2
	3.2.	B Equipment Dismantling and Removal	3.2
3.3	SITE	REHABILITATION/RESTORATION	3.4
	3.3.	Natercourses	3.4
	3.3.	2 Municipal Road Allowances	3.4
	3.3.	3 Agriculture Lands	3.5
	3.3.		
3.4	MAI	NAGING EXCESS MATERIALS & WASTE	3.5
4.0		RGENCY RESPONSE AND COMMUNICATIONS PLANS	
4.1		TRONMENTAL PROCEDURES	
4.2	OC	CUPATIONAL HEALTH AND SAFETY PROCEDURES	4.1
4.3	HEA	LTH AND SAFETY PLAN	4.1
4.4	EME	RGENCY RESPONSE AND COMMUNICATIONS PLAN	4.2
5.0	DEC	OMMISSIONING NOTIFICATION	5.1
6.0	ОТН	ER APPROVALS	6.1
7.0	REFI	RENCES	7.1
LIST O	FTAE	BLES	
Table	1.1:	Decommissioning Plan Report Requirements (as per O. Reg. 359/09 – Table 1)	1 0
Table	3.1.	Typical Facility Decommissioning Waste Materials and Modes of	1.2
. 5.5.0	J	Disposal	3.6
Table	6.1:	Potential Decommissioning Permits and Approvals	



Abbreviations

DPR Decommissioning Plan Report

Hydro One Hydro One Networks Inc.

km Kilometre(s)

kV Kilovolt(s)

m Metre(s)

mbg Metre(s) below ground

mm Millimetre(s)

MNRF Ministry of Natural Resources and Forestry

MOECC Ministry of the Environment and Climate Change

O. Reg. Ontario Regulation

OMAFRA Ontario Ministry of Agriculture, Food and Rural Affairs

PV Photovoltaic

REA Renewable Energy Approval

SCADA Supervisory control and data acquisition

SNCA South Nation Conservation Authority

Stantec Stantec Consulting Ltd.

the Project Pendleton Solar Energy Centre

the Proponent Pendleton Energy Centre Limited Partnership



Introduction June 28, 2017

1.0 INTRODUCTION

1.1 OVERVIEW

Pendleton Energy Centre Limited Partnership (the Proponent), is proposing the development of a 12 megawatt alternating current 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. 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 initiative to promote the development of renewable electricity in the province.

The Project is located at Lot 19-20, Concession 8 North Plantagenet, on land leased by the Proponent for 20 or more years. The Project Location is bounded to the north by County Road 2, to the east and south by forested lands, and to the west by County Road 19. A map showing the location of the Project is provided in **Figure 1**, **Appendix A**.

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

Section 2.0 of this report describes the potential future use of the Project beyond its initial contract period. Section 3.0 describes the decommissioning activities, as well as the location and timing of any site rehabilitation and restoration for areas disturbed by the Project. It also describes the management of excess materials and waste during dismantling and decommissioning of the Project. Section 4.0 outlines details of the Emergency Response Plan, and Section 5.0 outlines notification to inform the public of Project decommissioning. The municipal and provincial permits and approvals which may be required at the time of decommissioning are provided in Section 6.0.



1.1

Introduction June 28, 2017

1.2 REPORT REQUIREMENTS

This Decommissioning Plan Report (DPR) describes the Project activities planned during the decommissioning phase so that potential negative environmental effects may be identified. In addition, this report describes mitigation measures in respect of negative environmental effects that could result from decommissioning activities.

This DPR is one component of the REA application for the Project, and has been 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 (2017). **Table 1.1** summarizes the requirements of this report as specified under O. Reg. 359/09:

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

	Requirements	Section Reference			
Set	Set out a description of the following in respect of the renewable energy project:				
1.	Procedures for dismantling or demolishing the facility.	3.1-3.2			
2.	Activities related to the restoration of any land and water negatively affected by the facility.	3.3			
3.	Procedures for managing excess materials and waste.	3.4			



Probable Future Use of the Facility June 28, 2017

2.0 PROBABLE FUTURE USE OF THE FACILITY

The Project is anticipated to have an operational lifespan of 20 or more years. At the end of the Project lifespan, the Project components are expected to be decommissioned as described in Section 3.0. If Project economics and need remain viable at that time, the facility could be "repowered" with new technology and continue operating for an extended period. This process may include the replacement and/or upgrading of Project components, however specific details are unknown at this time as technological improvements over the next 20+ years are currently unknown. The Proponent would engage the public, as appropriate and as required based on regulations and requirements in effect at the time of decommissioning, prior to incorporating substantial Project changes.

Although the future land use of the Project Location cannot be known, it is most probable that after decommissioning the Project Location will be returned to its former agricultural land use. Therefore, this DPR has conservatively assumed that the future site uses will be agricultural. It should be noted that there is potential for the planned post-Project land use to change prior to actual decommissioning. The information in this Report will be updated, if required, in advance of decommissioning to represent the applicable conditions and regulatory requirements in effect at that time.



Decommissioning June 28, 2017

3.0 DECOMMISSIONING

At the end of the Project's useful life, the Project components are expected to be decommissioned as described below.

3.1 DECOMMISSIONING DURING CONSTRUCTION (ABANDONMENT OF PROJECT)

In the unlikely event that construction cannot be completed and decommissioning of the Project is initiated during the construction phase, restoration of lands to pre-construction conditions will follow the same procedure as for the decommissioning at the end of Project life, as described in the sections below.

The Proponent would be responsible for environmental protection. In the event that the site has been cleared and/or excavated in preparation for installation of Project infrastructure, appropriate environmental protection measures would be implemented to prevent topsoil erosion. The extent of environmental protection measures required would be dependent on the progress made at the time of Project abandonment, and would be determined through site inspections by qualified specialists. Possible measures would include, as appropriate, erosion and sediment control fencing, filling excavated areas, replacement of topsoil, and/or revegetation.

3.2 DECOMMISSIONING AFTER CEASING OPERATION

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 (see Section 2.0). For this section of the DPR, it is assumed that the Project will be decommissioned after the 20-year power purchase agreement with the Independent Electricity System Operator (IESO), and prior to any substantial repowering efforts.

3.2.1 General Environmental Protection During Decommissioning

During all decommissioning and restoration activities, general environmental protection and mitigation measures would be implemented. Many activities during decommissioning would be comparable to the construction phase. As such, general mitigation measures and management practices that would be used, as appropriate, including erosion and sediment control, air quality and noise mitigation, and contingency plans for unexpected finds and spills, are provided in the Construction Plan Report.

All decommissioning and restoration activities will be performed as per the requirements of relevant governing agencies, and will be in accordance with all relevant statutes in effect at the time of decommissioning.



Decommissioning June 28, 2017

3.2.2 Pre-Dismantling Activities

At the end of the Project's useful life, it will first be de-energized and isolated from all external electrical lines.

Prior to any dismantling or removal of equipment, staging areas would be delineated at appropriate locations within the Project Location, including near the project substation and inverter locations.

Temporary erosion and sedimentation control measures will be implemented during the decommissioning phase of the Project. These measures will be enacted with consideration of industry standard practices.

3.2.3 Equipment Dismantling and Removal

The following sections describe the process that will be undertaken to remove the various components associated with the Project.

3.2.3.1 Solar Panels

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 watts per panel and measure approximately 2 m long by 1 m wide. Each solar panel will be mounted on a galvanized steel and 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.

Each panel will be disconnected from the electrical system and unfastened from the mounting rack. After removal of the panel from the rack, it will be placed in a vehicle or container for transportation off-site for recycling or disposal.

The fixed racks that support the solar panels will be disassembled and removed from the site. The metal racking components may be reused or recycled for future use.

All surface components and subsurface components, including those related to foundations will be removed to at least the lesser of i) depth to bedrock, ii) 1 m below surface, or iii) to the depth originally installed if less than 1 m. The soil will also be restored. Where feasible, some Project components that are located below approximately 1 m depth such as piles or concrete footings may be completely removed from the ground.



Decommissioning June 28, 2017

3.2.3.2 Electrical Equipment and Collector System

Inverters and inverter step-up transformer skids, including associated piling, will be removed and will be shipped off site for eventual reuse or disposal. The piles and associated foundations will be removed from the site and disposed or recycled.

Underground collector cables will be removed where they are less than 1 m below grade.

All work to decommission the overhead / underground (where less than 1 m below grade) connection line would be conducted within the boundaries of the Project and municipal road allowance.

3.2.3.3 Substation

All above ground structures and electrical equipment, including circuit breakers, chain link fencing, control building(s) and grounding grid would be removed, and any concrete foundations would be removed to at least 1 m below grade or to the depth originally installed if less than 1 m. All granular and geotextile materials would be removed from the Project Location by a dump truck, or placed in a designated on-site area for use by the landowner. All electrical system components will be taken off-site for reuse or disposal.

3.2.3.4 Access Roads

All access roads will be removed; this includes any geotextile material beneath the roads and granular material. All granular and geotextile materials would be removed from the site by dump truck.

Where any access roads will be removed within areas that were previously used for agricultural purposes, topsoil will be redistributed to provide similar ground cover as was present within the areas prior to site disturbance. The exception to removal of the access roads and associated culverts or their related material would be upon written request from the landowner to leave all or a portion of these facilities in place for future use by the landowner.

3.2.3.5 Storage Infrastructure and Perimeter Fence

Storage and operation infrastructure and any associated temporary decommissioning improvements (e.g., temporary construction trailer) used during the decommissioning phase will be removed from the site by truck. Any foundations associated with these facilities would be removed to a depth of at least 1 m below grade or to the depth originally installed if less than 1 m.

Perimeter fencing would be removed and recycled or re-used. Where the landowner prefers to retain the fencing, these portions of fence would be left in place.



Decommissioning June 28, 2017

3.3 SITE REHABILITATION/RESTORATION

The owner of the Project at the time of decommissioning will develop a Rehabilitation Plan designed to restore agricultural lands and wildlife habitat in areas affected by the Project.

The Rehabilitation Plan should include, but not be limited to the following:

- agricultural areas, which comprise the pre-developed Project Location, will be restored by
 redistributing topsoil to provide substantially similar ground cover as was present within the
 areas prior to site disturbance to accommodate the return of active agricultural operation of
 the site.
- natural areas will be revegetated using native plant material and seeds appropriate for the Project Location or allowed to revegetate naturally. In the event the land is intended to return to agricultural production, the re-seeding of the land will be in the purview of the landowner.
- access roads and other areas which may have become compacted during operation or decommissioning will be decompacted to pre-existing conditions.
- restoration of any drainage tile that was impacted by the Project and existing within the Project Location at the initiation of Project construction to the same condition or better condition than it was prior to Project construction.

Where Project infrastructure has been removed, disturbed areas will be seeded by the Proponent with quick growing native species to prevent topsoil erosion, unless seeding is immediately applied by the landowner. The seed mixture will be determined at that time in consultation with the Township of Alfred and Plantagenet, United Counties of Prescott and Russell and/or the South Nation Conservation Authority (SNCA), as applicable. Erosion and sediment control measures will be installed at ditches and will be left in place until ground cover is fully established.

3.3.1 Watercourses

Any proposed decommissioning works within or near watercourses would be discussed with the Township, the County, MNRF and/or SNCA as necessary, to determine any applicable guidelines, permitting, site-specific mitigation and/or remediation plans. Similar mitigation and monitoring measures implemented during construction will be used during decommissioning of the Project. These mitigation measures are described in the Construction Plan Report, and site specific requirements determined during the detailed design and permitting process. Measures are anticipated to include standard construction practices at the time of decommissioning including erosion and sediment control during removal of the structures.

3.3.2 Municipal Road Allowances

Existing Hydro One distribution circuit poles are located within the municipal road allowances. It is not anticipated that any decommissioning activities will occur within municipal road



Decommissioning June 28, 2017

allowances, beyond the removal of the connection line to the Hydro One distribution system located adjacent to the Project along County Road 19 (to be confirmed closer to the decommissioning phase of the Project). Should any of the municipal road allowances be disturbed during decommissioning activities, they will be returned to the condition they were in prior to the decommissioning activities. This will be determined in consultation with the United Counties of Prescott and Russell, the Township of Alfred and Plantagenet, and/or the SNCA as applicable.

3.3.3 Agriculture Lands

Agricultural lands that have become compacted due to facility operation or decommissioning activities, such as access roads, would be decompacted using chisel ploughing and/or subsoiling, as determined by an environmental advisor or landowner.

Any agricultural tile drains capped or modified during construction, and/or damaged during construction, operation and/or decommissioning, would be addressed by a drainage tile contractor and returned to the same condition or better condition than it was prior to Project construction.

Topsoil would be re-graded or added to similar depth as the condition it was prior to construction. All areas would be graded to pre-construction conditions and restored appropriately, in consultation with the landowner.

3.3.4 **Spills**

Although strict spill prevention and spill response procedures will be in place during operation, there is the potential for small spills to occur during routine operation, maintenance, and decommissioning. Mitigation measures for spills are described in the <u>Construction Plan Report</u>.

Hazardous materials or wastes will not be stored on-site during operation and maintenance of the Project. Provided the Project is operated and maintained in accordance with industry best practices there should be no significant environmental liabilities associated with cleanup or remediation.

3.4 MANAGING EXCESS MATERIALS & WASTE

Prior to decommissioning of the Project, the Proponent would complete a waste audit and prepare a waste reduction work plan in accordance with any applicable guidance or requirements of the MOECC, or relevant regulations in effect at time of decommissioning.



Decommissioning June 28, 2017

Typical waste materials and modes of disposal, recycling or reuse are presented in **Table 3.1.**

Table 3.1: Typical Facility Decommissioning Waste Materials and Modes of Disposal

Component	Typical Mode of Disposal
Concrete foundations	Crush and recycle as granular material
Solar Panels	Reuse or recycle
Steel & aluminum racks and mounts	Salvage for reuse or recycle for scrap
Cabling	Recycle
Inverter step-up transformers, inverters and circuit breakers	Salvage for reuse or recycle for scrap
Granular material	Reuse or dispose in landfill
Oils/lubricants	Recycle
Geotextile material	Dispose in landfill
Miscellaneous non-recyclable materials	Dispose in landfill

Major pieces of equipment may be recyclable or reusable. The galvanized-steel and aluminum racks may be sold for scrap or recycled. Electrical equipment could either be salvaged for reuse or recycled. Components such as the cabling would have a high resale value due to copper and aluminum content. Concrete from footings could be crushed and recycled as granular fill material. Spent oils if any could be recovered for recycling through existing oil reprocessing companies.

As much of the facility would consist of reusable or recyclable materials, there would be minimal residual waste for disposal as a result of decommissioning the facility. Small amounts of registerable waste materials would be managed in accordance with O. Reg. 347 or subsequent applicable legislation. Residual non-hazardous wastes would be disposed of at a licensed landfill in operation at the time of decommissioning.



Emergency Response and Communications Plans June 28, 2017

4.0 EMERGENCY RESPONSE AND COMMUNICATIONS PLANS

The following programs, plans, and procedures described within the <u>Design & Operations Report</u> will be carried forward during the decommissioning of the Project.

4.1 ENVIRONMENTAL PROCEDURES

- Spills and releases: identify the procedures for the prevention, response, and notification of spills. In addition, establish the general procedures for spill clean-up, personnel training, and material handling and storage to prevent spills.
- Non-hazardous waste management: establish alternative procedures for the management and disposal of used lubricants, used drums, and general waste.

4.2 OCCUPATIONAL HEALTH AND SAFETY PROCEDURES

The general contractor retained to undertake decommissioning will be responsible for employee health and safety and will implement the following safety procedures and protocols, as appropriate, to maintain employee safety throughout decommissioning activities:

- personal protective equipment (PPE), including non-slip footwear, eye protection, clothing, and hardhats, will be worn by personnel when on duty
- elevated platforms, walkways, and ladders will be equipped with handrails, toeboards, and non-slip surfaces
- electrical equipment will be insulated and grounded in compliance with the appropriate electrical code.

As appropriate, the general contractor retained to undertake decommissioning will develop or have an existing training program that can be implemented to appropriately train personnel on decommissioning programs, environmental, health, and safety procedures, and the Emergency Response Plan.

4.3 HEALTH AND SAFETY PLAN

The general contractor will prepare a Health and Safety Plan considering both public and occupational health and safety issues. This may include protecting the public from equipment and construction areas by posting warning signs, use of PPE, accident reporting, equipment operation.



4.1

Emergency Response and Communications Plans June 28, 2017

4.4 EMERGENCY RESPONSE AND COMMUNICATIONS PLAN

The Emergency Response and Communications Plan detailed in the <u>Design & Operations Report</u> will be utilized during the decommissioning of the Project, along with the Complaint Response Protocol. This includes informing the public, Aboriginal communities, the Township of Alfred and Plantagenet, and the United Counties of Prescott and Russell about activities occurring at the Project site (including emergencies), means for contacting the Proponent or the general contractor responsible for decommissioning, recording follow up on complaints expressed during the decommissioning phase, and reporting spills to the MOECC, as required.



Decommissioning Notification June 28, 2017

5.0 DECOMMISSIONING NOTIFICATION

Advance notification of decommissioning will be provided to the Township of Alfred and Plantagenet, the United Counties of Prescott and Russell, Aboriginal communities, stakeholders and other interested agencies prior to decommissioning works commencing. Notification may be in the form of letters, newspaper notices, and updates on the Project or Proponent website or direct communications.



Other Approvals June 28, 2017

6.0 OTHER APPROVALS

The Proponent will obtain all necessary approvals in effect at the time from appropriate government and regulatory bodies. Existing permits and approvals, which may be required at the time of decommissioning, are provided in **Table 6-1**.

Table 6.1: Potential Decommissioning Permits and Approvals

Administering Agency	Permit / Approval	Rationale				
MUNICIPAL						
United Counties of	Municipal Consent, Work within the Right of Way	Required for works in county road allowances (e.g. County Road 2 and/or County Road 19).				
Prescott and Russell	Occupancy Permit	Use of county roads (e.g. County Road 2 and/or County Road 19).				
	Road Cut Permit	May be required for works to county roads (e.g. County Road 2 and/or County Road 19).				
Township of Alfred and Plantagenet and/or United Counties of Prescott and Russell	Traffic Management Plan	To adhere to road safety and suitability.				
PROVINCIAL						
SNCA	Development, Interference with Wetlands, and Alterations to Shorelines and Watercourses Permit	Work within floodplains, watercourse crossings, river or stream valleys, hazardous lands and within or adjacent to wetlands.				
MOECC	Record of Site Condition	A change of property use and/or ownership.				
Ministry of Labour	Notice of Project	Notify the Ministry of Labour before decommissioning begins.				
	Special vehicle configuration permit	Use of non-standard vehicles to transport large components.				
	Transportation Plan	Adherence to road safety and suitability.				
Ministry of	Highway Entrance Permit	Interference or obstruction of the highway.				
Transportation	Change of Access and Heavy/Oversize Load Transportation Permit	Compliance with provincial highway traffic and road safety regulations.				
	Wide or excess load permit	Transportation of large or heavy items on provincial highways.				



References June 28, 2017

7.0 REFERENCES

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- Ministry of the Environment (MOE). 2008. A Guide to Waste Audits and Waste Reduction Work Plans for Construction & Demolition Projects, as required under Ontario Regulation 102/94. Last revised: 2008.
- Ministry of the Environment (MOE). 2010. Technical Bulletin Four Guidance for Preparing the Decommissioning Plan Report, as part of an application under Ontario Regulation 359/09.
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7.1