SOLRAY.

February 2012

ENVIRONMENTAL IMPACT STUDY REPORT

Sunderland Solar Farm

DILLON CONSULTING

TABLE OF CONTENTS

1.0 Introduction 1
2.0 The Proponent 3
3.0 Project Location 4
4.0 Project Summary 6
5.0 Environmental Impact Study Purpose 9
6.0 Rationale For Development within A Natural Feature Or Setback 10
7.0 Project Activities 11
7.1 Construction Activities 12
7.2 Operations and Maintenance 17
7.3 Decommissioning Activities 20
7.3.1 Equipment Dismantling and Removal 20
7.3.2 Site Restoration 21
7.3.3 Managing Excess Materials and Waste 21
8.0 Existing Environmental Conditions of Relevant Natural Features 22
8.1 Overview 22
8.2 Description of Significant Natural Features 22
8.2.1 Wetlands 22
8.2.2 Woodlands 25
8.2.3 Wildlife Habitat 27
9.0 Environmental Effects of the Project 30
9.1 Mitigation Commitments to Compensate for Habitat Loss and Disturbance 44
10.0 Environmental Effects Monitoring Plan 45
11.0 Negative Environmental Effects, Design and Operations 47
12.0 Negative Environmental Effects, Construction 48
13.0 Conclusions 49
14.0 References 50

LIST OF FIGURES

Figure 1: General Location of the Sunderland Solar Farm in Ontario 2

Figure 2: Project Location 5

Figure 3: Evaluation of Significance Map 8

LIST OF TABLES

Table 1: Summary of Natural Heritage Assessment for the Sunderland Solar Farm 6

Table 2: Project Construction Schedule 11

Table 3: Construction Activities 12

Table 4: Operations and Maintenance Activities 18

Table 5: Equipment Dismantling and Removal 20

Table 6: Description of Assumed Provincially Significant Wetlands within 120 metres of the Project 23

Table 7: Description of Significant Woodlands within 120 metres of the Project 26

Table 8: Description of Significant Wildlife Habitat in the Project Location and Surrounding 120 metres . 28

Table 9: A Summary of Key Features and Attributes that may Serve as Indicators of Negative Environmental Effects 31

Table 10: Summary of Potential Positive/Negative Effects and Mitigation Measures for Significant/Provincially Significant Natural Features 32

Table 11: Environmental Effects Monitoring Plan 46

1.0 INTRODUCTION

Solray Energy Corporation (Solray) proposes to develop a solar facility with a maximum name plate capacity of 10 MW, located near Sunderland in the Township of Brock and Regional Municipality of Durham, Ontario (**Figure 1**). The renewable energy facility will be known as the Sunderland Solar Farm (hereinafter referred to as the "project") and will be rated as a Class 3 Solar Facility. Solray has received a contract from the Ontario Power Authority (OPA) for the sale of electricity generated by this renewable facility through the Province's Feed-in-Tariff (FIT) program (enabled by the *Green Energy and Green Economy Act*, 2009). The project will require a Renewable Energy Approval (REA) as per *Ontario Regulation 359/09* under Part V.0.1 of the *Ontario Environmental Protection Act*.

Ontario Regulation 359/09 requires that renewable energy projects prepare an Environmental Impact Study (EIS) Report to address natural features that are located within the project location or a prescribed setback area and have been evaluated to be significant or provincially significant in the Evaluation of Significance Report (*REA* Section 38). This EIS Report was completed to address the regulatory requirements for the *REA* process and is the fourth and final report in a series that fulfills the requirements of the Natural Heritage Assessment as required by *Ontario Regulation 359/09*. The EIS Report will detail the potential impacts, mitigation and monitoring requirements to protect natural features within and adjacent to the project location. Discussions regarding Species at Risk and other information needs, as outlined in the MNR's Approval and Permitting Requirements Document for Renewable Energy (MNR 2009), are outlined in a separate report, under direction from the MNR and in compliance with *Ontario Regulation 359/09*.

Figure 1: General Location of the Sunderland Solar Farm in Ontario

2.0 THE PROPONENT

Solray is a developer of utility-scale solar energy projects in Ontario, with two projects moving towards construction and nine projects in early-stage development. Solray endeavours to work closely with all interested stakeholders including landowners, Aboriginal communities, the general public, municipalities, environmental officials and government agencies. Solray's main objective is to design, construct and operate projects that are both environmentally beneficial and financially viable.

Contact information for the proponent is as follows:

Full Name of Company:	*Solray Energy Corporation*
Prime Contact:	*Andy Keith, President*
Address:	*2788 Bathurst St., Suite 305* *Toronto, Ontario* *M6B 3A3*
Telephone:	*(416) 910-6580*
Fax:	*(416) 780-8001*
Email:	*andy@solray.ca*

Dillon Consulting Limited (Dillon) is the consultant responsible for the preparation of REA-related reports and for consultation activities for the Sunderland Solar Farm. The contacts at Dillon are:

Full Name of Company:	*Dillon Consulting Limited*	
Prime Contact:	*Mario Buszynski,* *Project Manager*	*Katharine Myrans,* *REA Project Coordinator*
Address:	*235 Yorkland Blvd., Suite 800* *Toronto, Ontario, M2J 4Y8*	*235 Yorkland Blvd., Suite 800* *Toronto, Ontario, M2J 4Y8*
Telephone:	*(416) 229-4646 ext 2365*	*(416) 229-4646 ext 2381*
Fax:	*(416) 229-4692*	*(416) 229-4692*
Email:	*MBuszynski@Dillon.ca*	*KMyrans@Dillon.ca*

3.0 PROJECT LOCATION

The proposed Class 3 Solar Facility is located at S1690 Concession Road 7, Sunderland, between Ridge Road and Sideroad 18A within the Township of Brock. The project location covers part of Lot 17, Concession 6, and consists of approximately 40.0 hectares of privately owned land, with geographic coordinates (centroids) as follows:

- Latitude: 44° 16' 49.521" N
- Longitude: 79° 2' 4.116" W

An electrical connection line approximately 2.5 km in length will be built by Hydro One Networks Inc. (HONI) along Concession Road 7 to link the energy generated at the above-mentioned location with the provincial electricity grid at Highway 12. This line is not considered to be part of the project location.

"Project Location" is defined in *Ontario Regulation 359/09* to be "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". Thus, **Figure 2** shows the project location, as defined in *Ontario Regulation 359/09*, to be the outer boundary (as identified by the perimeter fence) within which all project components are located. The figure identifies these components as well as lands within 120 metres and 300 metres of the project location.

The planned solar facility will occur entirely within lands zoned as rural by the Township of Brock (Township of Brock, 2005) and lands designated as agricultural by the Region of Durham (Municipality of Durham, 2005). In addition, the project location falls entirely within the Greenbelt Area Protected Countryside and Lake Simcoe Protection Plan Area, and partially within the Natural Heritage System of the Greenbelt Plan Area (MOE 2009; Greenbelt Plan 2005).

SOLRAY.

Sunderland Solar Farm

Figure 2: Project Location

Legend

- Roads
- 120 m from Project Location
- 300 m from Project Location
- Project Location
- Lots/Concessions
- Access Road w/Shoulder
- Noise Barrier
- Panels
- 0.5 MW Section Boundaries
- Fence
- Lay Down Area
- Substation
- Inverter

0 100 200 300

DILLON CONSULTING

N W E S

Created By: SFG/SCM
Checked By: KM
Date Created: 042511
Date Modified: 120111
File Path: I:\GIS\Solray Sunderland\Mapping\Project Layout.mxd

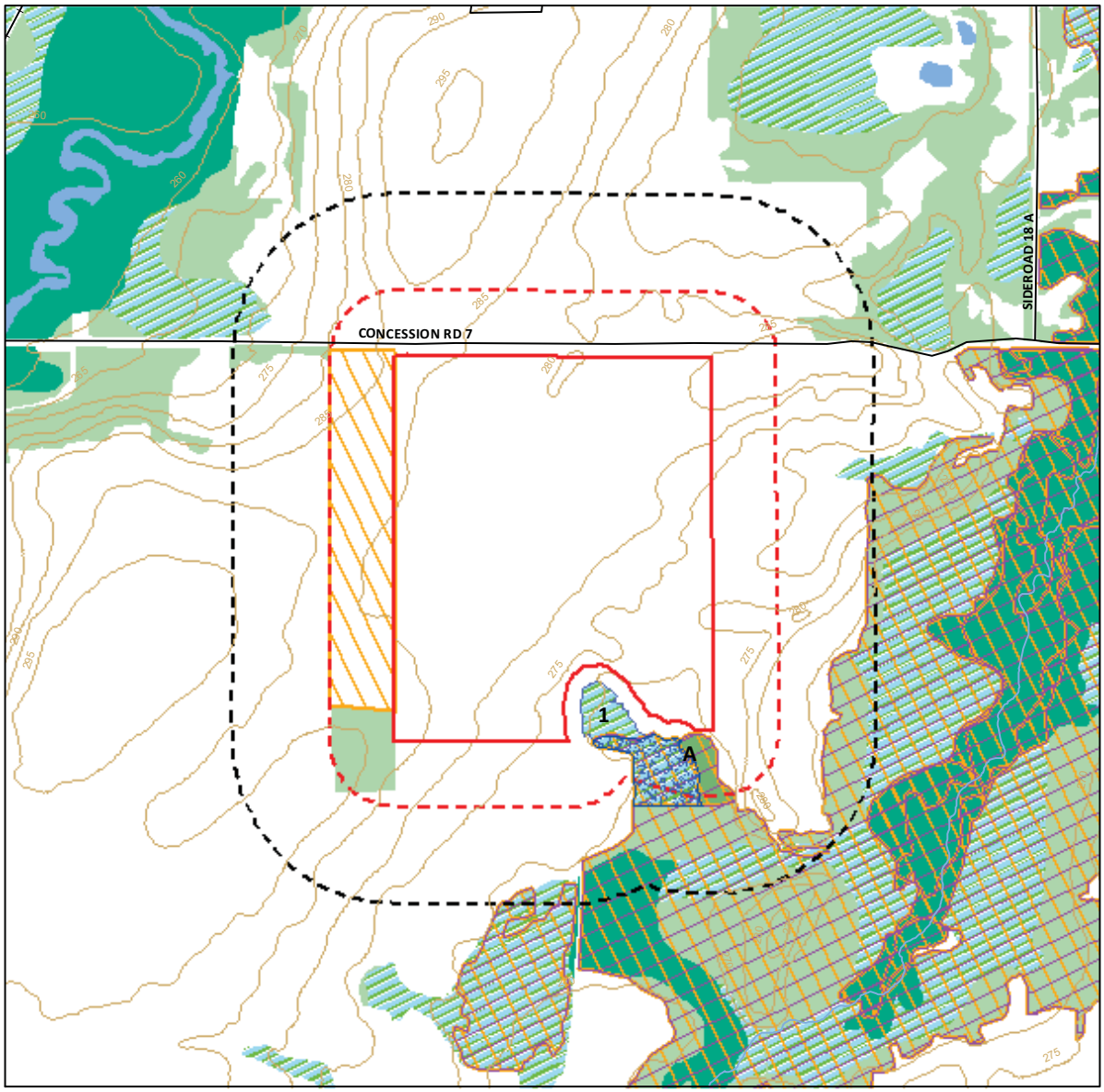
4.0 PROJECT SUMMARY

An Evaluation of Significance was completed according to Section 27 of *Ontario Regulation 359/09*. This evaluation was preceded by a Records Review and a Site Investigation, as per Sections 25 and 26 of *Ontario Regulation 359/09*, respectively. A summary of relevant project natural features, detailed in previous reports, is outlined in **Table 1**. This table is the result of all natural heritage assessment work completed for this project and identifies all natural features within the project location and surrounding 120 meters, including those that have been identified as significant or provincially significant, or will be assumed provincially significant (wetlands) or treated as significant (wildlife habitat) during the Natural Heritage Assessment process and require an EIS. Studies to confirm the significance of wildlife habitats treated as significant will be completed prior to construction. Mitigation measures outlined in this report will only be applicable if wildlife habitats are confirmed to be significant. **Figure 3** provides the summary of the above natural features relative to the project location.

Table 1: Summary of Natural Heritage Assessment for the Sunderland Solar Farm

Natural Feature	Applicable Project Component(s)	Distance Between Natural Feature and Project location (metres)	Summary of Natural Heritage Assessment			EIS Required?
			Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Provincial Parks and Conservation Reserves						
None identified within the project location or adjacent lands within 300 metres						
ANSI, Life Science						
None identified within the project location or adjacent lands within 300 metres						
ANSI, Earth Science						
None identified within the project location or adjacent lands within 300 metres						
Valleylands						
None identified within the project location or adjacent lands within 300 metres						
Wetlands						
Wetland 1	Fence, solar panels, access road, inverter	31	No	Identified	Assumed Provincially Significant	✓
Woodlands						
Woodland A	Fence, solar panels, access road, inverter	10	✓	Refined	Significant	✓
Woodland B	Fence, solar panels	Adjacent to project location	✓	Refined	Not Significant	No

Natural Feature	Applicable Project Component(s)	Distance Between Natural Feature and Project location (metres)	Summary of Natural Heritage Assessment			EIS Required?
			Identified During Records Review?	Identified, Verified or Refined During Site Investigation?	Evaluation of Significance Results	
Wildlife Habitat						
Seasonal Concentration Areas						
None identified within the project location or adjacent lands within 300 metres						
Rare Vegetation Communities						
None identified within the project location or adjacent lands within 300 metres						
Specialized Wildlife Habitat						
Amphibian Breeding Habitat	Fence, solar panels, access road, inverter	46	No	Identified	Assumed Significant	✓
Habitat of Species of Conservation Concern						
Schweinitz's Sedge	Fence, solar panels, access road, inverter	10	No	Identified	Assumed Significant	✓
Western Chorus Frog (evaluated with Amphibian Breeding Habitat)	Fence, solar panels, access road, inverter	46	No	Identified	Assumed Significant	✓
Animal Movement Corridors						
None identified within the project location or adjacent lands within 300 metres						
Generalized Candidate Significant Wildlife Habitat						
Generalized Candidate Significant Wildlife Habitat within 120 m of the project location	Fence, solar panels, access roads	Adjacent to project location	No	Identified	Assumed Significant	✓



SOLRAY

Sunderland Solar Farm

Figure 3:
Evaluation of Significance Map

Legend

- Local Roads
- 5 m Contours
- Waterbody
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Candidate Significant Habitat for Species of Conservation Concern – Schweinitz's Sedge
- Generalized Candidate Significant Wildlife Habitat
- Provincially Significant Weltand
- 1 Assumed Significant Wetland
- Undelineated Wetland
- Woodlands
- A Significant Woodland
- Candidate Significant Amphibian Breeding Habitat (Candidate Significant Habitat for Western Chorus Frog)

N W E S

0 100 200 300

DILLON CONSULTING

Created By: PFM
Checked By: JP
Date Created: 042511
Date Modified: 120611
File Path: I:\GIS\Solray Sunderland\Mapping\EISFigure 3: Evaluation of Significance Map.mxd

5.0 ENVIRONMENTAL IMPACT STUDY PURPOSE

By completing an EIS Report in accordance with procedures established by the MNR, Subsection (1) of Section 38 (*Ontario Regulation 359/09*) may permit project components to be constructed and installed within 120 meters of a significant or provincially significant natural feature. This report is consistent with Section 38 of *Ontario Regulation 359/09*, which details that an EIS Report must include the following:

- Identification and assessment of any negative environmental effects of the project on a natural feature, provincial park or conservation reserve;
- Identification of mitigation measures in respect of any negative environmental effects;
- Description of how the environmental effects monitoring plan in the Design and Operations Report addresses any negative environmental effects; and,
- Description of how the construction plan report addresses any negative environmental effects.

The focus of this EIS Report will be to fulfill the requirements of Section 38 for the significant natural features identified in **Table 1** as being in the project location or within 120 meters.

6.0 RATIONALE FOR DEVELOPMENT WITHIN A NATURAL FEATURE OR SETBACK

The location of the Sunderland Solar Farm has been subject to field investigations and a thorough review of constraints to development was undertaken prior to delineating the project location. Based on the natural environment information collected, the project location was refined to avoid impacts to significant and/or sensitive natural heritage features, where possible. Although the project location extends into the 120 metre setback of significant natural features, the layout of the solar project has been developed to minimize its footprint and prioritized the protection of natural features that provide habitat for sensitive species. The project has been developed to retain the significance of all natural features identified and mitigates any effects that will occur. Of the natural features evaluated to be significant, the layout of the project as shown on **Figure 2** will allow for the persistence of all these natural features after this project is constructed and operational.

7.0 PROJECT ACTIVITIES

The following subsections outline the project activities during the construction, operation and decommissioning phases. **Table 2** outlines the construction schedule and expected operational date for this project based on Solray's Feed-in-Tariff contract with the Ontario Power Authority.

Table 2: Project Construction Schedule

Construction Activity	Approximate Timeline (2012-2013)	Anticipated Duration
Survey and staking of project location	April 29, 2013- May 12, 2013	2 weeks
Installation of perimeter fence and security lighting	May 13, 2013- May 26, 2013	2 weeks
Drainage and erosion control	May 13, 2013- May 26, 2013	2 weeks
Clearing, ground leveling, compacting and grading	May 13, 2013- May 26, 2013	2 weeks
Construction of access roads	May 13, 2013- June 9, 2013	4 weeks
Power and communications	May 13, 2013 – May 19, 2013	1 week
Laydown/construction staging areas and temporary facilities	May 27, 2013- June 23, 2013	4 weeks
Preparation of substation and inverter station foundations	June 17, 2013- July 28, 2013	6 weeks
Installation of support foundations, racks and solar PV modules	June 17, 2013- September 22, 2013	14 weeks
Installation of electrical collection system, wiring, substation and components	July 29, 2013- October 6, 2013	10 weeks
Connection to the provincial grid	September 2, 2013- September 22, 2013	3 weeks
Remediation and clean-up of work areas	September 23, 2013- October 6, 2013	2 weeks
Site landscaping and vegetation	September 23, 2013- October 20, 2013	4 weeks
Facility Testing	November 1, 2013	1-2 days
Facility Operation	February 25, 2014	ongoing

7.1 *Construction Activities*

The following activities associated with construction of the solar facility will take between 5-8 months and are scheduled to begin in the spring of 2013. They will occur in the relative order in which they are presented in **Table 3**. Pre-construction activities that are currently underway on the ground at the project location include: topographic surveys, geotechnical studies, archaeological and cultural heritage assessments, natural heritage studies, grading and stormwater studies and a phase one environmental site assessment.

Table 3: Construction Activities

Activity	Description
Survey and staking of project location	At the beginning of the construction phase, the site will be surveyed and staked to delineate the outline of perimeters for fencing, access roads, excavations and foundation locations. Areas to be avoided will be fenced and/or flagged and evaded.
Installation of perimeter fence and security lighting	Perimeter fences will be installed to delineate the construction area, protect the public during construction activities, and prevent vandalism. A steel chain link fence of approximately 2.7 metre height with 3-strand barbed wire on top will be installed around the perimeter of the project location with a gate either at the access road entrance on Cragg Road or where the access road intersects the temporary construction laydown area. The fence posts will typically be spaced 2.5 metres apart. The installation will require the use of skid steer and auger. For security and maintenance purposes, shielded, task-specific lighting will be installed at the construction offices, construction staging areas, substation and possibly on or near each inverter station.
Drainage and erosion control	Before any vegetation removal, clearing or grading occurs, appropriate sediment and erosion control measures will be installed. This could include the use of hay bales and silt fence barriers. The control measures will remain installed throughout the construction period and will be routinely inspected by the contractor. Ditches and swales will be shaped and re-vegetated as necessary. Specific details regarding surface drainage and any construction requirements will be established as part of an overall Stormwater Management and Drainage Plan.

Activity	Description
Removal of existing buildings	It is anticipated that the existing buildings currently within the project location will be removed. These buildings include: farm house, barn, silo and five additional buildings currently used for storage. Existing services (e.g., phone, electricity) will be disconnected by the service provider. The buildings will be demolished and materials will be removed from the site and reused/recycled/disposed of as appropriate. Foundations will be excavated as necessary and the area filled and graded as per below.
Clearing, ground leveling, compacting and grading	The project location will be minimally graded to facilitate construction activities as per the Grading Plan and will maintain the general drainage patters of the site as much as possible. Graders, bulldozers, scrapers, soil compactors, dump trucks, wheel loaders and backhoes will be used to prepare the site. Negligible clearing of vegetation will be required based on the results of the Natural Heritage Assessment. Major excavation works of fill placement are not required for the project. The primary excavation work will be limited to soil removal for foundations, access roads and digging trenches to run underground electrical cables. Topsoil removed from the permanent access road will be feathered out on lands adjacent to the access road. Any excess topsoil will be used to infill low-lying areas. Stockpiled topsoil will be covered in order to minimize erosion from wind and precipitation.
Construction of access roads	A main access road will be needed for construction vehicles and equipment transport. It will also provide long term access to the site for on-going maintenance requirements. This access road will be off of Cragg Road, which is a local municipal road. Culverts will be installed across ditch to public roadway, if required. In addition, several internal gravel roads will be constructed to provide access for construction purposes. The majority of these roads will remain after construction as permanent roads to provide access for maintenance during operation. The main access road will be about 10.0 metres wide (5 metre road with 2.5 metre shoulders), with filter fabric beneath a granular 'B' base and finished surface of granular 'A' material. The total recommended thickness is 500 to 600 mm. The subgrade will be free of depressions and sloped (at a minimum grade of 2%) to provide effective drainage. The subgrade will be proofrolled with heavy rollers to locate any loose or disturbed areas. Should weak areas or other incompatible material be detected during proofrolling, further excavation and subsequent backfill with approved native deposits (moisture content within 3 percent of optimum moisture content) or imported granular materials may be required. The replacement granular materials will be compacted to at least 95 percent SPMDD. No materials will be

Activity	Description
	removed from the site. Water will be trucked in and sprayed as necessary for dust control during construction. The use of gravel will reduce water use for dust control during construction.
Power and communications	During the construction period, any electricity required to power heavy equipment will be provided from portable diesel generators supplied by the Contractor. Electricity required for temporary construction offices, lighting and other purposes will be arranged for and obtained from the local electricity provider. Communications will be primarily through the use of cellular phones and wireless connections; therefore, no telephone or internet cable line installation will be required.
Laydown/construction staging areas and temporary facilities	Temporary laydown and construction staging areas, totalling 7 acres will be created along the northern edge of the project boundary, west of the access road, as shown on **Figure 2**. These areas will be used for construction office trailers, portable washrooms, first aid stations, vehicle parking, construction equipment parking, storage sheds, truck unloading/loading, waste disposal pick-up areas, and equipment and material lay-down. After site grading (discussed above) a layer of granular material will be installed to provide an adequate base for construction vehicles, heavy equipment and material laydown. These areas will be decommissioned and rehabilitated and all temporary facilities removed when the construction period is finished. A small portion of the area may be retained to accommodate vehicle parking for maintenance personnel and equipment storage.
Preparation of substation and inverter station foundations	The substation area (20 metres x 30 metres) will be prepared for the transformer foundations and the oil containment area. Based on geotechnical studies it is not anticipated that blasting and/or rock ripping will be required to prepare the substation area. Inverter stations may also require excavation for foundations. Foundations for the substation and inverter station foundations will consist of either driven or helical screw piles (see below for installation method).

Activity	Description
Installation of support foundations, racks and solar PV modules	The entire project will have approximately 40,000 to 50,000 solar PV modules which will be mounted on steel and/or aluminum racking structures. It is estimated that between 1800 and 3000 racks will be required for the project and will be arranged in rows spaced about 5-7 metres apart. The racks will be supported by steel uprights that will be mounted on either steel driven or helical screw piles. These would be installed using mechanical, hydraulic or vibratory pile hammer equipment mounted on a specialized rig, excavator or boom truck. The hydraulic drive motor would rotate the screw pile into the ground. Alternatively, if driven piles are to be used, they would be installed in a similar fashion, but would be driven rather than rotated or screwed into the ground. In order to support the racking system and modules it is anticipated that the piles would be driven to a design depth of 7 metres below grade. A total of between 3600 and 6000 piles would be used.
Installation of electrical collection system, wiring, substation and components	The electricity generated by the PV panels will be in the form of direct current (DC). Inverters will be required to convert the DC output of the PV cells into alternating current (AC) suitable for supplying the electrical grid. It is anticipated that the solar modules will be electrically divided into twenty sections of 0.5MW each. DC wiring mounted to the back side of the racks is connected to a combiner box at the end of each row of racks. From the combiner box buried electrical collection cables will connect the combiner boxes in each 0.5MW section to an inverter station. The project will have ten inverter stations located along the main access road, each containing a 1 MW AC inverter and associated step-up transformer. Each inverter station will service two 0.5MW sections. From the inverters, underground cables will direct the electricity to the substation. The cables will be installed at a depth of at least 1m by a cable trenching machine or dropped in trenches created by an excavator. The material removed from the trench will be used as backfill in the trench. Topsoil and subsoil will be excavated and stored separately. A layer of sand will be located and levelled on the bottom of the excavation and covering the conduits or cables. Equipment used in cable installation may include a backhoe or track mounted excavator, and trenching/boring equipment. The substation will occupy an area measuring approximately 20 metres x 30 metres and will be installed in a pre-fabricated building measuring approximately 5 metres x 6.5 metres. Substation components to be installed include the main power transformer, switchgear cells, metering, and service transformer. Disconnect switches will also be installed in the substation area.

Activity	Description
	After all major construction activities are complete the components will be tested. If any problems or issues arise, remedial corrections and calibration of equipment will be made prior to start-up.
Connection to the Provincial Grid	From the main substation transformer an overhead 44 kV distribution line will extend along the access road and will tie into Hydro One's distribution line located on Cragg Road (point of common coupling). The line will be mounted on wooden poles equipped with insulators and connectors. From the point of common coupling onwards Hydro One will be responsible for building, owning, and maintaining the 44kV line. They will also be responsible for any permits associated with this distribution line. Given that the distribution line is located within the existing right-of-way along Cragg Road, it is not expected that any natural features would be removed.
Remediation and clean-up of work areas	After all major construction activities are complete, work areas will be remediated and, with the exception of permanent structures, returned to their pre-construction condition or vegetated (see below). All debris and excess materials on site will be removed. Trucks will be used to remove all non-permanent equipment from the project location, along with any debris. The truck(s) will access the site via the permanent access road located off Cragg Road.
Site landscaping and vegetation	Once construction and site clean up are complete the project location will be seeded with low-growing, native and non-invasive vegetation. Native vegetation species could be planted that provide foraging and breeding habitat for various wildlife species. The selected vegetation would be maintained at low heights to prevent shading effects on the solar panels. Seeding would be completed in a seasonally appropriate time period to maximize the success of the plantings. Landscaping is the final construction activity for the project. It is expected that no heavy machinery or equipment will be required for the planting.

All construction activities will be conducted by licensed contractors in accordance with required standards and codes and all activities will abide by local laws and requirements. All construction-related activities will be conducted within the project location boundary outlined in **Figure 2**. During construction, no hazardous materials, including fuel, oils or grease will be stored on site, although equipment may require their use. Disposal of hazardous wastes will only be required in the case of accidental spills and will follow the procedures outlined in the Spills Response Plan. Decisions on waste disposal or recycling during, and immediately after, construction will be made by the on-site contractor who will follow established Ministry of the Environment protocols for waste disposal.

7.2 *Operations and Maintenance*

The following activities are associated with the operation and maintenance of the solar facility. These activities will take place over the lifetime of the facility which is expected to be twenty years.

The facility will operate year round and generate electricity during daylight hours only and the amount of daily power generated will depend on weather conditions. The proposed solar energy facility will be monitored and managed remotely; therefore, minimal on-site activity is required for its daily operation and there will be no permanent on-site employees. Security and minor maintenance will be the only regular activities anticipated on site.

Table 4: Operations and Maintenance Activities

Activity	Description
Monitoring and meter calibrations	The facility will be managed twenty-four hours a day offsite through remote monitoring (via internet) to ensure proper power output and to alert the operations staff to potential issues. Most issues can be remotely diagnosed so that the correct individual(s) can be dispatched to the facility to correct any problems.
Routine periodic maintenance and inspection of project components	Site visits by the operations manager will occur approximately every month to visually inspect the solar farm and project location and ensure that the facility is in proper working order. Activities that will occur during these visits may include data collection, regular maintenance (as described below) and any necessary minor repairs. Security visits may also occur periodically.
Transformers	Transformers will be visually inspected approximately once a month. The inspection will include the following : ▪ Checking the containment system to ensure the liner is attached and shows no signs of perforation or other damage; ▪ Checking of the concrete walls for cracks or signs of frost heaving; ▪ Checking of the sump for evidence of water or oil. There should be no oily sheen on the water in the oil separator sump; and ▪ Inspection of the transformer for signs of leaks. If noted, they will immediately be assessed and repaired as necessary.
Lighting	For security and maintenance purposes, shielded, task-specific lighting will be installed at the construction offices, construction staging areas, substation and possibly on or near each inverter station. These lights will be turned on either by a local switch or by motion sensors that will be triggered by movement during maintenance or emergency activities. No lights are currently planned around the project perimeter to minimize the project's visual impact on surrounding development and roads. All exterior lights will be shielded to minimize their impact to the night sky and neighbours. Periodically, light bulbs may require replacement should they become inoperable.
Cleaning of panels	Cleaning of panels and equipment will take place approximately 3 times annually. It is anticipated that two crews will take approximately 4 to 5 days to wash the panels in the facility for each maintenance period. It is expected that between 15,000 and 35,000 litres of water will be required for each maintenance period. No water-taking will occur. All water required for panel washing will be trucked to the project location. Only water is used for cleaning. No cleaning solutions of any type will be used to wash the panels. Runoff from washing of

Activity	Description
	panels will be managed in the same way as stormwater.
Major maintenance	Unforeseen, large repairs are not anticipated but could potentially include broken modules, electrical equipment breakdowns or other component or systems failures. Should major maintenance be required it will be performed using existing roads and site access.
Periodic landscape maintenance	Short native vegetation will be planted once construction activities are complete. It will be necessary to maintain the land in such a way that vegetation does not shade or in other ways impact the solar panels; however, it is anticipated that the site will be planted with mostly low-growth native plant species, which will not only limit the need for regular maintenance, but will also maintain the nutrient quality of the soil and manage weed growth with little to no use of herbicide. Regular maintenance may include mowing of grass to ensure cleanliness and prevent shading of panels.
Inspections and testing	Activities will be carried out as required by the local utility and other governing bodies.
Traffic	Limited deliveries may be necessary for maintenance during operation of the facility. Traffic will not be significant on a daily basis.
Drainage and erosion control	Stormwater runoff at the project location will be managed as per the Stormwater Management and Drainage Plan. It is anticipated that the proposed site drainage will consist of: overland runoff on vegetated areas; existing and constructed shallow triangular shaped grassed swales; and, constructed ditches in the form of flat-bottomed vegetated swales situated along the access roads and, if required, around the perimeter of the sites to intercept and convey external drainage to maintain riparian drainage conditions.
Waste	The operation of the system does not produce waste of any kind. All debris as a result of maintenance or cleaning will be removed from the site immediately by the contractor.

During the operation phase, no hazardous materials will be stored on-site with the exception of oil for transformers, which will be adequately contained and accompanied by a Spills Response Plan. No fuel consumption will be required for the operation of the facility; however, if maintenance is required, fuel will be used by trucks and other vehicles that may be required on-site. Mitigation measures will be the same as those for construction.

7.3 *Decommissioning Activities*

It is anticipated that the decommissioning process will begin at the end of the power purchase agreement with the Ontario Power Authority (or legal successor) or another green energy power purchaser. The decommissioning plan is based on current procedures and experience. These procedures may be subject to revision based on new experiences and requirements over time. Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and until the site is stabilized. Decommissioning and site restoration activities will be undertaken with the input of the landowner.

7.3.1 Equipment Dismantling and Removal

After the facility has been disconnected from the grid and all electrical components have been disconnected within the facility, components will be dismantled and removed as outlined in **Table 5**.

Table 5: Equipment Dismantling and Removal

Component	Description
Above-ground Structures	
PV modules and associated equipment	▪ Disconnect all aboveground wirings, cables and electrical interconnections. ▪ Remove PV modules from racks and ship to recycling facilities or manufacturers for material reuse. ▪ Remove all racks and support structures, including extraction of in-ground support structures (see below).
Inverter stations and transformers	▪ Remove inverters and associated components including combiners, low voltage switch gear and medium voltage transformers. ▪ Remove meters, fans, lighting fixture(s) and other electrical components. ▪ If concrete foundations have been used for inverter stations or substation they will be removed (see below).
Access roads	▪ Consult with landowner to determine if access roads should be left in place for their continued use. ▪ If access road removal is deemed necessary, aggregates will be stripped along with underlying geotextile fabric. Aggregates will likely be reused on another project. ▪ All compacted areas will be tilled in a manner adequate to restore the sub-grade material to the proper density and depth consistent with the surrounding fields. Clean, compatible sub-grade material, followed by topsoil will be applied as necessary. ▪ Fences and gates will be removed and recycled.
Below-ground Structures	
Underground cables	▪ Underground electrical lines will be removed in their entirety by pulling and/or trenching as necessary.
Equipment foundations	▪ The substation, inverter stations and steel racking for the solar

Component	Description
	modules will have foundations that require removal. The substation foundation will likely consist of steel piles but may also include concrete. It is anticipated that structures will be fully removed from the ground. In the event that a structure breaks during excavation, any portion below 1.2 m in depth will remain in place; the portion above 1.2m will be removed.

7.3.2 Site Restoration

Once the on-site solar equipment is removed, it is expected that the site will be returned to its original condition (with the exception of the farmhouse, barn and other buildings that were removed). Some minor site grading may be required. The access roads may be left in place at the landowner's request or removed (including filter fabric) and graded to restore terrain profiles (as much as possible). Top soil will be replaced as required throughout the project location. This material may come from existing long-term berms, stockpiles, or nearby soils. The soils will then be re-vegetated and seeded as required.

7.3.3 Managing Excess Materials and Waste

During the decommissioning phase a variety of excess materials and wastes will be generated. Solray aims to recycle or reuse project materials as much as possible and to work with manufacturers, local subcontractors and waste firms to segregate material to be recycled, reused and/or disposed of. Waste materials for disposal will be removed by a licensed contractor and transported to a MOE-approved facility.

Waste and recyclable materials will be transported offsite by truck and managed at appropriate waste and or recycling facilities. It is not anticipated that any waste materials will be left onsite with the possible exception of foundations or steel piles broken off below 1.2 metres in depth and/or disconnected underground electrical wires buried below 1 metre in depth.

8.0 EXISTING ENVIRONMENTAL CONDITIONS OF RELEVANT NATURAL FEATURES

Existing environmental conditions for the project location and surrounding areas were determined through the records review and site investigation, which comply with Section 25 and 26 of the *REA* process. Below, we provide a summary of the natural environment associated with the project location with a specific focus on natural features of significance that required an EIS. The function, composition, attributes and characteristics that make natural features significant, contribute to their persistence, may be sensitive to development and serve as a good indicator of potential negative environmental effects are described below.

8.1 *Overview*

Through the records review, site investigation and evaluation of significance work, it was confirmed that the following natural features either did not occur in the project location or relevant adjacent lands or were not evaluated to be significant or provincially significant:

- Provincial Parks and Conservation Reserves;
- ANSI, Life Science;
- ANSI, Earth Science; and,
- Valleylands.

8.2 *Description of Significant Natural Features*

8.2.1 Wetlands

Wetlands were not identified within the project location; however, one wetland unit, Wetland 1, was identified within the 120 metre setback and was assumed to be provincially significant (**Figure 3**). The boundary of the wetland was delineated using ELC protocol during the site investigation work and shown on **Figure 3.** **Table 6** outlines the attributes, composition and function of this significant wetland. **Table 6** also outlines the project components that fall within 120 metres of the significant wetland boundary. Characteristics that contribute to wetland persistence, may be sensitive to development and serve as a good indicator of potential negative environmental effects are described below in **Section 10**.

Table 6: Description of Assumed Provincially Significant Wetlands within 120 metres of the Project

Characteristic/ Ecological Function	Value	OWES Manual Section (South)	OWES Name	Field Visit	Details
Actual Wetland Size	2.4 ha		SIZE1	Yes	Wetland boundaries delineated during the site investigation; 0.8 ha of wetland area the project location, 1.6 ha within 120 metre setback
Wetland Type	Score = 10	1.1.2	WLTYPE	Yes	Meadow Marsh and Swamp
Site Type	Score = 2	1.1.3	SITE	Yes	Palustrine
Vegetation Communities	1. gc ; ne 2. h ; ts Score = 2.5	1.2.2	VEG	Yes	1. gc – *Eupatorium maculatum ssp. maculatum, Impatiens capensis, Eupatorium perfoliatum, Asclepias incarnate ssp, incarnate* *ne – Phalaris arundinacea, Carex vulpinoidea, Carex retrosa* 2. h - *Populus tremuloides*, *Fraxinus pennsylvanica, Salix alba, Thuja occidentalis, Ulmus americana* ts – *Cornus rugosa, Ribes americanum, Thuja occidentalis, Fraxinus pennsylvanica*
Proximity to Other Wetlands	107 m Score = 8	1.2.4	WPROX	Yes	Distance to wetland to the south (Beaver River Wetland Complex PSW)
Interspersion	>200 Score = 30	1.2.5	INTER	n/a	
Open Water Types	Type 1 Score = 8	1.2.6	OPWAT	Yes	Open water occupies <5% of wetland area
Flood Attenuation (Total)	Total Score = 19	3.1	FLOOD	n/a	Upstream Catchment Area (203 ha) determined using digital elevation model; headwater area.
Water Quality Improvement (Total)	Total Score = 34.86	3.2	WQI	n/a	Catchment basin determined to be >50% agricultural because surrounded by pastureland
Shoreline Erosion	Score = 0	3.4	SEC	n/a	Wetland entirely palustrine

Characteristic/ Ecological Function	Value	OWES Manual Section (South)	OWES Name	Field Visit	Details
Control					
Groundwater Discharge (Total)	Total Score = 7	3.2.3	TGD	n/a	
Groundwater Recharge (Total)	Total Score = 57	3.5	TGR	n/a	Wetland entirely palustrine with Loam soils
Species Rarity (Total)	Total Score = 0	4.1.2	RTOT2	Yes	No species at risk habitat or provincially significant animal and plant species were observed; no regionally or locally rare or significant vascular plant species were found (Riley 1989, Varga *et al.* 2000)
Significant Features and Habitats (Total)	Total Score = 0	4.2	SGFT	Yes	No significant features or habitats were observed.
Fish Habitat (Total)	Total Score = 0	4.2.6	FISHAB	Yes	No fish habitat or migration and staging habitat was observed within the wetland.

8.2.2 Woodlands

Woodlands were not identified within the project location; however, two woodland units were identified within the 120 metre setback. Of the two woodlands found, Woodland A was determined to be significant (**Figure 3**). The boundaries of woodland units in or within 120 metres of the project location were delineated using ELC protocol during the site investigation work and are shown on **Figure 3. Table 7** outlines the attributes, composition and function of this woodland that make it significant. **Table 7** also outlines the project components that fall within 120 metres of the significant woodland boundary. Characteristics that contribute to woodland persistence, may be sensitive to development and serve as a good indicator of potential negative environmental effects are described below in **Section 10**.

Table 7: Description of Significant Woodlands within 120 metres of the Project

Woodland ID	Size Criterion	Ecological Functions Criteria					Woodland Uncommon Characteristics	Project Components within 120 m	Evaluation of Significance	
	Woodland Size (hectares)	Woodland Interior	Proximity to other significant woodland or habitats	Linkages	Water Protection	Woodland Diversity Representation			Significant	Not-Significant
	Size Threshold (hectares)									
	4	any	1	1	0.5	1	1			
A	93.45	13.25	▪ Adjacent to Beaverton River Wetland Complex PSW ▪ A watercourse bisects this woodland which may provide habitat for fish	▪ Adjacent to Beaverton River Wetland Complex PSW ▪ A watercourse bisects this woodland which may provide habitat for fish	▪ A watercourse bisects this woodland which may provide habitat for fish	▪ Identified as Poplar Mineral Deciduous Swamp Type (SWDM4-5) and Fresh – Moist Poplar Deciduous Forest Type (FODM8-1) ▪ Trembling Aspen (*Populus tremuloides*) is dominant, Green Ash (*Fraxinus americana*) and Basswood (*Tilia americana*) associates	▪ Not uncommon in terms of species composition, cover type, age or structure ▪ Species with a high Coefficient of Conservatism value (i.e., 8-10) were not observed following the alternative site investigation protocol	▪ Fence ▪ Solar Panels ▪ Access Road ▪ Inverter	✓	

8.2.3 Wildlife Habitat

The occurrence and boundaries of significant wildlife habitat in or within 120 metres of the project location were delineated using information collected during the site investigation (e.g. ELC, observation of suitable site characteristics, etc.) and following criteria outlined in the Significant Wildlife Habitat Technical Guide (MNR 2000). Wildlife habitats requiring an EIS are shown in **Figure 3**. **Table 8** outlines the attributes, composition and function of each identified significant/to be treated as significant wildlife habitat and the project components that fall within 120 metres of each boundary. Characteristics that contribute to wildlife habitat persistence, may be sensitive to development and serve as a good indicator of potential negative environmental effects are described below in **Section 10**. For "Generalized Candidate Significant Wildlife Habitat", general mitigation measures proposed in **Table 10** will address effects due to construction activities only.

Table 8: Description of Significant Wildlife Habitat in the Project Location and Surrounding 120 metres

Wildlife Habitat	Attributes of Habitat*	Composition	Function	Relevant Evaluation Criteria Determining Status	Within Project location	Within 120 m	Significant	Treated as / Assumed Significant	Not Significant	Project Components within 120 m	Nearest Distance to project location
Specialized Habitat for Wildlife											
Amphibian Breeding Habitat	Ponds used by several species of frogs and salamanders. The best breeding ponds are unpolluted and contain a variety of vegetation structure in and around the edge of the pond for egg-laying and calling by frogs. Closed-canopy woodlands with rather dense undergrowth maintaining a damp environment are preferred. Moist fallen logs are an important habitat component required for salamanders. Sites with several ponds and/or ponds close to creeks are valuable. Associated with ELC ecosites FOC, FOM, FOD, SWC, SWM and SWD. Species of Conservation Concern: Western Chorus Frog	This 1.6 ha unit is comprised of Poplar Mineral Deciduous Swamp.	Amphibian Breeding Habitat.	n/a; habitat is assumed to be significant and appropriate mitigation measures will be outlined in the EIS.	---	✓	---	✓	---	▪ Fence ▪ Solar Panels ▪ Access Road ▪ Inverted	46 metres

Wildlife Habitat	Attributes of Habitat*	Composition	Function	Relevant Evaluation Criteria Determining Status	Within Project location	Within 120 m	Significant	Treated as / Assumed Significant	Not Significant	Project Components within 120 m	Nearest Distance to project location
Habitat of Species of Conservation Concern											
Schweinitz's Sedge	Moist woodland and seepages.	This unit contains 1.6 ha Poplar Mineral Deciduous Swamp and 0.7 ha of Poplar Deciduous Forest within the 120 metre setback area and extends beyond the boundary of the setback area.	Habitat for Species of Conservation Concern.	This habitat is assumed to be significant and appropriate mitigation measures will be outlined in the EIS.	---	✓	---	✓	---	▪ Fence ▪ Solar Panels ▪ Access Road ▪ Inverted	10 metres
Western Chorus Frog	Included in the evaluation of amphibian breeding habitat.										
Generalized Candidate Significant Wildlife Habitat											
Wildlife habitat that is located wholly within the 120 metre setback area and is determined to not be affected by development and operation of a solar facility.			Generalized Candidate Significant Wildlife Habitat	n/a; habitat is treated as significant.	---	✓	---	✓	---	▪ Fence ▪ Solar Panels ▪ Access Road ▪ Inverted	Adjacent to project location

*Based on Significant Wildlife Habitat Technical Guide, MNR 2000; Natural Heritage Assessment Guide for Renewable Energy Projects, MNR 2011

9.0 ENVIRONMENTAL EFFECTS OF THE PROJECT

A summary of attributes, composition and function(s) defined in **Table 6, Table 7,** and **Table 8** that contribute to the persistence of provincially significant and/or significant natural features, may be sensitive to development and serve as a good indicators of potential negative environmental effects are described below in **Table 9**. This summary provides key components of natural feature attributes, composition and function(s) which will be brought forward and evaluated as part of the impact analysis.

The evaluation of potential impacts, mitigation and residual effects are discussed in **Table 10**. In many cases, activities listed in **Table 10** overlap (e.g. clearing and equipment lay-down). Where activities overlap, the first activity in the project construction sequence or which has the broadest impact is evaluated in **Table 10.**

Table 9: A Summary of Key Features and Attributes that may Serve as Indicators of Negative Environmental Effects

Natural Feature	Indicator Species	Features/Attributes Necessary for Persistence (Physical and Functional)	Features Potentially Sensitive to Development	Good Indicator Features/Species
Wetlands				
Wetland 1	None	**Physical:** occurrence of wetland unit with low disturbance. **Functional:** provides and is adjacent to significant wildlife habitat.	Vegetation along the edge of disturbance, species diversity.	▪ Vegetation along the edge of disturbance. ▪ Persistence of native species dominance.
Woodlands				
Woodland A	None	**Physical:** occurrence of large contiguous forest unit with low disturbance. **Functional:** provides and is adjacent to significant wildlife habitat, provides habitat for woodland species.	Vegetation along the edge of disturbance, species diversity.	▪ Vegetation along the edge of disturbance. ▪ Persistence of native tree species dominance.
Specialized Habitat for Wildlife				
Amphibian Breeding Habitat (Includes habitat for Western Chorus Frog)	Western Chorus Frog (if present)	**Physical:** occurrence of swamp wetland community with breeding pools. **Functional:** water quality to support breeding; connection to upland habitat.	Breeding pools during breeding season with appropriate water quality.	▪ Persistence of breeding habitat. ▪ Occurrence of quality vegetation cover
Habitat for Species of Conservation Concern				
Habitat for Schweinitz's Sedge	Plant specimen	**Physical:** occurrence of moist woodland and seepages. **Functional:** seed dispersal, connection to other areas with similar attributes.	Individual Plant.	▪ Plant specimen post-construction if observed pre-construction.

Table 10: Summary of Potential Positive/Negative Effects and Mitigation Measures for Significant/Provincially Significant Natural Features

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Wetland 1									
Wetland 1	Site Preparation – Grading	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct effects.	▪ Potential increased surface runoff from exposed soils during construction. ▪ Potential negative impact for change in water levels and quality of wetland area due to changes in adjacent land vegetation cover and/or topography. ▪ Potential for depreciation of habitat quality during construction. ▪ Potential increased inputs of nutrients and contaminants to wetland vegetation when wetland buffer is temporarily minimized during construction. ▪ Potential loss of species or avoidance of habitat by species due to adjacent construction disturbance.	Wetland only has the potential to be indirectly effected during construction.	Once during the site preparation phase.	Until vegetative cover is restored during the operations phase.	▪ Develop and implement an erosion and sediment control (ESC) plan prior to site preparation activities. ▪ Minimize removal /disturbance of vegetation adjacent to the wetland between the fence and the solar panels/racks. ▪ Maximize the distance of all construction equipment used from the wetland edge; operate machinery in the project location areas only. ▪ Develop and implement a stormwater management plan which maintains pre-construction surface water flows to adjacent lands (quantity, quality, infiltrations, conveyance patterns and seasonality of water flow). ▪ ESC structures should be monitored regularly to ensure that it is fully functional and any issues identified are resolved in a timely fashion, particularly in the area adjacent to the wetland.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Wetland 1	Construction – Installation of Perimeter Fence	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ Disturbance/ obstacle to wildlife movement.	▪ Isolation of larger terrestrial wildlife from electrical lines, solar panels, access roads and other project components that may negatively impact larger terrestrial wildlife. ▪ Potential avoidance of the area by wildlife species during construction. ▪ Inability of larger terrestrial wildlife to access the area of the project location potentially leading to fragmentation of habitat, decrease in gene flow, loss of biodiversity, etc.	Wetland only has the potential to be indirectly effected.	Once during construction.	The perimeter fence will remain in place for the project lifespan.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Maximize the distance of all construction equipment used from the wetland edge; operate machinery in the project location areas only. ▪ Ensure no large wildlife are within the project location prior to completion of the fence.	No residual effect.
Wetland 1	Construction – Access Roads	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Settling of dust created during road construction. ▪ Granular road material may mobilize into surrounding areas during storm events.	Wetland only has the potential to be indirectly effected.	Once during construction.	Throughout construction.	▪ Maintain effective erosion and sediment control measures as installed during the site preparation phase. ▪ Implement dust suppression measures for access roads being constructed within 120 metres of the wetland. ▪ Where feasible, avoid creating dust from road construction on days where the prevailing winds would carry dust south towards the wetland.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Wetland 1	Construction – Electrical Lines (AC and DC)	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Open trenches may prevent overland drainage of surface water in the area and create temporary storage basins; reduction in the water sustaining the wetland area during construction. ▪ Disturbance/incidental mortality to amphibian species during construction.	Wetland only has the potential to be indirectly effected depending on climate events.	Various times during the construction of the facility.	Through the construction phase.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Minimize duration of time trenches remain excavated. ▪ Avoid excavation of trenches during periods of expected heavy rainfall. ▪ If dewatering of trenches is necessary, direct all discharged water away from the wetland.	No residual effect.
Wetland 1	Construction – Solar panels and racks, E-houses, inverters, transformers and substation	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Potential for spill of transformer oil during construction. ▪ Residual noise from the inverter inside the E-house. ▪ Installation of concrete pad(s) for mounting of components causing a permanent decrease in soil permeability. ▪ Potential disturbance/incidental mortality to wildlife species during construction.	Wetland only has the potential to be indirectly effected.	During construction.	Project components will remain in place for the project lifespan.	▪ Spill containment structures will be constructed at the inverter and substation transformers. All containment structures will have the capacity to retain 110% of the oil volume contained in the transformer should a spill occur. ▪ Contingency measures, including a spill response plan will be developed and implement as required. ▪ Construct perimeter fencing prior to installing core project components to prevent entry of most large mammal species within the construction area.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Wetland 1	Operations – Maintenance and Operation of Project Components	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Potential disruption in species behaviour, particularly nocturnal species due to light and noise pollution from operation of security lighting within the project location. ▪ Potential positive impact for change in water levels and quality of wetland area due to changes in adjacent land vegetation cover and/or topography.	Low – effect limited to extent of light/noise trespass on wetland.	Ongoing throughout the operations phase for the project.	Project components will remain in place for the project lifespan.	▪ Limit use of lighting where possible. ▪ Avoid light effects entering into the wetland (eliminate light trespass). If lighting is required around perimeter of the project location, use of motion sensors may be implemented as necessary.	No residual effect.
Wetland 1	Operations – Maintenance of the Perimeter Fence and Access Roads; Periodic Use of Access Roads	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Permanent obstacle to larger terrestrial wildlife movement, primarily for larger mammals.	Wetland only has the potential to be indirectly effected.	Fence may require periodic repair depending on circumstance. Use and maintenance throughout the operations phase as necessary.	The perimeter fence and access roads will remain in place for the project lifespan.	▪ If vegetation clearing is necessary to maintain/repair perimeter fencing, time clearing activities to avoid disturbance to breeding species where possible.	No residual effect.
Wetland 1	Decommissioning – Removal of All Project Components	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Possible decline in the quantity/quality of surface water run-off entering the wetland if adjacent vegetation is impacted by removal of components.	Expected to be none. If negative effects occur they may vary within the wetland.	Once during the decommissioning phase.	Short-term during removal of project components.	▪ Develop and implement ESC plan. ▪ ESC measures should be monitored monthly and removed once vegetation has stabilized. ▪ ESC measures (i.e., silt fence) installed for decommissioning purposes will prevent the movement of amphibians into the decommissioning area. ▪ Minimize disruptions to hydrologic function of the wetland by avoiding changes to grade.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Woodland A									
Woodland A	Site Preparation – Grading	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ Change in land topography.	▪ Changes in overland drainage. ▪ Potential for decrease in surface water quality due to soil mobilization during site preparation. ▪ Potential for loss of edge vegetation due to the deposition of dust and/or overland mobilization of soil from site construction.	Woodland only has the potential to be indirectly effected.	Once prior to construction.	Until vegetative cover is restored.	▪ Develop and implement an ESC plan prior to site preparation activities. ▪ Minimize duration of soil exposure ▪ Schedule grading to avoid times of high runoff volumes where possible (i.e., spring and fall. ▪ Minimize changes in land contours and maintain natural drainage patterns where possible; develop and implement a stormwater management plan to emulate pre-construction conditions. ▪ Time grading activities to avoid disturbance to sensitive wildlife species, if present.	No residual effect.
Woodland A	Construction – Installation of Perimeter Fence	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ Disturbance/ obstacle to wildlife movement.	▪ Isolation of larger terrestrial wildlife from electrical lines, solar panels, access roads and other project components that may negatively impact larger terrestrial wildlife ▪ Potential avoidance of the area by wildlife species during construction ▪ Inability of larger terrestrial wildlife to access the area of the project location potentially leading to fragmentation of habitat, decrease in gene flow, loss of biodiversity, etc.	Woodland only has the potential to be indirectly effected.	Fence will be constructed during first 2 weeks of the construction phase of the project.	The perimeter fence will remain in place for the project lifespan.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Maximize the distance of all construction equipment used from the woodland edge; operate machinery in the project location areas only. ▪ Ensure no large wildlife are within the project location prior to completion of the fence.	No residual effects.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Woodland A	Construction – Access Roads	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Potential introduction of non-native substrate to create access roads during construction. ▪ Decreased permeability of road surface to precipitation. ▪ Granular road material may mobilize into surrounding areas during storm events. ▪ Potential disturbance/incidental mortality to wildlife species from construction activities.	Woodland only has the potential to be indirectly effected.	During construction.	Access roads will remain in place for the project lifespan.	▪ Maintain effective ESC measures as installed during site preparation phase. ▪ Minimize changes in land contours and maintain natural drainage patterns where possible; develop and implement a stormwater management plan to emulate pre-construction conditions. ▪ Maximize the distance of all construction equipment used from the woodland edge; operate machinery in the project location only. ▪ Construct perimeter fencing prior to installing core project components to prevent entry of larger wildlife within the construction area.	No residual effect.
Woodland A	Construction – Electrical Lines (AC and DC);	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Soil compaction from use of heavy machinery to excavate trenches for underground cables during construction. ▪ Potential disturbance/incidental mortality to wildlife species from construction activities.	Woodland only has the potential to be indirectly effected.	During construction.	Cables will remain in place for the project lifespan.	▪ Maintain effective ESC measures as installed during site preparation phase. ▪ Locate all trenches for buried AC and DC cables as far from woodland edge as possible. ▪ Maximize the distance of all construction equipment to be used from the woodland edge; operate machinery in the project location only. ▪ Construct perimeter fencing prior to installing core project components to prevent entry of most large mammal species within the construction area.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Woodland A	Construction – Solar panels and racks, E-houses, inverters, transformers and substation	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Potential for spill of transformer oil during construction. ▪ Residual noise from the inverter inside the E-house. ▪ Installation of concrete pad(s) for mounting of components causing a permanent loss in natural cover and decrease in soil permeability. ▪ Potential disturbance/incidental mortality to wildlife species.	Woodland only has the potential to be indirectly effected.	During construction.	Project components will remain in place for the project lifespan.	▪ Spill containment structures will be constructed at the inverter and substation transformers. All containment structures will have the capacity to retain 110% of the oil volume contained in the transformer should a spill occur. ▪ Contingency measures, including a spill response plan will be developed and implement as required. ▪ Construct perimeter fencing prior to installing core project components to prevent entry of most large mammal species within the construction area.	No residual effect.
Woodland A	Operations – Maintenance of the Perimeter Fence and Access Roads; Periodic Use of Access Roads	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Permanent obstacle to larger terrestrial wildlife movement, primarily for larger mammals. ▪ Potential disturbance/incidental mortality to wildlife species.	Woodland only has the potential to be indirectly effected.	Fence may require periodic repair depending on circumstance. Use and maintenance throughout the operations phase as necessary.	The perimeter fence and access roads will remain in place for the project lifespan.	▪ If vegetation clearing is necessary to maintain/repair perimeter fencing, time clearing activities to avoid disturbance to breeding species where possible.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
			Physical Impact (Direct)	Functional Effect (Indirect)					
Woodland A	Operations – Operations and Maintenance of Project Components	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Potential disruption in species behaviour, particularly nocturnal species. ▪ Potential for spill of transformer oil. ▪ Residual noise from the inverter inside the E-house. ▪ Increase in shade effects from panels and other components on grassland species.	Woodland only has the potential to be indirectly effected.	Ongoing throughout the operations phase for the project.	Project components will remain in place for the project lifespan.	▪ Limit use of lighting where possible. ▪ Avoid light effects entering into the woodland (eliminate light trespass). If lighting is required around perimeter of the project location, use of motion sensors may be implemented as necessary.	No residual effect
Woodland A	Decommissioning – Removal Project Components	The closest project component will be 12 metres away from the woodland edge. Project components within 120 metres of the woodland edge include the fence, solar panels, access road and inverters.	▪ None.	▪ Soil compaction. ▪ Re-establishment of species movement across project location after removal of fence.	Woodland only has the potential to be indirectly effected.	Once during decommissioning phase.	Until decommissioning activities are complete.	▪ Implement ESC measures. ▪ Re-establish vegetative cover once activities are complete.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)									
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)	Site Preparation – Grading	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct effects.	▪ Potential increased surface runoff from exposed soils during construction. ▪ Potential negative impact for change in water levels and quality of wetland area due to changes in adjacent land vegetation cover and/or topography. ▪ Potential for depreciation of habitat quality during construction. ▪ Potential increased inputs of nutrients and contaminants to wetland vegetation when wetland buffer is temporarily minimized during construction. ▪ Potential loss of species or avoidance of habitat by species due to adjacent construction disturbance.	Habitat only has the potential to be indirectly effected.	Once during the site preparation phase.	Until vegetative cover is restored during the operations phase.	▪ Develop and implement an ESC plan prior to site preparation activities. ▪ ESC measures (i.e., silt fence) installed for construction purposes will prevent the movement of amphibians into the construction area. ▪ Minimize removal /disturbance of vegetation adjacent to the wetland habitat between the fence and the solar panels/racks. ▪ Maximize the distance of all construction equipment used from the wetland edge; operate machinery in the project location areas only. ▪ Develop and implement a stormwater management plan which maintains pre-construction surface water flows to adjacent lands (quantity, quality, infiltrations, conveyance patterns and seasonality of water flow). ▪ ESC structures should be monitored regularly to ensure that it is fully functional and any issues identified are resolved in a timely fashion, particularly in the area adjacent to the amphibian breeding habitats. ▪ Consideration will be given to minimize or avoid construction noise and activities adjacent to the wetland between sunset and midnight during the amphibian breeding season (April – June).	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)	Construction – Installation of Perimeter Fence	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Disturbance/obstacle to amphibian movement. ▪ Potential to prohibit the entry of amphibians into an active construction area.	Habitat only has the potential to be indirectly effected.	Once during construction.	Throughout construction.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Maximize the distance of all construction equipment used from the habitat edge; operate machinery in the project location areas only. ▪ Consideration will be given to minimize or avoid construction noise and activities adjacent to the wetland between sunset and midnight during the amphibian breeding season (April – June). ▪ Ensure no large wildlife are within the project location prior to completion of the fence.	No residual effect.
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)	Construction – Access Roads	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Settling of dust created during road construction. ▪ Granular road material may mobilize into surrounding areas during storm events.	Habitat only has the potential to be indirectly effected.	Once during construction.	Throughout construction.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Implement dust suppression measures for access roads being constructed within 120 metres of the amphibian breeding habitat. ▪ Where feasible, avoid creating dust from road construction on days where the prevailing winds would carry dust south towards the wetland breeding habitat. ▪ Consideration will be given to minimize or avoid construction noise and activities adjacent to the wetland between sunset and midnight during the amphibian breeding season (April – June).	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)	Construction – Electrical Lines (AC and DC)	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Open trenches may prevent overland drainage of surface water in the area and create temporary storage basins; reduction in the water sustaining the wetland area supporting amphibian breeding. ▪ Potential disturbance/incidental mortality to amphibian species.	Habitat only has the potential to be indirectly effected depending on climate events.	Various times during the construction of the facility.	Through the construction phase.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Minimize duration of time trenches remain excavated. ▪ Avoid excavation of trenches during periods of expected heavy rainfall. ▪ If dewatering of trenches is necessary, direct all discharged water away from the wetland and amphibian habitat. ▪ Consideration will be given to minimize or avoid construction noise and activities adjacent to the wetland between sunset and midnight during the amphibian breeding season (April – June).	No residual effect.
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)	Operations – Maintenance and Operation of Project Components	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ Light pollution from operation of security lighting within the project location potentially disrupting amphibian breeding. ▪ Noise pollution potentially disrupting amphibian breeding calls. ▪ Potential mortality of adults on access roads.	▪ Potential disruption in species behaviour, particularly nocturnal species.	Low – effect limited to extent of light/noise trespass on habitat.	Ongoing throughout the operations phase for the project.	Project components will remain in place for the project lifespan.	▪ Limit use of lighting where possible. ▪ Avoid light effects entering into the wetland (eliminate light trespass). If lighting is required around perimeter of the project location, use of motion sensors may be implemented as necessary. ▪ Place substation(s) and inverter(s) away from the wetland, limiting noise pollution.	No residual effect.

Significant or Provincially Significant Natural Feature Affected by Activity	Project Phase & Activity within 120 m of Natural Feature	Distance to Nearest Project Component and Components within 120m	Potential Negative/Positive Effect(s)		Magnitude of Effect	Frequency of Effect	Duration of Effect	Mitigation Measures	Residual Effects
Amphibian Breeding Habitat (Includes Habitat for Western Chorus Frog)	Decommissioning – Removal of All Project Components	The closest project component will be 30 metres away from the wetland edge. Project components within 120 metres of the wetland edge include the fence, solar panels, access road and inverters.	▪ No direct impacts.	▪ Potential decline in the quantity/quality of surface water run-off entering the wetland if adjacent vegetation is impacted by removal of components.	Expected to be none. If negative effects occur they may vary within the wetland.	Once during the decommissioning phase.	Short-term during removal of project components.	▪ Develop and implement ESC plan. ▪ ESC measures should be monitored monthly and removed once vegetation has stabilized. ▪ ESC measures (i.e., silt fence) installed for decommissioning purposes will prevent the movement of amphibians into the decommissioning area. ▪ Minimize disruptions to hydrologic function of the breeding habitat by avoiding changes to grade.	No residual effect.
Habitat for Species of Conservation Concern: Schweinitz's Sedge									
Habitat for Species of Conservation Concern: Schweinitz's Sedge	Construction – Access Roads	No known location.	▪ No direct impacts.	▪ A single individual lost could influence survivorship of species in the larger area. ▪ Settling of dust created during road construction.	Habitat only has the potential to be indirectly effected.	Once during construction.	Throughout construction.	▪ Maintain effective ESC measures as installed during the site preparation phase. ▪ Implement dust suppression measures for access roads being constructed within 120 metres of the habitat. ▪ Where feasible, avoid creating dust from road construction on days where the prevailing winds would carry dust south towards the habitat.	No residual effect.
Generalized Candidate Significant Wildlife Habitat									
Generalized Significant Wildlife Habitat	Site Preparation and Construction	The closest project component will be adjacent to the generalized habitat. Project components within 120 metres of the habitat edge include the fence, solar panels, access roads and the lay down area.	▪ No direct impacts.	▪ Potential loss of species or avoidance of habitat by species due to adjacent construction disturbance.	Low – development of solar project not anticipated to have a significant effect.	During the first two weeks of construction during land clearing work, then limited to incidental effects.	Throughout the construction phase of the project.	▪ Develop and implement an ESC plan prior to site preparation activities. ▪ Limit use of lighting where possible. ▪ Ensure no large wildlife are within the project location prior to completion of the fence.	No residual effect.

9.1 *Mitigation Commitments to Compensate for Habitat Loss and Disturbance*

Natural features, including habitat, will not be lost in order to construct and operate the Sunderland Solar Farm. However, habitats may be disturbed during construction and operation of the facility. Mitigation commitments are outlined in **Table 10** above.

10.0 ENVIRONMENTAL EFFECTS MONITORING PLAN

The environmental effects monitoring plan (EEMP) prepared for the Sunderland Solar Farm outlines the mitigation measures to minimize the potential environmental effects of engaging in this renewable energy project (**Table 11**). The mitigation measures outlined in **Table 11** below are in response to the physical impacts and function effects that have potential to occur during the construction, design and operation, and decommissioning of the facility and are specific to significant or provincially significant natural heritage features outlined in **Table 10.** These will form part of the overall EEMP for the project in the Design and Operations Report and the Construction Plan Report, as applicable. **Table 11** also summarizes the monitoring plan and monitoring frequency during operation of the facility, as well as contingency measures that will be undertaken if performance objectives are not achieved. **Table 11** should be read in conjunction with **Table 9** and **Table 10** which outlines the features and attributes necessary for persistence, features potentially sensitive to development and are good indicator features or species.

Table 11: Environmental Effects Monitoring Plan

Potential Positive/Negative Environmental Effects		Significant/ Provincially Significant Natural Feature(s) Affected by Activity	Performance Objective	Mitigation Measure	Monitoring Strategy & Methods	Monitoring Locations	Frequency & Duration	Reporting Requirements	Contingency Measures
Physical	Functional								
Site Preparation and Construction									
▪ Potential for increased erosion and sedimentation on adjacent lands.	▪ Potential for change in water quality required for successful breeding.	Wetland 1 Woodland A Amphibian Breeding Habitat Habitat for Species of Conservation Concern Generalized Significant Wildlife Habitat	Minimize erosion and sedimentation of adjacent lands and maintain water quality of natural feature.	<u>Erosion and Sediment Control</u> ▪ Minimize soil exposure. ▪ Install ESC measures prior to grading to prevent mobilization of sediment and other contaminants from the project location into the surrounding landscape. <u>Stormwater Management</u> ▪ Develop and implement a stormwater management plan to ensure drainage patterns are not significantly altered from existing conditions due to road drainage, reduction in surface permeability, etc. <u>Site Landscaping and Vegetation</u> ▪ Project location will be seeded with low-growing, native vegetation post-construction.	Monitor ESC measures regularly during site preparation and construction. Monitor effectiveness of stormwater management measures; ensure flow is free of sedimentation.	Around the perimeter of project location where ESC measures are implemented. Monitor for surface water run-off flow and evidence of erosion to the wetland area.	Monitor ESC measures regularly during site preparation and construction. Post-construction ESC monitoring to occur monthly or after rain events 10 mm or greater until vegetation is re-established.	ESC inspection checklist log compiled for each monitoring event. Submitted to the MOE at the end of the construction phase.	Repair deficiencies in ESC structures as soon as possible upon notification of breach in ESC structure and buffer fencing. Appropriate restoration of wetland vegetation if a high degree of sedimentation occurs or excessive (more than 50%) vegetation mortality is observed.

11.0 NEGATIVE ENVIRONMENTAL EFFECTS, DESIGN AND OPERATIONS

The *REA* regulation requires an environmental effects monitoring plan as a part of the Design and Operations Report to demonstrate how potential negative environmental effects of the project will be mitigated, and set out a program for ongoing monitoring of the effectiveness of the mitigation measures. **Table 11** above provides a description of performance objectives in respect of each potential negative environmental effect; mitigation measures planned to achieve performance objectives; how the project is to be monitored; and a contingency plan to be implemented should monitoring reveal that mitigation measures have failed. **Table 11** has been prepared for inclusion in the Sunderland Solar Farm Design and Operations Report. Additional mitigation measures proposed to minimize potential impacts of the facility and not related to natural features are summarized in the Design and Operations Report.

12.0 NEGATIVE ENVIRONMENTAL EFFECTS, CONSTRUCTION

The *REA* regulation requires that a Construction Plan Report be prepared to demonstrate how potential negative environmental effects of construction activities will be mitigated including modifications to construction activities, use of treatment technologies (e.g. Erosion and Sediment Control structures), and scheduling of activities. **Table 11** above provides a description of performance objectives in respect of each potential negative environmental effect; mitigation measures planned to achieve performance objectives; how the project is to be monitored; and a contingency plan to be implemented should monitoring reveal that mitigation measures have failed. **Table 11** has been prepared for inclusion in the Sunderland Solar Farm Construction Plan Report. Additional mitigation measures proposed to minimize potential impacts of the facility and not related to natural features are summarized in the Construction Plan Report.

13.0 CONCLUSIONS

Through a records review, site investigation and natural features evaluation of significance, it was determined that significant and/or provincially significant natural features exist within the prescribed setback areas (**Figure 3**). As such, an EIS Report is required under Section 38 of *Ontario Regulation 359/09*. This fourth and final report therefore satisfies the requirements under *Ontario Regulation 359/09* with respect to a natural heritage assessment.

This EIS Report demonstrates how potential negative environmental effects, if any, of the project will be mitigated, and sets out a program for ongoing monitoring of the effectiveness of the mitigation measures. **Table 11** above provides a description of performance objectives in respect of each potential negative environmental effect; mitigation measures planned to achieve performance objectives; how the project is to be monitored; and a contingency plan to be implemented should monitoring reveal that mitigation measures have failed. The EIS Report was completed to mitigate any potential negative environmental effects to the following significant natural features:

- Wetland 1;
- Woodland A;
- Amphibian Breeding Habitat;
- Habitat for Species of Conservation Concern: Western Chorus Frog; and,
- Habitat for Species of Conservation Concern: Schweinitz's Sedge.

Table 10 and **Table 11** outline how the activities related to the construction, operation and decommissioning of the facility affect these natural features and the appropriate mitigation and monitoring work to be implemented to mitigate or avoid the potential negative environmental effects of the project.

14.0 REFERENCES

- Bird Studies Canada. 2003. The Marsh Monitoring Program: Training Kit and Instructions for Surveying Marsh Birds, Amphibians, and Their Habitats. 2003 Edition. 40 pages.
- Municipality of Durham. 2005. Official Plan of the Regional Municipality of Durham.
- Ontario Ministry of Agriculture and Food, Ministry of Municipal Affairs and Housing, and Ministry of Natural Resources. 2005. Greenbelt Plan Area. Schedule 1.
- Ontario Ministry of the Environment. 2009. Lake Simcoe Protection Plan. 100pp.
- Ontario Ministry of Natural Resources. 2000. Significant Wildlife Habitat Technical Guide. 151pp.
- Ontario Ministry of Natural Resources (MNR), 2002. Ontario Wetland Evaluation System Southern Manual (3rd Edition). Revised December 2002.
- Ontario Ministry of Natural Resources. September 2009. Approval and Permitting Requirements Document for Renewable Energy Projects. September 24, 2009.
- Ontario Ministry of Natural Resources. July 2011. Natural Heritage Assessment Guide for Renewable Energy Projects. Queen's Printer for Ontario. 99pp.
- Riley, J.L. 1989. Distribution and Status of the Vascular Plants of Central Region. Ontario Ministry of Natural Resources. 99pp.
- Varga, S., D. Leadbeater, J. Webber, J. Kaiser, B. Crins, J. Kamstra, D. Banville, E. Ashley, G. Miller, C. Kinsley, C. Jacobson, K, Mewa, L. Tebby, E. Moxley, E. Zajc. 2000. Distribution and Status of the Vascular Plants of the Greater Toronto Area. Ontario Ministry of Natural Resources, Aurora District. 103pp.