

# DECOMMISSIONING PLAN REPORT

## *Southgate Solar Project*

December 2014

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**1. INTRODUCTION**

Southgate Solar LP proposes to develop a solar facility with a maximum nameplate capacity of 50 megawatts alternating current (MWac), located near Mount Forest, in the Township of Southgate, County of Grey, Ontario (**Figure 1**). The renewable energy facility will be known as the Southgate Solar Project (the “Project”).

Southgate Solar LP has initiated the Project through a Power Purchase Agreement (PPA) with the Ontario Power Authority (OPA). The Project will require approval under Ontario Regulation 359/09–Renewable Energy Approval (REA) under Part V.0.1 of the *Ontario Environmental Protection Act*.

This draft Decommissioning Plan Report (DPR) describes how Southgate Solar LP proposes to restore the Project Location to a clean and safe condition suitable for the anticipated future use of the land at the end of the Power Purchase Agreement with the Ontario Power Authority (20 years). However, following the term of the agreement, the life of the facility could be extended upon consent of the Township of Southgate and landowners. The report provides an overview of all anticipated activities during the decommissioning phase of the Project and outlines mitigation measures to address potential negative environmental effects as a result of these activities. It also discusses the restoration of land and water and the management of excess materials and waste as detailed in **Table 1**.

Table 1: Checklist for Requirements under O.Reg. 359/09 – Decommissioning Plan Report

Required Documentation	Location in Report
Procedures for dismantling or demolishing the facility.	Section 5.1, <i>Equipment Dismantling and Removal</i>
Activities related to the restoration of any land and water negatively affected by the facility.	Section 5.3, <i>Site Restoration</i>
Procedures for managing excess materials and waste.	Section 5.4, <i>Managing Excess Materials and Waste</i>



**SOUTHGATE SOLAR PROJECT**

**FIGURE 1  
GENERAL PROJECT LOCATION**



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNR

MAP CREATED BY: GM  
MAP CHECKED BY: MB  
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\149154 - Samsung Southgate\mxd\PDR\



PROJECT: 149154  
STATUS: DRAFT  
DATE: 11/12/2014

**2. THE PROPONENT**

In the course of developing renewable energy projects, Southgate Solar LP strives to satisfy various environmental approval requirements and obtains regulatory approvals that vary depending on the jurisdiction, project capacity and site location. In addition, Southgate Solar LP aims to build long-term relationships with the communities that host its projects. Southgate Solar LP is committed to the health and welfare of the residents of the Township of Southgate, and to ensure that the Southgate Solar Project is successful for stakeholders.

Contact information for the Proponent is as follows:

**Full Name of Company:** Southgate Solar LP

**Prime Contacts:** - Simon Kim, Project Manager  
- A. José De Armas, Manager, Project Development

**Address:** 2050 Derry Road West 2<sup>nd</sup> Floor, Mississauga, ON, L5N 0B9

**Telephone:** 1-866-234-7094

**Email:** ssp@samsungrenewableenergy.ca

Dillon Consulting Limited is the prime contractor for the preparation of this report. The contact at Dillon is:

**Full Name of Company:** Dillon Consulting Limited

**Prime Contact:** Michael Enright, Project Manager

**Address:** 1155 North Service Road West, Unit 14, Oakville, Ontario, L6M 3E3

**Telephone:** (905) 901-2912 ext. 3401

**Email:** menright@dillon.ca

### 3. PROJECT LOCATION

The proposed Class 3 Solar Facility is to be located within the Township of Southgate, in the County of Grey, approximately 11 kilometres north of the community of Mount Forest. **Figure 1** shows the general location of the Project in Southwestern Ontario. The proposed Project Location consists of approximately 235 hectares (581 acres) of land and is contained within an area bounded on the north by Southgate Road 24, Southgate Road 14 to the south, Southgate Road 47 to the east, and Highway 6 to the west. The proposed Project Location, consisting of multiple privately-owned parcels, is to be leased by Southgate Solar LP. It has an approximate centroid at the following geographic coordinates:

- Latitude: 44° 6' 7.78" N
- Longitude: 80° 44' 49.91" W

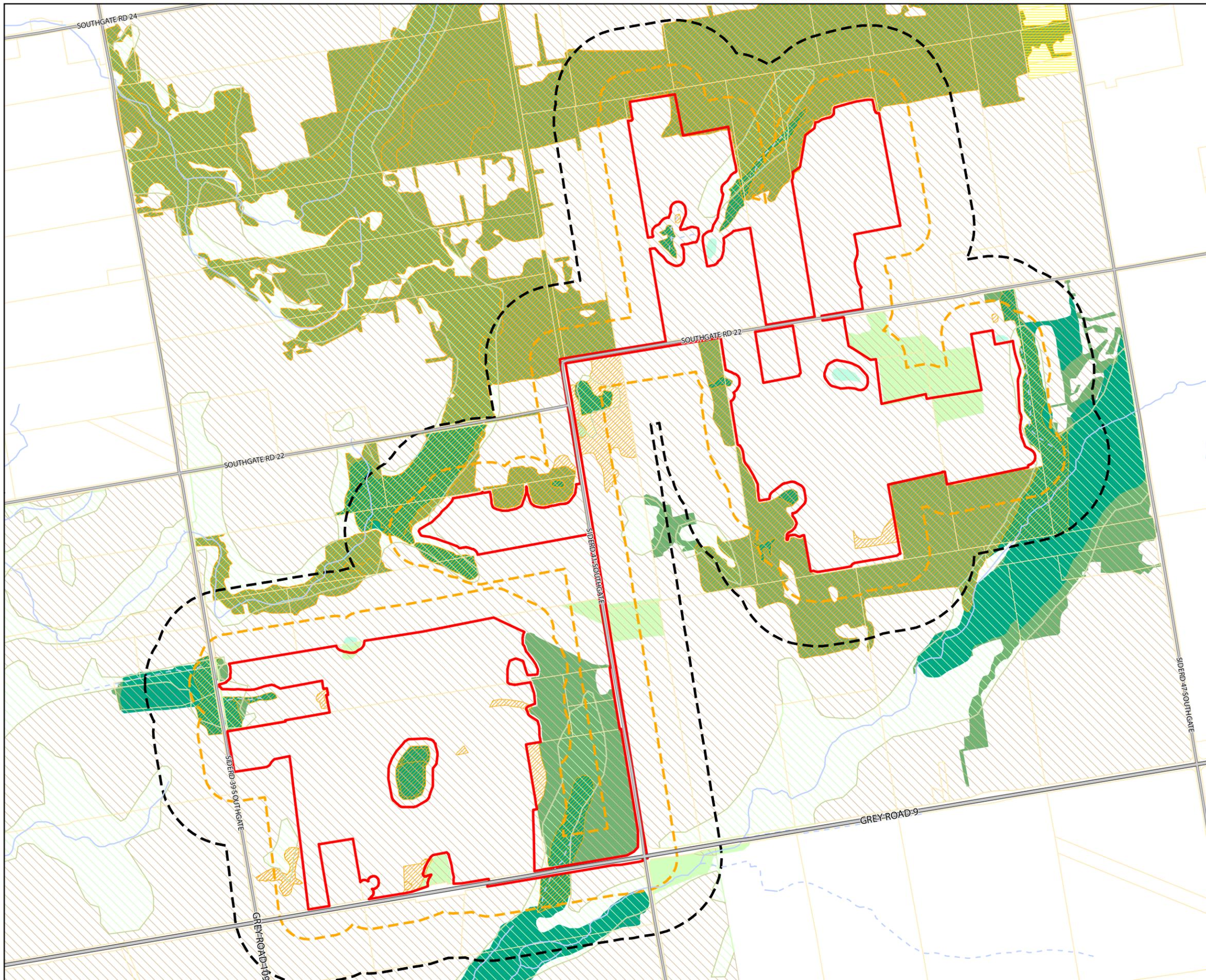
The Project Location is defined in Ontario Regulation 359/09 to be “a part of land and all or part of any building or structure in, on or over which a person is engaging in or proposes to engage in the project”.

**Figure 2** shows the Project Location as the boundary within which all project components will be located and the surrounding natural features. Further information on facility components making up the Project Location is provided in Section 6 of the *Design and Operations Report*.

#### 4. OPERATIONAL FLEXIBILITY

As part of the design of the Project, Southgate Solar LP is requesting to pre-approve changes that may be made to the Project at the time of detailed design. These changes include, but are not limited to general modifications to the site plan that result in a decrease in the Project Location size within the current boundary, and a decrease in the number of Project components or infrastructure (including transformer substation(s), solar inverter/transformer cluster(s)). Adjustments to project components may also occur, however, it is not expected that noise components would be moved greater than 10 m from their current locations. In all cases where an operational or technical change is necessary, the project will remain within the bounds of the Project Location boundary as shown on **Figure 2**, and commitments made in the various technical reports. During operations, routine modifications to the solar facility may be implemented (e.g., repaving of entrance, repairs to fencing, etc.) provided their effects are environmentally insignificant and do not exceed the boundaries of the constructed Project.

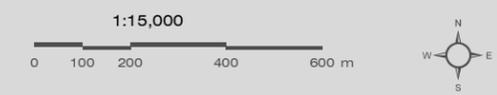
The decommissioning phase of the Project will be affected by the operational flexibility through the quantity of project components to be removed, and the location of the fence line and working area. It is anticipated that only the total components required to construct a 50 MWac facility would require removal during decommissioning. This DPR will be updated approximately 6 months prior to the start of decommissioning in accordance with REA requirements.



## SOUTHGATE SOLAR PROJECT

**FIGURE 2  
NATURAL AND CULTURAL  
HERITAGE FEATURES**

- Permanent Watercourse
  - - - Intermittent Watercourse
  - Project Location
  - Project Location 120 m Setback
  - Project Location 300 m Setback
  - Parcel Boundary
- Zone (Township of Southgate Zoning Bylaw)**
- Agricultural
  - Environmental Protection
  - Residential
  - Significant / Treated as Significant Wildlife Habitat
  - Assumed Provincially Significant Wetland
  - Dillon Delineated Wetland (Non-Provincially Significant)
  - Significant Woodland
  - Dillon Delineated Woodland (Non-Significant)



MAP DRAWING INFORMATION:  
DATA PROVIDED BY MNR

MAP CREATED BY: GM  
MAP CHECKED BY: JP  
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STATUS: DRAFT  
DATE: 12/2/2014

## **5. DECOMMISSIONING PLAN OVERVIEW**

Decommissioning consists of the removal of above and below-ground facility components, the management of excess materials and waste and the restoration of Project Location lands and waters, as applicable to facilitate the anticipated future use of the land. Decommissioning activities are expected to take between 6 and 9 months.

Potential negative environmental effects from the decommissioning of the facility will be mitigated through the measures outlined in the Environmental Effects Mitigation and Monitoring Plan (EEMMP) (see Appendix A of the *Design and Operations Report*). Mitigation measures include the use of erosion and sediment control measures, limiting the use of heavy machinery (where possible), and maintaining a buffer from natural features. Southgate Solar LP's staff and contractors will be made aware of the environmental management items contained in these reports to ensure they are implemented.

Southgate Solar LP will meet with the Project landowners prior to decommissioning to discuss their preferences and Southgate Solar LP's commitment and obligation to restore the Project Location to its pre-construction condition or a similar state. All decommissioning and restoration activities will adhere to the requirements of the *Ontario Health and Safety Act (1990)* and will be in accordance with all applicable federal and provincial laws, as well as local permitting requirements. As with the construction phase, an on-site manager (generally, the contractor's project manager) responsible for safety will be present while decommissioning activities are taking place.

The decommissioning plan is based on current procedures and experience. These procedures may be subject to revision over time based on the standards of the day. At the time of decommissioning, various options and procedures will be re-evaluated to ensure that decommissioning is safe and beneficial to the environment and to the landowner(s). Soil erosion and sedimentation control measures, as well as other mitigation measures used during construction will be re-implemented during the decommissioning phase and will remain in place until the site is stabilized. Decommissioning and site restoration activities will be undertaken with the input of the landowner(s) and will be carried out in accordance with the commitments made in this report.

### **5.1 Current and Future Land Use**

The proposed solar facility will be located primarily within lands currently zoned by the Township of Southgate Agricultural. The Official Plan for the Township of Southgate designates the Project Location as Agricultural, with some land designated as Hazard lands and Rural. The upper-tier municipality (County of Grey) designates the lands as Agricultural and Rural, with some Hazard Lands. A search and analysis of available records identified that the Project is not located in areas subject to Land Use Plans; specifically, the Project does not lie within the Niagara Escarpment, Lake Simcoe Watershed, Oak Ridges Moraine or the Greenbelt Provincial Plan areas.

Based on the zoning and current land use it is assumed that the probable future use of the Project Location after decommissioning will be agricultural. However, this will be confirmed six months prior to decommissioning to ensure that restoring the land to its current land use remains the most appropriate action.

## **5.2 Decommissioning During Construction (Abandonment of Project)**

In the unlikely event that construction ceases prior to facility completion and operation, with no expectation of construction re-start, the project would be decommissioned in a manner as described in **Section 5** of this report. Any installed components will be removed and managed as per **Section 5.3** and the site will be restored to its original pre-construction condition, or a similar state as per **Section 5.2** in consultation with the landowner(s). Potential negative effects related to construction and decommissioning (e.g., dust and sedimentation or erosion) and appropriate mitigation measures are addressed in the EEMMP (see Appendix A of the *Design and Operations Report*) and in the plans for final decommissioning and site restoration as outlined in this document in **Sections 5.2, 5.3** and **5.4**.

## **5.3 Decommissioning After Ceasing Operation**

Properly maintained PV panels have an expected lifespan of thirty to fifty years, or more, with equipment replacement and repowering. This report assumes the decommissioning process will begin at the end of the Power Purchase Agreement with the OPA (20 years). However, following the term of the agreement, the life of the facility could be extended upon consent of the Township of Southgate and landowners. At the time of decommissioning, the installed components will be removed and reused/recycled, where possible, and the site restored in accordance with the activities discussed in **Table 2** and **Table 3**. As with the steps for decommissioning during construction, mitigation measures, as outlined in the EEMMP, will be implemented. All removal of equipment will be done in accordance with the applicable regulations and manufacturer recommendations.

**6. DECOMMISSIONING OF THE RENEWABLE ENERGY GENERATION FACILITY**

**6.1 Equipment Dismantling and Removal**

After the solar facility has been disconnected from the utility power grid and all electrical components have been disconnected, components will be dismantled and removed as outlined in **Table 2**. Decommissioning will be undertaken by licensed subcontractors using similar techniques and equipment as those employed during construction.

Table 2: Equipment Dismantling and Removal

Activity	Description
<i>Above-ground Structures</i>	
PV Arrays	<ul style="list-style-type: none"> <li>• Disconnect all above ground wirings, cables and electrical interconnections.</li> <li>• Remove PV modules from racks and temporarily store on-site in delineated area before removal by truck to appropriate facility(ies).</li> <li>• Dismantle and remove all racks and support structures, including extraction of in-ground support structures (see below). Temporarily store on-site before removal by truck to recycling facility.</li> </ul>
Medium Voltage (MV) Stations, Substation	<ul style="list-style-type: none"> <li>• Disconnect and remove all electrical equipment.</li> <li>• Remove inverters and associated components including combiners, medium voltage transformers, medium voltage switch gear and transport off-site to appropriate facility.</li> <li>• Unbolt high voltage substation transformer and remove from the foundation with a crane and dismantle all other substation component and transport off-site to appropriate facility.</li> <li>• Remove concrete foundations for MV Stations and substation components (see below).</li> </ul>
Access roads and other components	<ul style="list-style-type: none"> <li>• Consult with landowners to determine if access roads should be left in place for their continued use.</li> <li>• If one or more access roads are removed after consultation with the landowners, the aggregate materials will be excavated by a backhoe/front-end loader, along with any underlying geotextile fabric.</li> <li>• 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.</li> <li>• Overhead lines and poles that are not owned by Hydro One Networks Inc. (HONI) will be removed along with associated equipment (isolation switches, fuses, metering) and holes will be filled in with clean fill or on-site fill, as appropriate.</li> <li>• Removal of the perimeter fencing, followed by removal of fence pole foundations.</li> </ul>

Activity	Description
<i>Below-ground Structures</i>	
Underground cables	<ul style="list-style-type: none"> <li>Underground electrical lines running between inverters and the substation will be removed.</li> </ul>
Equipment foundations	<ul style="list-style-type: none"> <li>The substation, MV Stations and steel racking for the solar modules will have foundations that require removal. These foundations will likely consist of steel piles but may also include concrete. Other underground infrastructure requiring removal may include concrete protective electrical structures. It is anticipated that structures will be fully removed from the ground and that the affected area shall be backfilled as necessary.</li> <li>In the event that a structure breaks during excavation, it is not anticipated that any waste materials will be left on-site 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. Waste concrete will be recycled off-site by a concrete recycler or crushed on-site and used as backfill material.</li> <li>All foundation materials will be removed from the site via truck and managed at appropriate facilities.</li> </ul>

## 6.2 Environmental Effects

Decommissioning activities, particularly the removal of Project components and grading could cause negative environmental effects similar to those during the construction phase. For example, there is the potential for disturbance (erosion/sedimentation/fuel spills) to adjacent watercourses or significant natural features. Mitigation measures similar to those employed during the construction phase of the Project will be implemented. These will remain in place until the site is stabilized in order to mitigate erosion and silt/sediment runoff and impacts on the significant natural features or water bodies located adjacent to the Project Location.

Road traffic may temporarily increase due to the movement of decommissioning crews and equipment. There may be an increase in particulate matter (dust) in adjacent areas during the decommissioning phase. Additionally, there will be emissions from the diesel engines of construction machinery and equipment which may cause odour disturbance and localized impacts to air quality. Decommissioning activities may lead to temporary elevated noise levels from heavy machinery and an increase in trips to the Project Location. Work will be undertaken during daylight hours and conform to local noise By-laws. Please see Section 7 of the *Construction Plan Report* for a detailed account of mitigation measures.

A summary of potential environmental effects and proposed mitigation measures can be found in the EEMMP, (see Appendix A of the *Design and Operations Report*).

### **6.3 Site Restoration**

The current Project Location has been primarily used for agricultural purposes. A detailed description of environmental conditions and natural features at the Project Location prior to construction is provided in Section 11 of the *Environmental Impact Study Report* as part of the *Natural Heritage Assessment*. Through the decommissioning phase, the Project Location could be restored to a state similar to its former condition or to the condition of the future intended land use (anticipated to be agricultural).

Project components are expected to be removed. The access roads will either be left at the landowners' request or graded to restore terrain profiles. If necessary, the use of a sub-soiler may be required to relieve compaction and restore the soil conditions for agricultural activities. Rehabilitated lands may be seeded with a low-growing species such as clover to help stabilize soil conditions, enhance soil structure and increase soil fertility.

Eight streams and three seepage areas that meet the definition of a water body under Ontario Regulation 359/09 were identified within the Project Location surrounding 120 m. The operation of the solar facility will not release emissions which could pollute the air or water. Thus, it is not anticipated that site restoration activities would include the restoration of water bodies (see Appendix A of the *Design and Operations Report* for further information). The site will be restored so that the post-decommissioning off-site drainage patterns and quality/quantity of stormwater will be similar to pre-construction conditions. It is not expected that the lands surrounding the facility will require any remediation since any potential contaminants at the project location will be contained with adequate spill protection. A Spills Response Plan will be developed by the on-site contractor prior to the start of construction and will be implemented as required during all phases of the Project.

Prior to the abandonment of the site, a site visit will be conducted to ensure that post-decommissioning conditions satisfy those requirements set out in Ontario Regulation 359/09 and other relevant agreements that may be in place with agencies (e.g., conservation authority, provincial ministries), the municipality and/or landowners.

### **6.4 Managing Excess Materials and Waste**

During the decommissioning phase a variety of excess materials and wastes will be generated (see **Table 3**). Most of the materials used in a solar facility are reusable or recyclable and some equipment may have manufacturer take-back and recycling requirements. Remaining materials will be removed and disposed of off-site at an appropriate facility. Southgate Solar LP will maximize recycling and reuse and will work with manufacturers, local subcontractors and waste firms to segregate material to be disposed of, recycled and/or reused.

Southgate Solar LP will be responsible for the logistics of collecting and recycling the PV modules and to minimize the potential for modules to be discarded. Southgate Solar LP proposes to

determine the best way of recycling the solar modules at the time of decommissioning based on best management practices.

Table 3: Management of Excess Materials and Waste

Material/Waste	Means of Managing Excess Materials and Waste
PV panels	If there is no possibility for reuse, the PV panels will either be returned to the manufacturer for appropriate recycling/disposal or will be transported to a facility where the glass, metal and semiconductor materials will be separated and recycled. Panels will be managed as per best management practices that may be in effect at the time of decommissioning.
Metal array mounting racks and steel supports	These materials will be recycled off-site at an approved facility.
Transformers and substation components	Oil from the transformers will be removed on-site to reduce the potential for spills and will be transported to an approved facility for disposal. The main HV substation transformer and step-up transformers at the MV Stations will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed of off-site in accordance with standards and best practices of the day.
Inverters, fans, fixtures	The metal components of the inverters, fans and fixtures will be recycled, where possible. Remaining components will be disposed of in accordance with the standards of the day.
Gravel (or other granular)	It is possible that the municipality may accept uncontaminated material without processing for use on local roads, however, for the purpose of this report it is assumed that the material will be removed from the Project Location by truck to a location where the aggregate can be processed for salvage. It will then be reused as fill for construction. In the unlikely event that the aggregate or portions of the aggregate is contaminated it will be transported to an MOECC-approved hazardous waste/disposal facility.
Geotextile fabric	It is assumed that during excavation of the aggregate, a large portion of the geotextile will be “picked up” and sorted out of the aggregate at the aggregate reprocessing site. Geotextile fabric that is remaining or large pieces that can be readily removed from the excavated aggregate will be disposed of off-site at an MOECC-approved disposal facility.
Concrete inverter/transformer foundations	Concrete foundations will be broken down and transported by certified and licensed contractor to a recycling or MOECC-approved disposal facility.

Material/Waste	Means of Managing Excess Materials and Waste
Cables and wiring	The electrical line that connects the substation to the Point of Common Coupling (PCC) will be disconnected and recycled, if possible, or disposed of at an approved facility. Support poles, if made of untreated wood, will be chipped for reuse. Associated electronic equipment (isolation switches, fuses, metering) will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed off-site in accordance with standards and best practices of the day.
Fencing	Fencing will be removed and recycled at a metal recycling facility.
Debris	Remaining debris on the site will be separated into recyclables/residual wastes and will be transported from the site and managed as appropriate.

Recyclable materials will be transported off-site by truck and managed at appropriate facilities in accordance with provincial waste management regulations. Residual waste materials for disposal will be removed by a licensed contractor and transported to an MOECC-approved facility. It is not anticipated that any waste materials will be left on-site 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. The final decision on waste disposal or recycling will be made by the on-site contractor who will refer to the standards of the day for waste generated at the facility. Given that methods of managing wastes and recyclables may change in the future, information in this report will be updated as necessary to conform to future local and provincial requirements.

**7. EMERGENCY RESPONSE AND COMMUNICATIONS PLANS**

The Emergency Response and Communications Plans (ERCs) are currently being drafted. They are discussed in the *Design and Operations Report* and will be in place prior to construction. The plans will cover the entire life of the Project and any details specific to decommissioning activities.

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## **8. DECOMMISSIONING NOTIFICATION**

The process for notification of decommissioning activities will be the same as the process for notification of construction activities and non-emergency communications as outlined in the ERCPs. Decommissioning activities may require the notification of stakeholders given the potential for increased noise and traffic volumes at and around the Project Location. The Township of Southgate and the County of Grey will be notified prior to the commencement of any decommissioning activities.

In accordance with MOECC requirements, six months prior to decommissioning, Southgate Solar LP will update their list of stakeholders and notify them, as appropriate, of decommissioning activities. Federal, provincial and local authorities will also be notified as needed to discuss the potential approvals required to engage in decommissioning activities.

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## 9. OTHER APPROVALS

Well-planned and well-managed renewable energy facilities are not expected to pose environmental risks at the time of decommissioning. Southgate Solar LP will ensure that the decommissioning stage of the project is carried out in accordance with REA requirements and with the measures and practices described in this report.

Decommissioning of the project will follow the standards of the day. Decommissioning activities may also require permits from other government agencies or entities, which are expected to be similar to those required during the construction phase of the project. Southgate Solar LP will ensure that these are obtained prior to decommissioning.

Authorization or permits may be required from the following groups:

- Township of Southgate
- County of Grey
- Ministry of Transportation
- Ministry of Natural Resources and Forestry
- Ministry of the Environment and Climate Change
- Ministry of Tourism, Culture and Sport

The *Decommissioning Plan Report* will be updated as necessary to ensure that changes in available technology and site restoration methods are taken into consideration.

## **10. CONCLUSIONS**

This Decommissioning Plan Report has been completed to assist Southgate Solar LP in fulfilling regulatory requirements as mandated by provincial government agencies for the decommissioning of the Project. This report is consistent with the provisions of Ontario Regulation 359/09 for a Class 3 Solar Facility. In the event of the abandonment of the proposed facility or in the event that the solar operation ceases, Southgate Solar LP will adhere to all decommissioning requirements provided in this report, or stipulated by the MOECC as a condition of approval, and will ensure that the Project Location is restored to a condition appropriate for its future use. It is the overall conclusion of this Decommissioning Plan Report that the decommissioning of the Project and any ancillary equipment can be conducted in such a manner as to ensure that there will be no significant negative environmental or social effects.

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