

GoldLight

DECOMMISSIONING PLAN REPORT



Executive Summary

Canadian Solar Solutions Inc., acting on behalf of GoldLight LP, proposes to develop a solar facility with a maximum name plate capacity of approximately 10 megawatts (MW) alternating current (AC), located near Pefferlaw, in the Town of Georgina and the Region of York, Ontario. Canadian Solar Solutions Inc. is coordinating and managing the approvals process for GoldLight LP. The renewable energy facility will be known as GoldLight and will be rated as a Class 3 Solar Facility.

This *Decommissioning Plan Report* (DPR) provides an overview of all activities that will occur during the decommissioning phase of GoldLight, as well as all activities related to the restoration of land and water, and the management of excess materials and waste.

Decommissioning of the facility will include disconnection of the facility from the electrical grid and the removal of all facility components, including:

- Photovoltaic (PV) modules, racking and supports;
- inverters, substation, transformers and other electrical equipment;
- access roads;
- underground cables, communication tower, perimeter fence; and,
- concrete foundations.

Decommissioning activities, particularly the removal of project components and grading, could cause negative environmental effects similar to those of the construction phase. Potential negative environmental effects will be mitigated through the measures outlined in the Environmental Effects Mitigation and Monitoring Plan (EEMMP) (see Appendix D of the *Design and Operations Report*).

During the decommissioning of the solar facility, a variety of materials and waste will be generated. Where possible, materials will be reused or recycled. Waste materials for disposal will be removed by a licensed contractor and transported to an MOE-approved facility. Recyclable materials will be transported off-site by truck and managed at appropriate facilities in accordance with provincial waste management regulations. It is not anticipated that any waste materials will be left on-site.

The current project location is primarily used for agricultural production of row crops and contains a woodland and meadow. Based on the zoning By-law 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. Restoration will include re-grading of the land

as appropriate to maintain natural drainage patterns and the planting of vegetation suitable for erosion/sediment control and soil fertility.

GoldLight LP will ensure that the decommissioning stage of the project is carried out in accordance with Renewable Energy Approval (REA) requirements and with the measures and practices described in this report along with best management practices. Permits will be obtained as required and notification will be given to stakeholders prior to decommissioning.

This decommissioning plan is based on current best management practices and procedures. These procedures may be subject to revision based on new standards and emergent best management practices at the time of decommissioning. The plan will be updated six months prior to the start of decommissioning and will be re-evaluated to ensure that decommissioning is safe, beneficial to the environment and to the landowner(s). It is the overall conclusion of the *Decommissioning Plan Report* that the decommissioning of GoldLight will be conducted in such a manner as to ensure that there will be no significant negative environmental effects as a result of the project.

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1. Introduction

Canadian Solar Solutions Inc., acting on behalf of GoldLight LP, proposes to develop a solar facility with a maximum name plate capacity of approximately 10 megawatts (MW), located near Pefferlaw, in the Town of Georgina and the Region of York, Ontario. The renewable energy facility will be known as GoldLight and will be rated as a Class 3 Solar Facility. GoldLight LP 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*.

This *Decommissioning Plan Report* (DPR) is being submitted to the Ontario Ministry of the Environment (MOE) as required under the Renewable Energy Approvals (REA) process as outlined in *Ontario Regulation 359/09*, and was made available for public review and comment prior to this final submission to the MOE. Other draft reports made available for public review prior to this submission included:

- Project Description Report;
- Design and Operations Report;
- Construction Plan Report;
- Noise Study Report;
- Natural Heritage Assessment (4 reports);
- Water Assessment;
- Archaeological Assessments;
- Cultural Heritage Screening; and,
- Cultural Heritage Assessment.

The DPR describes how GoldLight LP proposes to restore the project location to a clean and safe condition suitable for the likely future use of the land. 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.

2. The Proponent

Canadian Solar Solutions Inc. is managing and coordinating the approvals process for GoldLight LP. Canadian Solar is an experienced developer, owner and operator of power generation and energy delivery assets. Company activities include developing, building, owning and operating renewable energy facilities. Canadian Solar strives to satisfy various environmental approval requirements and obtain regulatory approvals that vary depending on the jurisdiction, project capacity and site location. In addition, they build long-term relationships with the communities that host their projects and are committed to the health and welfare of the Township of Georgina and Region of York.

Contact information for the proponent is as follows:

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Dillon Consulting Limited (Dillon) is the consultant responsible for the preparation of REA-related reports for GoldLight. The contact at Dillon is:

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3. Project Location

The proposed Class 3 Solar Facility is located at 7130 Old Homestead Road, approximately 8 kilometres from the community of Pefferlaw. **Figure 1** shows the general location of the project in Ontario. The project location covers part of Lots 8 and 9, Concession 5, in the Town of Georgina and consists of 38.17 hectares of privately owned land (leased by the proponent) with geographic coordinates (centroids) as follows:

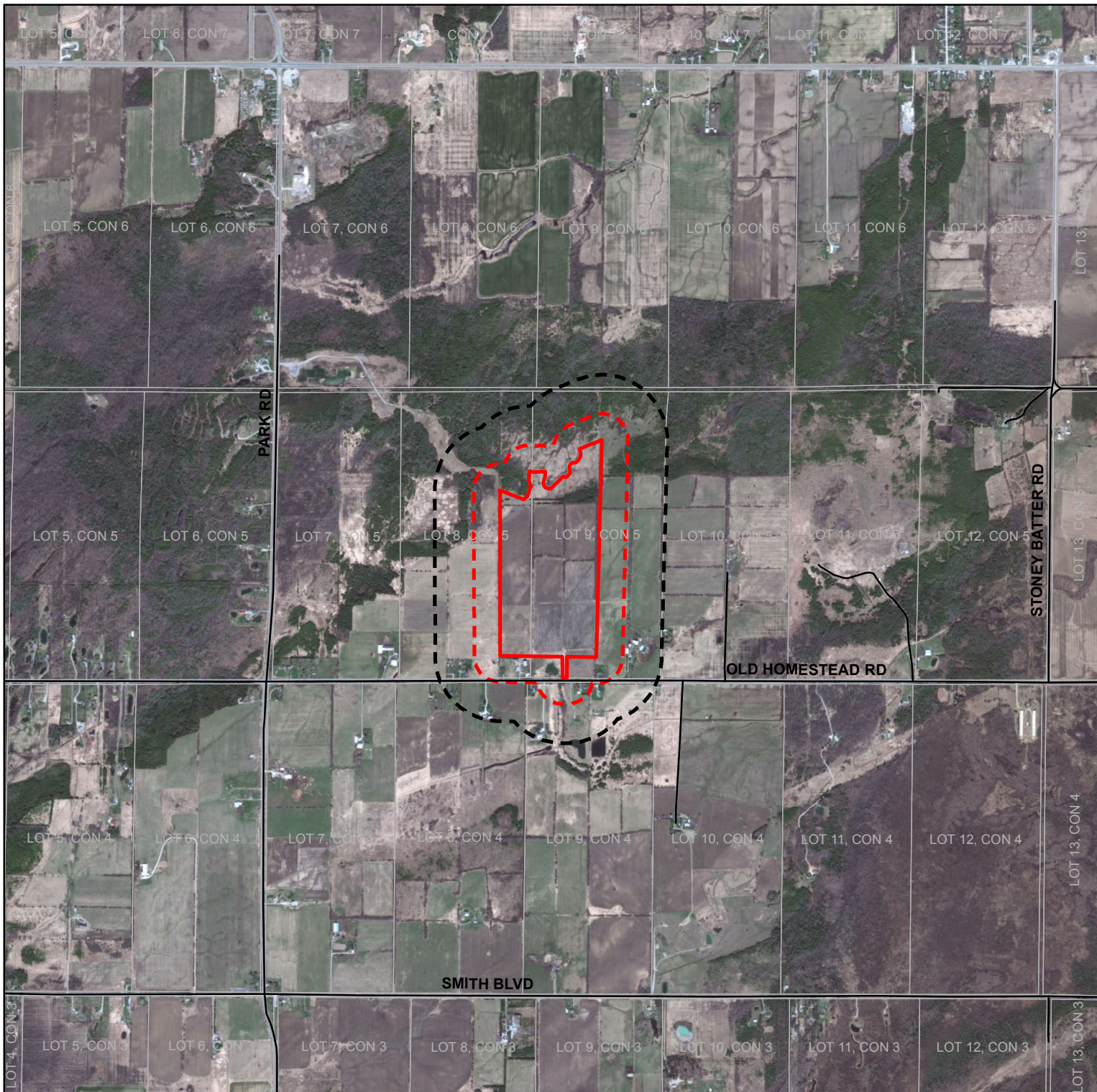
- Latitude: 44° 17' 26.06" N
- Longitude: 79° 17' 47.95" W

“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 outer boundary (defined by the perimeter fence and access road) within which all the project components will be located. Further information on facility components making up the project location is provided in Sections 4 and 5 of the *Design and Operations Report*.



Figure 1: General Location of GoldLight in Ontario

GoldLight Figure 2: Project Location and Context



Legend

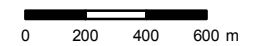
-  Local Road
-  Project Location
-  120 m Project Location Setback
-  300 m Project Location Setback
-  Lots/Concessions

Image Provided by Google Earth Pro, 2011

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4. Decommissioning Plan Overview

Decommissioning consists of the removal of above-ground and below-ground facility components, management of excess materials and waste and the restoration of project location lands and waters, as applicable. Activities are expected to take between 6 - 9 months.

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

GoldLight LP will meet with the project landowner(s) prior to decommissioning to discuss preferences and GoldLight LP commitments and obligations 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, provincial and local permitting requirements. As with the construction phase, an on-site manager responsible for safety will be present on-site (generally the contractor's project manager) while decommissioning activities are taking place.

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. 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 until the site is stabilized. Decommissioning and site restoration activities will be undertaken with the input of the landowner(s).

4.1 Current and Future Land Use

The project currently falls within lands zoned as 'Rural' by the Town of Georgina. Surrounding lands are also zoned as 'Rural' with some 'Industrial' to the northwest. Site investigations conducted for the *Natural Heritage Assessment* confirmed that the project location is used primarily for agricultural production of row crops and contains a woodland and meadow.

The project location falls within areas subject to land use plans. Specifically, the project location falls within the Greenbelt Protected Countryside, Greenbelt Natural Heritage System and Lake Simcoe Watershed. The project location does not fall within the Oak Ridges Moraine or the Niagara Escarpment. Based on the zoning By-law 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.

4.2 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 impacts related to construction and decommissioning (e.g., dust and sedimentation or erosion) and appropriate mitigation measures are addressed in the EEMMP (see Appendix D of the *Design and Operations Report*) and in the plans for final decommissioning and site restoration as outlined in this document.

4.3 Decommissioning After Ceasing Operation

Properly maintained PV panels have an expected lifespan of thirty to fifty years, or more, with equipment replacement and repowering. However, this report assumes the decommissioning process will begin at the end of the power purchase agreement with the OPA (20 years). 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 1** and **Table 2**. 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.

5. Decommissioning of the Renewable Energy Generation Facility

5.1 Equipment Dismantling and Removal

After the facility has been disconnected from the utility power grid and all electrical components have been disconnected within the facility, components will be dismantled and removed as outlined in **Table 1**. Decommissioning will be undertaken by licensed subcontractors using similar techniques and equipment as those employed during construction.

Table 1: Equipment Dismantling and Removal

Activity	Description
Above-ground Structures	
PV Arrays	<ul style="list-style-type: none"> ▪ Disconnect all above ground wirings, cables and electrical interconnections. ▪ Remove PV modules from racks, temporarily store on-site in delineated area before removal by truck to appropriate facility(ies). ▪ 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.
Inverters and transformers	<ul style="list-style-type: none"> ▪ Disconnect and remove all electrical equipment. ▪ Remove inverters and associated components including combiners, low voltage switch gear and medium voltage transformers and transport off-site to appropriate facility. ▪ Unbolt substation transformer and remove from the foundation with a crane. ▪ If concrete foundations have been used for inverter stations or substation, they will be removed (see below).
Access roads and other components	<ul style="list-style-type: none"> ▪ Consult with landowner(s) to determine if access roads should be left in place for their continued use. ▪ If one or more access roads are removed after consultation with the landowner(s), the aggregate materials will be excavated by a backhoe/front-end loader, along with any underlying geotextile

Activity	Description
	<p>fabric.</p> <ul style="list-style-type: none"> ▪ 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. ▪ Above ground lines and poles that are not owned by 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. ▪ The communication tower will be dismantled and components removed. ▪ Removal of the perimeter fencing, followed by removal of fence pole foundations will be completed.
Below-ground Structures	
Underground cables	<ul style="list-style-type: none"> ▪ Underground electrical lines running between inverters and the substation will be removed.
Equipment foundations	<ul style="list-style-type: none"> ▪ The substation, inverter 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. ▪ In the event that a structure breaks during excavation, all broken portions will be removed by the EPC contractor. Waste concrete will be recycled off-site by a concrete recycler or crushed on-site and used as backfill material. ▪ All foundation materials will be removed from the site via truck and managed at appropriate facilities.

5.2 Environmental Effects

Decommissioning activities, particularly the removal of project components and grading could cause negative environmental effects similar to those of 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 (see EEMMP in the *Design and Operations Report*). These will remain in place until the site is stabilized in order to mitigate erosion and silt/sediment runoff and any impacts on the significant natural features or water bodies located adjacent to the project location.

Road traffic will 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 all local noise By-laws. Please see Section 6 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 D of the *Design and Operations Report*).

5.3 Site Restoration

The current project location is primarily used for agricultural production of row crops and contains a woodland and meadow. A detailed description of environmental conditions and natural features at the project location prior to construction is provided in Section 8 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.

All project components will be removed with the exception of some underground infrastructure (discussed in **Table 1**) which will not impact the environment, including future activities at the project location and the health of the soils. The access roads will either be left at the landowner's 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.

Within the project location there are no water bodies as defined by *Ontario Regulation 359/09*. The operation of the solar facility does not release emissions which could pollute the air and water. Thus, decommissioning activities would not include the restoration of any water bodies. 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 special remediation since any hazardous materials used on the site will be contained with adequate spill protection.

Prior to abandonment of the site, a land survey will be conducted to ensure that conditions satisfy those set out in *Ontario Regulation 359/09* and any agreements with agencies (e.g., conservation authority, MOE), the municipality and/or landowner(s).

5.4 Managing Excess Materials and Waste

During the decommissioning phase a variety of excess materials and wastes (listed in **Table 2**) will be generated. Most of the materials used in a solar facility are reusable or recyclable and some equipment may have manufacturer take-back and recycling requirements. Any remaining materials will be removed and disposed of off-site at an appropriate facility. GoldLight LP will establish policies and procedures to 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.

GoldLight LP will be responsible for the logistics of collecting and recycling the PV modules and to minimize the potential for modules to be discarded in the municipal waste stream. Currently, some manufacturers and new companies are looking for ways to recycle and/or reuse solar modules when they have reached the end of their lifespan. Due to a recent increase in the use of solar energy technology, a large number of panels from a variety of projects will be nearing the end of their lifespan in 15 - 25 years. It is anticipated there will be more recycling options available for solar modules at that time. GoldLight LP proposes to determine the best way of recycling the solar modules using best management practices at the time of decommissioning.

Table 2: Management of Excess Materials and Waste

Material/Waste	Means of Managing Excess Materials and Waste
PV panels	<ul style="list-style-type: none"> ▪ If there is no possibility for reuse, between 30,000 and 100,000 panels will either be returned to the manufacturer for appropriate recycling/disposal or will be transported to a recycling 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	<ul style="list-style-type: none"> ▪ These materials will be recycled off-site at an approved facility.
Transformers and substation components	<ul style="list-style-type: none"> ▪ 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 substation transformer and step-up transformers at the inverter stations will be transported off-site to be sent back to the manufacturer, recycled, reused, or safely disposed of off-site in accordance with current standards and best practices.
Inverters, fans, fixtures	<ul style="list-style-type: none"> ▪ 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)	<ul style="list-style-type: none"> ▪ 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 MOE-approved hazardous waste/disposal facility.
Geotextile fabric	<ul style="list-style-type: none"> ▪ 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 MOE-approved disposal facility.

Material/Waste	Means of Managing Excess Materials and Waste
Concrete inverter/transformer foundations	<ul style="list-style-type: none"> ▪ Concrete foundations will be broken down and transported by certified and licensed contractor to a recycling or MOE-approved disposal facility.
Communications tower	<ul style="list-style-type: none"> ▪ All components of the tower will be transported off-site and recycled/reused and/or disposed of at appropriate facilities.
Cables and wiring	<ul style="list-style-type: none"> ▪ The electrical line that connects the substation to the point of common coupling 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 current standards and best practices.
Fencing	<ul style="list-style-type: none"> ▪ Fencing will be removed and recycled at a metal recycling facility.
Debris	<ul style="list-style-type: none"> ▪ Any 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 MOE-approved facility. It is not anticipated that any waste materials will be left on-site. 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.

6. Emergency Response and Communications Plans

The *Emergency Response and Communications Plans* (ERCs) are currently being prepared in consultation with the local municipality and fire department. 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.

7. 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 the project location. The local municipality in particular will be notified prior to commencement of any decommissioning activities.

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

8. Other Approvals

Well-planned and well-managed renewable energy facilities are not expected to pose environmental risks at the time of decommissioning. GoldLight 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 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 in the construction phase of the project. GoldLight LP will ensure that these are obtained prior to decommissioning. Authorization or permits may be required from the following:

- Town of Georgina;
- Region of York;
- Lake Simcoe Region Conservation Authority;
- Ministry of Transportation;
- Ministry of Natural Resources; and,
- Ministry of the Environment.

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

9. Conclusions

This *Decommissioning Plan Report* has been completed to assist GoldLight LP and any subsidiary or successors in fulfilling regulatory requirements as mandated by the provincial government agencies for the decommissioning of the GoldLight project. This report is consistent with the provision of *Ontario Regulation 359/09* for a solar facility. In the event of the abandonment of the proposed facility or in the event that the solar operation ceases, GoldLight LP and any subsidiary or successors will adhere to all decommissioning requirements provided in this report, or stipulated by the MOE as a condition of approval, and will ensure that the project location is appropriate for future use. It is the overall conclusion of this *Decommissioning Plan Report* that the decommissioning of GoldLight and any ancillary equipment will be conducted in such a manner as to ensure that there will be no significant negative environmental or social effects.