



DILLON
CONSULTING

LOYALIST SOLAR LP

Decommissioning Plan Report

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1.0 Introduction

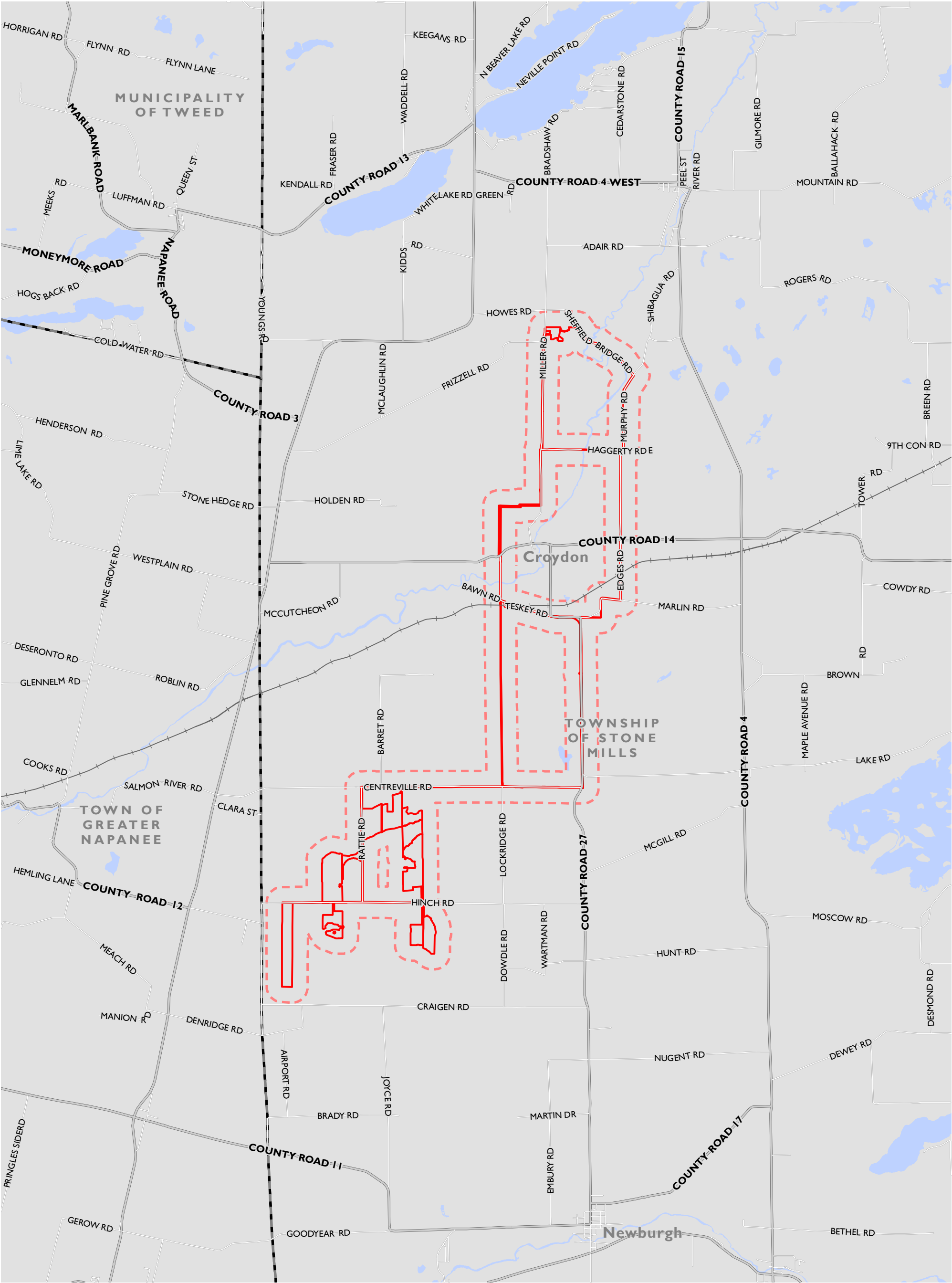
Loyalist Solar LP, a limited partnership between Mohawks of the Bay of Quinte and BluEarth Renewables Inc. (together the "Proponent"), proposes to develop a non-rooftop solar facility with a maximum nameplate capacity of 54 megawatts alternating current ("MW_{AC}"), located in the Township of Stone Mills, County of Lennox & Addington, Ontario (**Figure 1**). The renewable energy facility will be known as the Loyalist Solar Project (the "Project").

The Proponent submitted a proposal to the Independent Electricity System Operator ("IESO") under the Large Renewable Procurement ("LRP") process on September 1, 2015. The Proponent was subsequently awarded an LRP contract by the IESO to generate electricity, and the Project will now be subject to a number of approvals including *Ontario Regulation 359/09* ("O. Reg. 359/09") – Renewable Energy Approval ("REA") under Part V.0.1 of the Ontario *Environmental Protection Act*.

This *Decommissioning Plan Report* ("DPR") describes how the Proponent 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 life of the Project. This 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>



BluEarth Renewables Inc.
LOYALIST SOLAR LP

General Project Location
FIGURE 1

- Railway
- Project Location Boundary
- Project Location 300 m Area of Investigation
- Municipal Boundary



MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 18N



PROJECT: 163674 STATUS: DRAFT DATE: 2017-01-25

2.0 The Proponent

The Proponent is coordinating and managing the approvals process for the Project. The contact is:

Full Name of Company: *Loyalist Solar LP, c/o BluEarth Renewables Inc.*

Prime Contact: *Tom Bird, Director, Regulatory*

Address: *34 Harvard Road, Guelph, ON, N1G 4V8*

Telephone: *1-844-214-2578*

Email: *projects@bluearth.ca*

Dillon Consulting Limited (Dillon) has been retained by the Proponent to prepare the REA application for the Project. The contact at Dillon is:

Full Name of Company: *Dillon Consulting Limited*

Prime Contact: *Megan Bellamy, Project Manager*

Address: *235 Yorkland Boulevard, Suite 800, Toronto, ON, M2J 4Y8*

Telephone: *(416) 229-4646, Ext. 2423*

Fax: *(416) 229-4692*

Email: *MBellamy@dillon.ca*

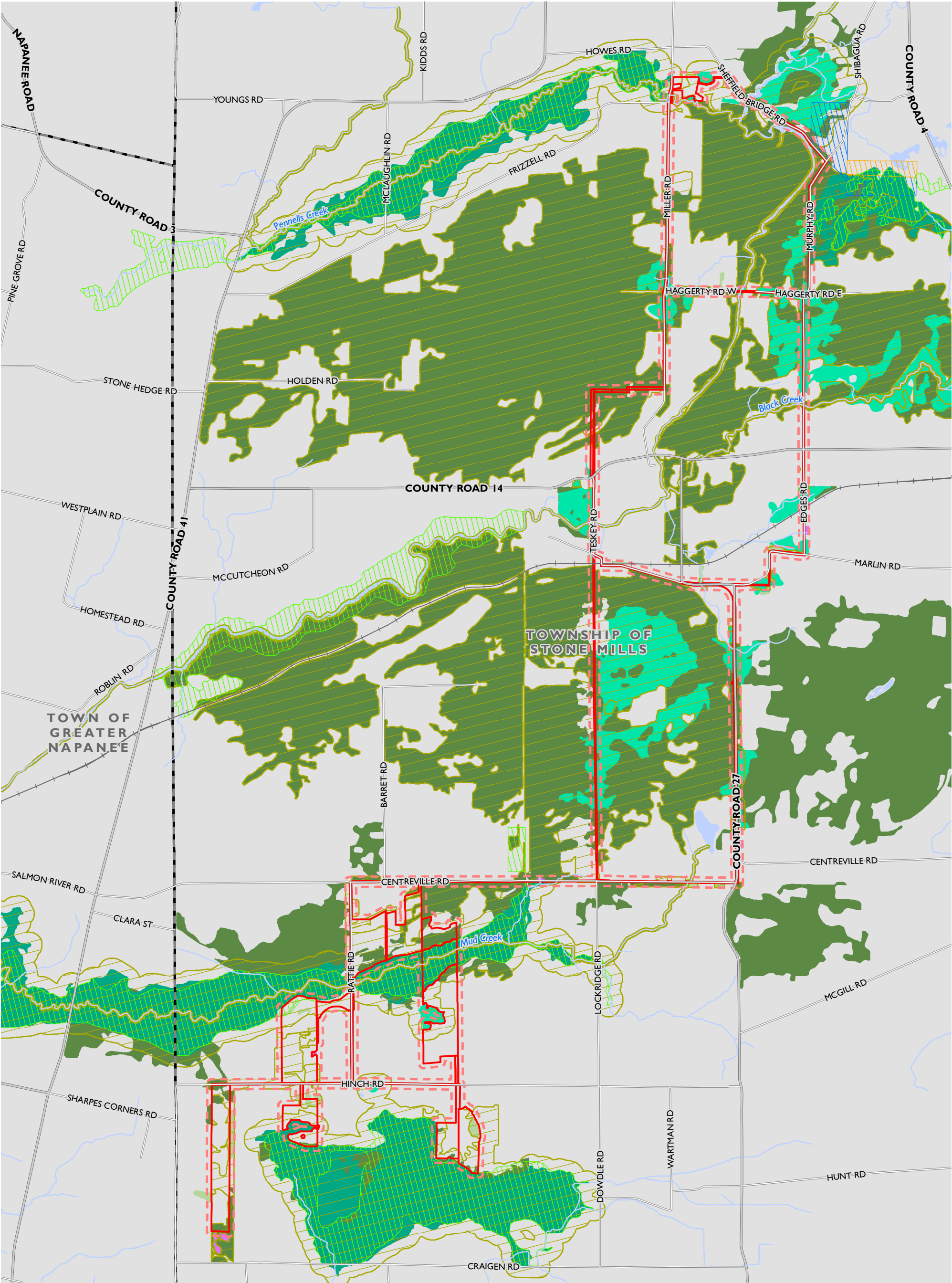
3.0 Project Location

This Class 3 Solar Facility is to be located within the Township of Stone Mills, and in the County of Lennox & Addington, approximately nine kilometres north of Napanee, Ontario. The Project Location, situated on multiple privately owned parcels, consists of approximately 200 hectares (494 acres) and is contained within an area generally bounded on the north by Howes Road, Craigen Road to the south, County Road 27 and Murphy Road to the east, and County Road 41 to the west (described as the “Project Location” on **Figures 1 and 2**). It has an approximate centroid at the following geographic coordinates:

- Latitude: 44°22'3.382" N
- Longitude: 76°58'19.543" 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*.



BluEarth Renewables Inc.
LOYALIST SOLAR LP

**Project Location
and Natural Features**
FIGURE 2

- | | | |
|---|--|---|
| — Railway | Zoning (Township of Stone Mills)* | Significant/Treated as Significant Wildlife Habitat |
| — Watercourse | Environmental Protection | Water Body |
| Project Location Boundary | Extractive Industrial Pits and Quarries | Significant Wetland |
| Project Location 50 m Area of Investigation | Waste Management | Assumed Provincially Significant Wetland |
| Municipal Boundary | | Non Significant Wetland |
| Parcel | | Significant Woodland |
| | | Non Significant Woodland |
- *All other lands within the 300 m Setback are zoned Rural.

An Environmental Impact Study has been submitted to the Ministry of Natural Resources and Forestry for natural features deemed significant. A Water Body Report has been prepared.

Land uses designated by the County of Lennox & Addington are Rural for the Project Location and surrounding 300 m.



MAP CREATED BY: GM
MAP CHECKED BY: JP
MAP PROJECTION: NAD 1983 UTM Zone 18N

1:40,000
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PROJECT: 163674 STATUS: DRAFT DATE: 2/3/2017

4.0 Decommissioning Plan Overview

Decommissioning consists of the removal of 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 10 to 12 months.

Potential negative environmental effects from the decommissioning of the facility will be mitigated through the measures outlined in the Environmental Effects Monitoring Plan (“EEMP”) (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 setback distance from significant natural features. The Proponent’s staff and contractors will be made aware of the environmental management items contained in these reports to ensure they are implemented.

The Proponent will meet with the Project landowners prior to decommissioning to discuss their preferences and the Proponent’s commitment and obligation to restore the Project Location to its pre-construction condition or a similar state. 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 minimizes the potential for impacts to the environment. 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 or the standards of the day.

4.1 Current and Future Land Use

The proposed solar facility will be located primarily within lands currently zoned by the Township of Stone Mills as rural. The Official Plan for the Township of Stone Mills designates the Project Location as rural, with the surrounding 300 m designated as rural and provincially significant wetlands. The upper-tier municipality (County of Lennox & Addington) Official Plan designates the lands as rural area, and environmental protection area. 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.

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 5.1** and the site will be restored to its original pre-construction condition, or a similar state as per **Section 5.3** 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 EEMP (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** and **5.3**.

4.3 Decommissioning After Ceasing Operation

Properly maintained solar PV facilities have an expected lifespan of thirty years or more. This report assumes the decommissioning process will begin at the end of the life of the project. However, it is possible that the Project would remain operational for longer period of time. 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**. Mitigation measures that may be required to address potential impacts during decommissioning will be consistent with those proposed during construction. These are outlined in the EEMP, presented in the *Design and Operations Report*. Removal of equipment will be done in accordance with the applicable regulations and manufacturer recommendations.

5.0

Decommissioning of the Renewable Energy Generation Facility

5.1 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
Above-ground Structures	
PV Arrays	<ul style="list-style-type: none">• Disconnect all above ground wirings, cables and electrical interconnections.• Remove photovoltaic ("PV") modules from racks and 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.
Inverter Stations, Substation	<ul style="list-style-type: none">• Disconnect and remove all electrical equipment.• Remove inverters and associated components including combiners, medium voltage transformers, switch gear and transport off-site to appropriate facility.• Unbolt substation and remove from the foundation with a crane and dismantle all other substation components and transport off-site to an appropriate facility.• Remove concrete foundations for inverter stations and substation components (see below).
Access roads and other components	<ul style="list-style-type: none">• Consult with landowners 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 landowners, the aggregate materials will be excavated by a backhoe/front-end loader, along with any underlying geotextile fabric.• 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 area. Clean, compatible sub-grade material, followed by topsoil will be applied as appropriate.• 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.• Removal of the perimeter fencing, followed by removal of fence pole foundations.

Activity	Description
Below-ground Structures	
Underground cables	<ul style="list-style-type: none"> Underground electrical lines running between inverters and the substation will either be removed or cut and left in place approximately 1m below ground to allow agricultural practices to resume.
Equipment foundations	<ul style="list-style-type: none"> The substation foundation will be removed to a depth of 1m below grade and covered with fill. This will allow previous agricultural practices to resume. 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. 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, 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 metre 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. 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 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 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 the *Construction Plan Report* for a detailed account of mitigation measures.

A summary of potential environmental effects as they apply to decommissioning and the proposed mitigation measures can be found in the EEMP (see Appendix A of the *Design and Operations Report*).

5.3 Site Restoration

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

Project components are expected to be removed. The access roads will either be left at the landowner's request or may be graded to restore terrain profiles. Rehabilitated lands may be seeded to help stabilize soil conditions, enhance soil structure, and increase soil fertility.

Under *Ontario Regulation 359/09*, the definition of a water body includes lakes, permanent and intermittent streams and seepage areas, but does not include grassed waterways, temporary channels for surface drainage, rock chutes and spillways, roadside ditches that do not contain a permanent or intermittent stream, temporary ponded areas that are normally farmed, dugout ponds or artificial bodies of water that are intended for the storage, treatment or recirculation of runoff from farm animal yards, manure storage facilities and outdoor confinement areas.

For the Loyalist Solar Project, one lake, five seepage areas and 13 streams met the definition of a water body under the Regulation. The operation of the solar facility will not release emissions which could pollute 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 remediation since any potential contaminants associated with decommissioning at the Project Location will be contained with adequate spill protection. A Spills Prevention and Contingency Plan 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* or the applicable standards of the day and other relevant agreements that may be in place with agencies (e.g., conservation authority, provincial ministries), the municipality and/or landowners.

5.4 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. The Proponent 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.

The Proponent and their contractor will be responsible for the logistics of collecting and recycling the PV modules and to minimize the potential for modules to be discarded. The Proponent proposes to determine the best way of recycling the solar modules at the time of decommissioning based on good 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. PV Panels will be managed as per good management practices that are 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 or managed as per good management practices that are in effect at the time of decommissioning.
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 substation 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 standards and good 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 a Ministry of Environment and Climate Change ("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.
Cables and wiring	The electrical line that connects the substation to the existing 230 kV H23B transmission line within the adjacent HONI corridor 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 or disposed of as per good practices of the day. 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 good practices of the day.

Material/Waste	Means of Managing Excess Materials and Waste
Fencing	Fencing will be removed and recycled at a metal recycling facility or managed as per good management practices in effect at the time of decommissioning.
Debris	Remaining debris on the site will be separated into recyclables or 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 that may break off below grade during removal and/or disconnected underground electrical wires buried at 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 approximately six months prior to the start of decommissioning to conform to future local and provincial requirements.

6.0 Emergency Response and Communication Plans

The Emergency Response and Communications Plans (“ERCP”s) are currently being developed. 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.

7.0 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 Stone Mills and the County of Lennox & Addington will be notified prior to the commencement of any decommissioning activities.

In accordance with MOECC requirements, six months prior to decommissioning, the Proponent 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.

8.0 Other Approvals

Well-planned and well-managed renewable energy facilities are not expected to pose environmental risks at the time of decommissioning. The Proponent 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. The Proponent will ensure that these are obtained prior to decommissioning.

Authorization or permits may be required from the following groups:

- Township of Stone Mills
- County of Lennox & Addington
- Ministry of Transportation
- Ministry of Natural Resources and Forestry
- Ministry of the Environment and Climate Change
- Ministry of Tourism, Culture and Sport

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

9.0 Conclusions

This *Decommissioning Plan Report* has been completed to assist the Proponent 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. The Proponent will adhere to the 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 effects.