

# GoldLight

## DESIGN AND OPERATIONS 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 *Design and Operations Report* (DOR) discusses the potential for environmental effects as they relate to permanent facility components and their operations within 300 metres of the project location. The report provides a detailed site plan, facility design plan and facility operations plan. An Environmental Effects Mitigation and Monitoring Plan (EEMMP) and Emergency Response and Communications Plans (ERCs) will cover the life of the proposed project from construction through to decommissioning.

Site plans detail the location of facility components, natural features, noise receptors, land uses, setbacks and other features in accordance with Table 1 of *Ontario Regulation 359/09*. The layout of project components has been designed to minimize the footprint of GoldLight and potential negative environmental effects. A *Noise Study Report* for the project determined that the operation of the facility will meet or exceed all requirements set out by the Ontario Ministry of the Environment. Noise mitigation will be implemented for inverters and transformers as needed.

The Stage 1 and Stage 2 *Archaeological Assessments* identified two archaeological sites of value or interest on the property, one within the project location and one within 120 meters of the project location. Both are subject to a Stage 3 Archaeological Assessment prior to any development of the property (see the Stage 1 and Stage 2 *Archaeological Assessments*). Based on the results of the *Cultural Heritage Self Assessment*, the project location does not fall within or adjacent to a protected property and no identified cultural heritage resources fall within the project location and no negative impacts are anticipated. However, the self assessment identified potential built heritage features abutting the project location and a full *Cultural Heritage Assessment* was conducted along with a Visual Assessment. These assessments determined that there will be no direct impacts to the cultural heritage features and minimal indirect impact.

The project location for GoldLight falls within areas subject to land use plans. Specifically, the project falls within the Greenbelt Protected Countryside, Greenbelt Natural Heritage System and Lake Simcoe Watershed.

The project falls within lands zoned by the Town of Georgina as 'Rural'. Surrounding lands are also zoned as 'Rural' with some 'Industrial' to the northwest and the solar facility will temporarily alter the land use. It is expected that the project location will be returned to its former land use, or to a future anticipated land use, at the time of decommissioning.

The project has been developed to retain the significance of all natural features identified and mitigates negative environmental effects that will occur. Of the natural features evaluated to be significant or assumed to be provincially significant, the layout of the project will allow for the persistence of all these natural features after the project is constructed and operational. Given the topography and location of GoldLight, it is not anticipated that significant ongoing stormwater management activities will be required during operation of the facility. GoldLight LP commits to maintaining the existing off-site drainage patterns and conditions at the project location. A stormwater management plan will be prepared prior to construction. No hazardous materials will be stored on-site with the exception of oil for transformers, which will be adequately contained.

Major facility components include: solar modules and mounting systems; inverters; transformers; substation; above- and below-ground electrical collection system; noise barriers; access roads; perimeter fence; communications tower; lighting; and temporary construction laydown area.

GoldLight will operate year round and generate electricity during daylight hours only. The facility will be continuously monitored and managed remotely using an online system that will track performance in real time and identify any problems that may occur. Minimal on-site activity is required for daily operation and there will be no permanent on-site employees. The project will be scheduled for maintenance as needed. Typically, maintenance includes checking the structures and connections and ground conditions. It is anticipated that the photovoltaic (PV) panels will be washed with water only as required. Additional maintenance or service may be required for issues such as equipment damage or malfunction; however, this is not anticipated to be a common occurrence. Site inspections for all project components will occur on an as-needed basis.

An Emergency Communications Plan will be included in the Emergency Response Plan and will provide key contact information for relevant responders, regulators, landowners and other stakeholders. It will contain a description of the chain of communications between GoldLight LP and relevant responders under emergency scenarios applicable to the project.

The overall conclusion of this *Design and Operations Report* is that this project can be operated without any significant adverse residual effects to the natural or social environment.



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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) alternating current (AC), 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 *Design and Operations Report* (DOR) 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;
- Construction Plan Report;
- Decommissioning Plan Report;
- Noise Study Report;
- Natural Heritage Assessment (4 reports);
- Water Assessment;
- Archaeological Assessments;
- Cultural Heritage Screening; and,
- Cultural Heritage Assessment.

The DOR discusses the potential for environmental effects as they relate to permanent facility components and their operation, within 300 metres of the project location. The report provides a detailed site plan, facility design plan, facility operations plan and Environmental Effects Mitigation and Monitoring Plan (EEMMP). It also contains the Emergency Response and Communications Plans (ERCPs) that cover the life of the proposed project from construction through to and including decommissioning.

## 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, GoldLight LP and Canadian Solar Solutions Inc. are building long-term relationships with the communities that host their projects and are committed to the health and welfare of the Town of Georgina and the Region of York, Ontario.

Contact information for the proponent is as follows:

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<b>Fax:</b>	<u>519-837-2550</u>
<b>Email:</b>	<u><a href="mailto:Mark.Feenstra@na.canadiansolar.com">Mark.Feenstra@na.canadiansolar.com</a></u>

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”. Facility components making up the project location are discussed in **Section 5** of this report and their locations have been mapped in the site plans provided in **Section 4**.



Figure 1: General Location of GoldLight in Ontario

#### 4. Site Plans

The following site plans (**Figures 2 to 4**) detail the location of facility components, natural features, noise receptors, land uses, setbacks and other features in accordance with Table 1 of *Ontario Regulation 359/09*. The following (and their associated infrastructure) are *not* shown in the site plans because they will not be collected, transmitted, treated, stored, handled, processed or disposed of in the construction, operation or decommissioning of the facility: groundwater, sewage, biomass or source separated organics. The facility will not discharge contaminants to air during its operation.

**Figure 2** identifies the project location boundary and lands within 1000 metres. It provides the larger context for the facility components and natural features that will be shown in more detail in **Figures 3 and 4**. **Figure 2** shows the location of all potential noise receptors and the distance between the project location and closest noise receptors to the east, west, south and north (more information is provided in **Section 4.1**). **Figure 2** also identifies any: roads, utility corridor(s), rights-of-way, easements not directly associated with the project, municipal zoning and/or land use designations, on-ground land uses, property parcels, and lots/concessions. The locations of the assessed cultural heritage features (house, farmhouse and landscape) are provided.

**Figure 3** provides the location of all proposed facility components. These components include: PV panels (and associated racking and supports), substation, inverter stations (which contain two inverters and one step-up transformer), access roads, underground and overhead cabling, communication tower and the perimeter fence. Rights-of-way or easements associated with these components are also identified if applicable. Detailed information on facility components is provided in **Section 5** and **Appendix A**. UTM coordinates are provided for the substation and nearest noise receptors. The substation transformer is 44 kV and will not require an acoustical barrier. Temporary land use areas are provided in **Figure 3** for context. These include: the construction laydown area (which includes temporary parking for construction vehicles as well as trailers and temporary office buildings).

**Figure 4** identifies applicable natural features and water bodies within the project location and surrounding 300 metres. Distances from each applicable natural feature and/or water body to the project location is provided. Setbacks apply only to those natural features evaluated as ‘significant’, ‘assumed provincially significant’ or ‘provincially significant’ as outlined in the *Natural Heritage Assessment Evaluation of Significance Report*. Details regarding applicable water bodies are provided in the *Water Assessment Report*.

## 4.1 Transformers and Noise Receptors

The background ambient noise, exclusive of that generated by the project, can be characterized as having qualities of a Class 3 (Rural) Area, as described in the MOE publication *NPC-232 Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)*. The primary contributor to background sound in Class 3 Areas are natural sounds and with occasional vehicle traffic on nearby roads. GoldLight is designed to operate 365 days per year. The solar panels are only able to generate electricity when the sun is shining. Similarly, the inverters and transformers only operate when the solar panels are generating electricity. The operating load for the inverters and transformers is dependent on the amount of electricity generated by the panels, which is at a maximum (100% load) when the sunlight is most intense. The *Noise Study Report* assumed them to be operational at maximum load during both daytime and night-time hours.

The chosen locations of inverter stations (each with two inverters and one step-up transformer) and the substation transformer were based, in part, on the location of noise receptors. **Appendix B** provides a list of all assessed noise receptors, their UTM coordinates and distance to the transformers. Noise impact associated with the dominant noise sources at two proposed neighbouring solar projects (EarthLight and BeamLight) were also assessed. The closest potential existing<sup>1</sup> noise receptor, as shown in **Figures 2 and 3** is 31.44 metres from the project location and 151.99 metres from the nearest transformer (substation transformer). As per *Ontario Regulation 359/09* and guidance documents from the MOE, assumed future noise receptors must be identified on vacant lots. The locations of the noise receptors are subjective but have been chosen based on the typical building pattern in the area. The closest assumed future noise receptor, as shown in **Figures 2 and 3** is 290.37 metres from the project location and 577.56 metres from the nearest transformer (an inverter step-up transformer).

Based on the results of the *Noise Study Report* noise mitigation measures are not required for any of the noise sources at the project location to ensure that noise levels meet MOE requirements. Without mitigation measures, the results of the *Noise Study Report* indicate that the project complies with the applicable MOE environmental noise guidelines. For more information refer to the *Noise Study Report*.

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<sup>1</sup> While it is possible that the potential noise receptor may be a barn or outbuilding that does not meet the definition of a noise receptor as defined by *Ontario Regulation 359/09*, these structures are considered to be noise receptors in order to err on the side of caution with regard to noise.



## 4.2 Archaeological and Cultural Heritage Resources

The Stage 1 and Stage 2 *Archaeological Assessments* identified two archaeological sites of value or interest on the property, one within the project location and one within 120 meters of the project location. Both are subject to a Stage 3 Archaeological Assessment prior to any development of the property (see the Stage 1 and Stage 2 *Archaeological Assessments*).

Based on the results of the *Cultural Heritage Self Assessment*, the project location does not fall within or adjacent to a protected property and no identified cultural heritage resources fall within the project location and no negative impacts are anticipated. However, the self assessment identified potential built heritage features abutting the project location and a full *Cultural Heritage Assessment* was conducted along with a Visual Assessment. These assessments determined that there will be no direct impacts to the cultural heritage features and minimal indirect impact.

## 4.3 Land Uses and Land Use Plans

The project falls within lands zoned by the Town of Georgina as ‘Rural’. Surrounding lands are also zoned as ‘Rural’ with some ‘Industrial’ to the northwest (*Town of Georgina Official Plan*, Schedule A, 2002, please see **Appendix C**). The project location lands are currently under active agricultural production of row crops and the solar facility will temporarily alter the land use. **Figure 2** depicts the current land uses within the project location and surrounding 120 metres as identified by the Ecological Land Classification (conducted as part of the *Natural Heritage Assessment*) and the Official Plan.

Mitigation measures will be undertaken to ensure there are no impacts to surrounding land uses, which are primarily agricultural with a few residential dwellings. Landscaping with native low-maintenance, low-growing native grassland species will occur within the project location. The project location could be returned to its original or future anticipated land use after decommissioning. A search and analysis of available records identified that the project location and surrounding 300 metres are located in areas subject to Land Use Plans. Specifically, the project falls within the Greenbelt Protected Countryside, Greenbelt Natural Heritage System and Lake Simcoe Watershed. The project does not fall within or adjacent to the Niagara Escarpment or Oak Ridges Moraine. No impacts are expected to areas protected under provincial plans and policies. Additional natural environment studies, as stipulated by *Ontario Regulation 359/09* for project locations within Plan Areas will be conducted and will consider the full intent of the *Greenbelt Act* and the *Lake Simcoe Watershed Protection Plan*.

## **4.4 Natural Heritage and Water Bodies**

The project location of GoldLight has been subject to numerous field investigations and a thorough review of development constraints was undertaken prior to delineating the project location.

Based on the natural environment information that was collected, the project location was refined to avoid impacts to significant and/or sensitive natural heritage features and water bodies. The layout of the solar project has been developed to minimize its footprint and avoid all significant natural features.

### ***4.4.1 Natural Heritage Features***

The project location is within 120 metres of a provincially significant wetland (Vachell Provincially Significant Wetland Complex), one assumed provincially significant wetland and a significant woodland habitat. A turtle over-wintering area (including habitat for Common Snapping Turtle, a Species of Conservation Concern), also identified within 120 metres of the project location, will be treated as significant. Of the natural features evaluated to be significant or assumed to be provincially significant, the layout of the project as shown on **Figure 3** will allow for the persistence of all these natural features after this project is constructed and operational. Completing an *Environmental Impact Study Report* (EIS) 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 metres of a significant or provincially significant natural feature if deemed appropriate by the MNR. The EIS identifies any mitigation methods for negative environmental effects that may occur. For detailed information on natural heritage features at the project location refer to the *Natural Heritage Assessment* documents.












### ***4.4.2 Water Bodies***

As shown in **Figure 4**, the project location is not located within 120 metres of a water body as defined by *Ontario Regulation 359/09*. As per Section 39 of *Ontario Regulation 359/09*, no solar panels or transformer substation will be located within 30 metres of the average annual high water mark of a water body. For detailed information on water bodies, refer to the *Water Assessment Report*.




**GoldLight**  
**Figure 2:**  
**Site Plan - Land Uses**

**Legend**

-  Assumed Future Noise Receptor
-  Potential Noise Receptor
-  Participating Receptor
-  Local Road
-  Project Location
-  120 m Project Location Setback
-  300 m Project Location Setback
-  Greenbelt Natural Heritage System
-  Vacant Parcel
-  Occupied Parcel
-  Lots/Concessions

**Municipal Land Use**

-  Industrial
- (All other lands are municipally zoned as Rural).

**Ecological Land Classification**

-  (Inclusion - SWT2-2: Willow Mineral Thicket Swamp Type)
-  1) CUM1-1: Dry – Moist Old Field Meadow Type
-  2) FOC4-1: Fresh – Moist White Cedar Coniferous Forest Type
-  3) Annual Row Crop
-  4) Perennial Cover Crop
-  5) Open Pasture
-  6) Residential Property
-  7) MAS2-1: Cattail Mineral Shallow Marsh Type
-  8) FOD: Deciduous Forest
-  9) Open Aquatic Area
-  10) Hedgerows
-  11) SWD4: Mineral Deciduous Swamp Ecosite

All coordinates shown are UTM Zone 17N NAD 83.

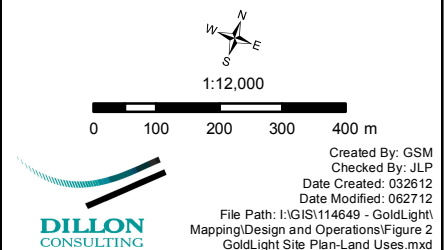
The project and lands shown in this figure lie completely within the Greenbelt Protected Countryside and Lake Simcoe Watershed.

The project location is not on or adjacent to a protected property as described in S.19(1) of *Ontario Regulation 359/09*. Cultural heritage features at the project location are discussed in the *Cultural Heritage Assessment* and are shown in this figure.

Two archaeological sites were identified within the property (one is within the project location). A Stage 3 Archaeological Assessment will be required. Please refer to Section 4.2 of the *Design and Operations Report*.

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GoldLight  
Figure 3:  
Site Plan -  
Conceptual Component Layout

Legend

- Assumed Future Noise Receptor
- Potential Noise Receptor
- Participating Receptor
- Local Road
- Project Location
- 120 m Project Location Setback
- 300 m Project Location Setback
- Vacant Parcel
- Occupied Parcel
- Lots/Concessions

Project Components

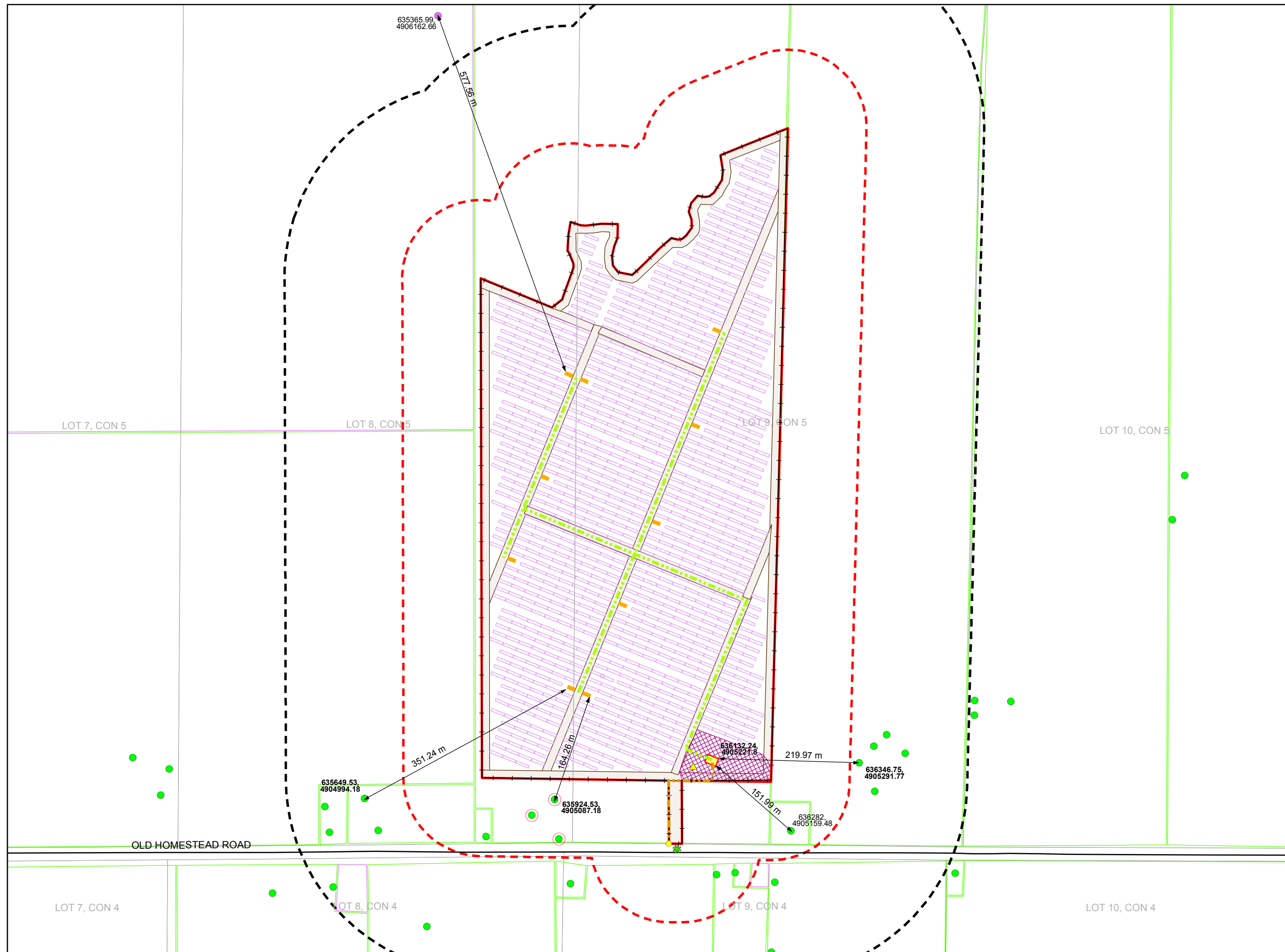
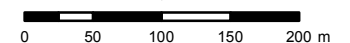
- Communication Tower
- Site Entrance
- Point of Common Coupling
- Overhead Line
- Fence
- Underground Cable
- Inverter Station
- Substation
- Solar Panels and Racks
- Laydown Area (Temporary)
- Access Road

All coordinates shown are UTM Zone 17N NAD 83.

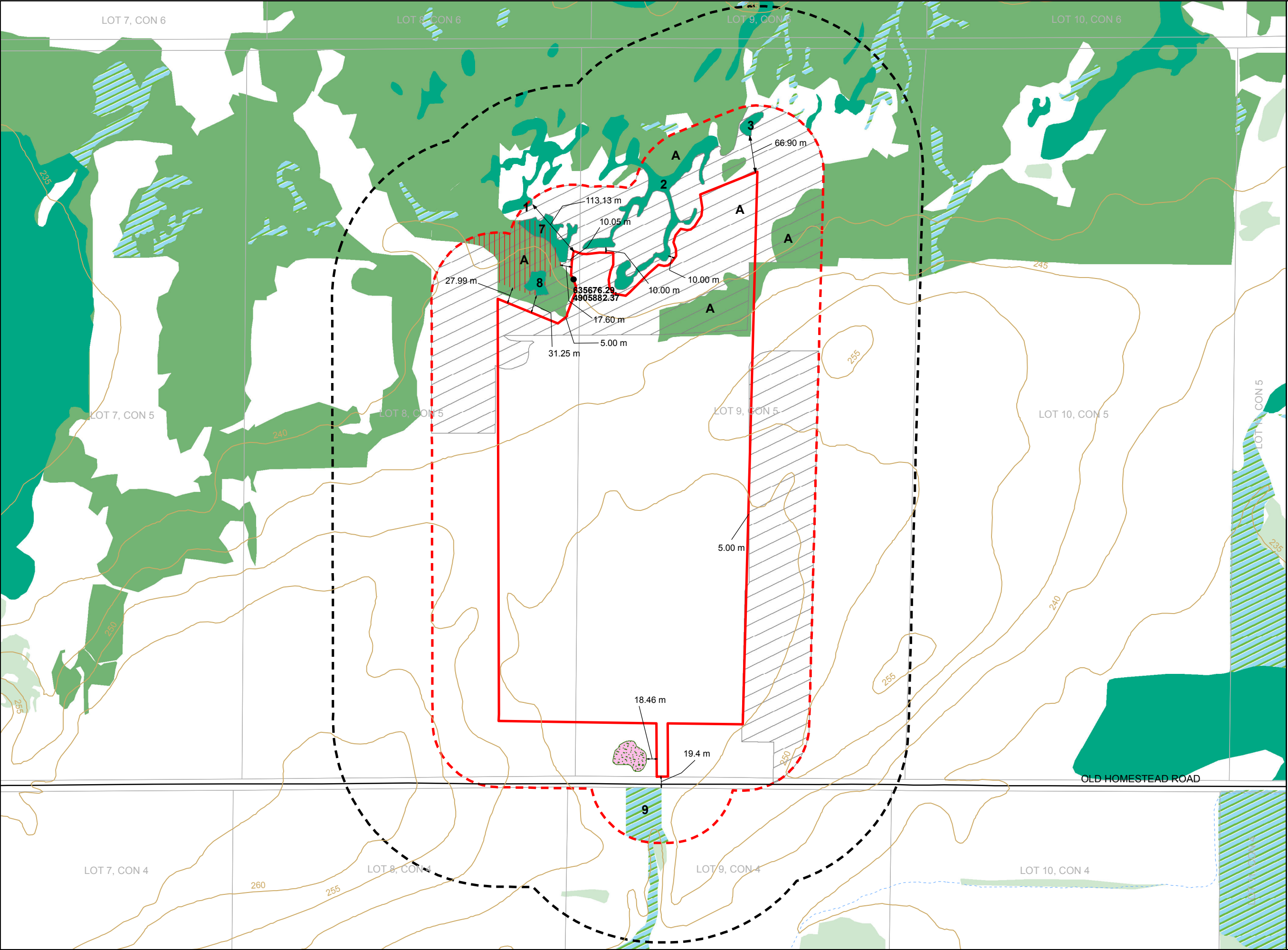
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
**GoldLight  
Figure 4:  
Site Plan -  
Natural Heritage Features**

**Legend**

-  Water Body (Unevaluated)
-  Local Road
-  Project Location
-  120 m from Project Location
-  300 m from Project Location
-  Lots/Concessions
-  Amphibian Breeding Habitat
-  Raptor Winter Feeding and Roosting Area
-  Unevaluated Wetland
-  Unevaluated Woodland

**Significant Natural Features**

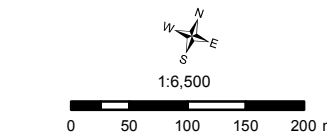
-  Generalized Candidate Significant Wildlife Habitat
-  Turtle Over Wintering Area
-  Provincially Significant Wetland
-  Significant Woodland

-  Closest Vertex of a Natural Feature to Project Location

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

All coordinates shown are UTM Zone 17N NAD 83.

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## 5. Facility Design Plan

The following subsections describe the solar facility components that are currently planned to be in place for the life of the project. The locations of the project components are shown in **Figure 3** and manufacturer technical specifications are provided in **Appendix A**. Temporary features related to construction and decommissioning activities are described in the *Construction Plan Report* and *Decommissioning Plan Report*. They are also shown in **Figure 3** for context.

The project will not require the proponent to take groundwater or surface water. The solar facility will not generate air emissions or sewage or handle, store or process biomass, source separated organics, or farm materials. Therefore, no equipment or components are required for these activities. The project will require some stormwater management, as described in **Section 6.1.1**.

### 5.1 Existing Features

GoldLight will not require the use of any existing features (e.g., buildings), as there are none within the project location; however, the facility will be connected to the existing electrical distribution grid and the project location will be accessed from Old Homestead Road.

### 5.2 Electricity Generation Process

PV panels will be the technology used to convert solar energy into electricity. With exposure to sunlight, the solar modules convert solar radiation into direct current (DC) electricity through a PV process. The PV process occurs when the energy from the sunlight is transferred to semiconductors contained in the modules. DC electricity generated from the panels will be collected and converted into AC electricity by inverters. From the inverter stations, the electricity will be sent to the step-up transformer where it will be metered and sent to the local distribution system.

### 5.3 Solar Facility Components

The following sub-sections provide detail on the individual components that will be used over the lifetime of the GoldLight project and may cause negative environmental effects.

#### 5.3.1 Solar Modules and Mounting System

Approximately 30,000 - 100,000 PV panels of between 60 - 300 watts each will be installed for GoldLight. It is anticipated that the following panels, or similar, will be used: Trina TSM-DA05 220W or Canadian Solar CSA 230W PV solar panels. The modules are designed for outdoor use.

The panels will be mounted and aligned in rows facing due south (approximately 4 - 10 metres apart) and will be mounted on fixed racking systems which will be attached to galvanized steel and/or aluminum support structures. Based on the results of a follow-up Geotechnical Assessment during engineering and construction, driven piles, screw piles or concrete foundations will be used as appropriate to minimize potential negative environmental effects.

### ***5.3.2 Inverters, Transformers and Electrical Collection System***

DC electricity generated from the panels will be transmitted through underground wires connected to combiner boxes where a number of incoming wires from the racks will be combined into a single outgoing cable. From the combiner box, the DC current will be transmitted below ground to one of ten inverter stations. Each inverter station will consist of two inverters (to convert the DC electricity into AC electricity suitable for distribution to the local grid) and an inverter transformer. The inverters will be SMA's Sunny Central and will be rated for 500 kVA of continuous output power. Each inverter will have its own cabinet-type enclosure and will be mounted on a concrete platform.

The inverter transformers located at the inverter stations will be Siemens 13800 V with a power rating of 1000 kVA. The inverter transformers will be located next to the inverters on a concrete platform and will boost the AC voltage which will then be distributed below ground (requires trenching) to a main transformer located within the substation. The step-up transformer is expected to be an 11.5 MVA pad mount transformer (make/model to be determined) and will increase the voltage further for connection to the Hydro One transmission grid. A short overhead line mounted on poles will be constructed to the point of common coupling (at the end of the main access road and Old Homestead Road municipal right-of-way). Appropriate grounding systems will be installed for the project, where necessary.

The substation will be a double-walled transformer or have secondary containment.

### ***5.3.3 Noise Barriers***

Based on the *Noise Study Report*, noise reduction measures will not be required to ensure that noise levels (dBAs) meet MOE-regulated limits at both assumed existing and potential future noise receptors.

#### **5.3.4 Access Roads**

A main access road will be needed for the construction equipment and related vehicles to enter the project location off Old Homestead Road. Internal access roads will also be developed for construction purposes and to provide long-term access for maintenance during operation. The roads will be 3.7 - 5 metres wide and will be granular. Geotextile fabric may be used to improve structural integrity and preserve the granular. If necessary, culverts will be installed beneath the access roads at locations where conveyance of surface water drainage is required.

#### **5.3.5 Perimeter Fence and Communications Tower and Lighting**

For the safety of the public and to prevent vandalism, a perimeter fence will be installed. This will be a chain link fence as required by the Electrical Safety Authority (approximately 2.7 metres in height) around the perimeter of the project location with locked gated entrance(s) and 3-strand barbed wire at the top. For security and maintenance purposes, lights may be installed near the entrance of the facility and task-specific lights will be provided as necessary. These will be appropriately shielded or directed to avoid impacts to neighbours. They may also be motion-sensored to address potential negative effects, as necessary. A communications tower will be installed and operated by Hydro One for emergency disconnect purposes only.

#### **5.3.6 Temporary Construction Area and Permanent Parking**

During construction it will be necessary to designate/construct a temporary storage/laydown area for equipment and components as well as parking spaces for facility workers. This area has been provided in **Figure 3** for context. It is possible that all or a portion of this area will be maintained after construction for maintenance vehicle parking.

#### **5.3.7 Water Crossings**

As shown in **Figure 4**, water bodies have been mapped in relation to the project location. Based on the project layout, no water crossings are anticipated for this project. For more information, please refer to the *Water Assessment Report*.

#### **5.3.8 Equipment Related to Stormwater Management**

Once operational, the solar facility is not anticipated to have any significant negative impacts to existing stormwater runoff or off-site drainage patterns. The stormwater management plan

(discussed below in **Section 6.1.1**) will identify any permanent features required at the project location to minimize potential negative environmental effects from stormwater. Stormwater management measures and equipment related to construction activities are discussed in the *Construction Plan Report*.

#### **5.3.9 Other Equipment**

During the operation and maintenance phases, the solar energy facility will not engage in, nor will any equipment be required for, the following activities:

- the use or taking of groundwater or surface water;
- the generation, collection, transmission or treatment of sewage;
- the production, handling, storing or processing of any waste, biomass, source separated organics, farm material or biogas; or
- discharges of contaminants to air.

## **6. Facility Operations Plan**

### **6.1 Daily Operations, Staffing and Training**

GoldLight will operate year round and generate electricity during daylight hours only. The facility will be continuously monitored and managed remotely using an online system that will track performance in real time and identify any problems that may occur. The communications tower will be used for emergency disconnect purposes only.

Minimal on-site activity is required for daily operation and there will be no permanent on-site employees. Operating reports for GoldLight, which will track persons on-site and the frequency of maintenance or any incidents, will be produced on an annual basis. Maintenance and transportation crews will be made aware of the contents of the site-specific health and safety plan and procedures to follow in the instance of accidental spills. Spill kits will be made available on-site.

During the operations phase, the only minor potential negative environmental effects to natural features would be due to routine maintenance at the project location. These are outlined in greater detail in the EEMMP, which can be found in **Appendix D**. 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.

#### **6.1.1 Stormwater Management**

Given the topography and location of GoldLight, it is not anticipated that significant ongoing stormwater management activities will be required during operation of the facility. GoldLight LP commits to maintaining the existing off-site drainage patterns and conditions off-site and to further mitigating any impacts to the existing site drainage that the proposed solar facility will cause.

Appropriate stormwater plans will be prepared prior to construction by the EPC contractor. Stormwater runoff at the project location will be managed as per a stormwater management and drainage plan to be developed and sealed by the appropriate contractor. This will be done with consideration to maintaining pre-construction off-site drainage patterns and any recommendations or limitations outlined in the *Natural Heritage Assessment* or *Water Assessment*. Any implemented measures will be inspected during routine maintenance.

### **6.2 Maintenance Activities**

The project will be scheduled for maintenance as required. Typically, maintenance includes checking the structures and connections. It is anticipated that the PV panels will be washed with

water only as required. Additional maintenance or service may be required if there are issues such as equipment damage or malfunction; however, this is not anticipated to be a common occurrence. Site inspections for all project components will occur on a scheduled basis. Security and minor maintenance are the only regular activities anticipated on-site.

Activities associated with the operation and maintenance of the solar facility are detailed in **Table 1**. These activities will take place over the operational lifetime of the project.

**Table 1: Operations and Maintenance Activities**

Activity	Description
Monitoring and meter calibrations	The facility will be monitored remotely twenty-four hours a day off-site 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 will occur as scheduled to visually inspect the solar facility 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 such as replacement of weathered electrical components. Security visits may also occur periodically. Transformers, inverters, panels and arrays will be visually inspected during scheduled visits.
Lighting	For security and maintenance purposes, task-specific lighting may be installed near the entrance of the facility and task-specific lights will be provided as necessary. These will be appropriately shielded or directed to avoid impacts to neighbours. They may also be motion-sensored to address potential negative effects, as necessary and will be inspected for burned/broken bulbs. Regularly scheduled maintenance will occur.
Cleaning of panels	Cleaning of panels and equipment will take place as required. No water-taking will occur. All water required for panel washing will be trucked to the project location. No harmful cleaning solutions of any type will be used to wash the panels. Manual snow clearing may periodically be required.



Activity	Description
Periodic landscape maintenance	Short native vegetation may 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. Regular scheduled maintenance will also occur to manage weed growth. This will be done in consideration of any seasonal limitations outlined in the <i>Natural Heritage Assessment</i> . It is not anticipated that herbicides will be used to manage vegetation.
Major maintenance	Unforeseen, large repairs are not anticipated. Should major maintenance be required it will be performed using existing roads and site access points.
Third party inspections and testing	Activities will be carried out as required by the local utility and other governing bodies in addition to any regularly scheduled inspections and testing.
Traffic	No major deliveries are anticipated for maintenance. Minimal vehicle traffic is associated with regular maintenance.
Drainage and erosion control	Stormwater runoff at the project location will be managed as per a stormwater management plan to be developed by the appropriate contractor and this will be done with consideration to maintaining pre-construction off-site drainage patterns and any recommendations or limitations outlined in the <i>Natural Heritage Assessment</i> or Water Reports. Any implemented measures will be inspected during routine maintenance.
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.

## **7. Environmental Effects Mitigation and Monitoring Plan**

The EEMMP outlines how potential negative environmental effects of the proposed project will be mitigated and how ongoing monitoring will occur to meet the requirements set out in *Ontario Regulation 359/09*. The EEMMP includes information on potential negative effects associated with all phases of the project from construction through decommissioning. The potential negative environmental effects associated specifically with the construction phase are also described in the *Construction Plan Report*. Given the nature of solar power generation, few (if any) effects are expected during the operations period.

The purpose of the EEMMP is to:

- ensure that commitments to minimize environmental effects in general, and specific regulatory requirements, will be met;
- provide clear and concise instructions regarding measures for protecting the environment and minimizing potential negative environmental effects;
- document environmental concerns and describe appropriate protection measures associated with all phases of the project;
- outline suggested monitoring activities;
- provide a reference document for planning and/or conducting specific activities that may have an effect on the environment;
- function as a training aid for environmental education and orientation; and,
- communicate changes in the program through a revision process.

**Appendix D** presents the EEMMP for GoldLight, which includes identification of the potential negative environmental effects, performance objectives, mitigation strategies and the proposed monitoring plan for each affected feature or environmental component.

## **8. Emergency Response and Communications Plans**

Emergency events associated with a solar facility are unlikely. The proponent will develop ERCPs that cover the entire life of the project including construction, operation and decommissioning phases. The plans will be in place prior to construction and will be reviewed and updated on an annual basis or when necessary due to changes in operation. Information dissemination to stakeholders on significant changes will follow the same procedures as described in **Section 8.3**.

### **8.1 Emergency Response Plan**

The Region of York has established an Emergency Response Plan (*Region of York Emergency Plan and Annexes, 2009*). The Town of Georgina has also established such a plan (*The Corporation of the Town of Georgina Emergency Plan, 2007*) based on hazard identification and risk assessment. The latter outlines the procedures for the declaration of an emergency, identifies first responders and an emergency control group, responsibilities, emergency information dissemination and is reviewed on an annual basis by the Town.

Prior to construction, GoldLight LP will establish an Emergency Response Plan (ERP) for GoldLight. In preparing this Plan, GoldLight LP will invite Fire Chief Bill O’Neil of the Town of Georgina Fire Department to the project location to review potential emergency scenarios that could arise during construction, operation, maintenance and decommissioning of the project. The ERP will then be submitted for review and comment to the Town of Georgina and Region of York. Based on their feedback, a final version of the plan will be prepared. At the time of construction, this plan will be reviewed with the chosen contractor and may be further updated. Copies of the plan will be kept on-site and in relevant offices.

### **8.2 Emergency Communications Plan**

An Emergency Communications Plan will be included in the ERP and will provide key contact information for relevant responders, regulators, landowners and other stakeholders. It will contain a description of the chain of communications between GoldLight LP and relevant responders under emergency scenarios applicable to the project. Emergency issues could potentially occur including fire, personal injury and spill incidents. A log book including key contacts and their information (names, emergency phone numbers) will be posted in the construction trailers as well as at the municipal clerk’s office and GoldLight LP offices for easy access during an emergency.

In the event of an emergency, relevant responders will be immediately contacted by phone based on the outlined chain of communication. If required during a major emergency, GoldLight LP will

provide information releases to the community. Technical staff will recommend actions plans and assist with responses to the public, stakeholders, and first responders such as the local fire department and police services. The Emergency Communications Plan will be developed in coordination with the Fire Department, Town, Region and Conservation Authority and will be made available on the project website and provided to the MNR and MOE.

### **8.3 Non-Emergency Communications Plan**

This section provides information on the methods of communication and information dissemination in non-emergency situations.

#### ***8.3.1 Ongoing Stakeholder Engagement***

Public consultation and stakeholder engagement activities are welcome and will continue throughout the life of the project. Information will be mailed to stakeholders as necessary. During construction and operations phases of the project, a sign will be erected at the gate of the facility, which will include the appropriate contact information, including telephone number, email and mailing address should the public have any questions, concerns or complaints.

The following consultation activities are up-coming:

- publish second newspaper notice announcing the second public meeting;
- second public meeting;
- final copies of REA documents posted on website;
- notice announcing application to MOE and posting on EBR;
- responses to communications received from the public throughout MOE technical review;
- announcement on project website when MOE review is complete and Notice to Proceed has been issued;
- notices announcing construction dates and any traffic disruptions; and,
- ongoing liaison with public.

Members of the public can contact GoldLight LP at any time with questions or comments about this project via phone or email. Contact information is provided in **Section 2** of this and other REA technical reports and is available on the website and in newspaper notices.

### **8.3.2 Communications Methods, Records and Complaints Resolution Process**

Correspondence received by GoldLight LP will be recorded in an electronic file and/or log book. If received during the REA process, this correspondence will be included in the *Consultation Report*. If received after the final REA submission to the MOE it will be recorded, filed, and provided to the MOE as an addendum to the *Consultation Report*. In both cases, if the correspondence requires a response this will be provided in a timely fashion and the response will be recorded.

Complaints and other communications received during the construction, operations, maintenance and decommissioning phases will be recorded in an electronic file and/or log book and will include the following:

- time and date of communication;
- type of inquiry/comment/complaint;
- name and contact information of the person(s);
- response and date of response; and,
- any follow-up issues.

A record will be kept for all complaints, including: the history of the complaint resolution process that was followed and all actions taken to remediate the cause of the complaint. Where appropriate, steps will be taken to prevent reoccurrence of similar complaints in the future and this information will also be recorded. Where relevant, the Ministry's Spills Action Centre will be notified of the complaint at 1-800-268-6060.

## **9. Considerations for Projects Subject to Land Use Plans**

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 does not fall within the Oak Ridges Moraine or Niagara Escarpment. No impact is expected to areas protected under provincial plans and policies. Additional natural environment studies, as stipulated by *Ontario Regulation 359/09* for project locations within Plan Areas will be conducted and will consider the full intent of the *Greenbelt Act* and Lake Simcoe Watershed Protection Plan.



## 10. Conclusions

This *Design and Operations Report* has been completed to fulfill regulatory requirements as mandated by the provincial government for the development of GoldLight. This report is consistent with the provisions of *Ontario Regulation 359/09* for a Class 3 Solar Facility as set out by the *Green Energy and Green Economy Act, 2009*.

Given the nature of solar power generation, few (if any) negative environmental effects are anticipated during the operations phase. Potential negative effects to the environment from operational and maintenance activities are outlined in the EEMMP and have been avoided through careful facility layout planning, the application of appropriate mitigation measures, and adherence to all regulatory requirements. An ERCP will ensure that the facility, stakeholders and first responders are prepared in the unlikely event of an emergency. Based on a noise study completed for GoldLight, the project will meet or exceed all MOE requirements without the use of mitigation measures.

The generation of power from solar energy will displace approximately 10 MW AC of electricity that otherwise may have been generated by fossil fuel burning or non-renewable power plants. As a result, the energy generated will not contribute to climate change or emissions-related health impacts. A further benefit is that local jobs will be created, especially during the construction phase. The project supports the goals of the Province's *Green Energy and Green Economy Act, 2009*.

The overall conclusion of this *Design and Operations Report* is that this project can be operated without any significant adverse residual effects to the natural or social environment.



# **Appendix A**

## **MANUFACTURER AND TECHNICAL SPECIFICATIONS**







Test Report

SC500HE-US

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Test Report  
acoustic environment test



## Revision History

Document number SC500HE-US	Edition and Type of Revision <sup>1)</sup>		Remarks	Author
-91:LD1210	1.0	A	First edition	S.Vorderbrügge
-91:LD1211	1.1	A	Second edition	S.Vorderbrügge

<sup>1)</sup> A: Changes due to faulty documents or improvement of documentation

B: Changes assuring complete or upward compatibility

C: Revisions limiting or excluding compatibility

	Name	Date	Signature
Checked by	P.Thomä	2011-04-01	

## Explanations of Symbols Used

To ensure optimum use of this test report, please note the following explanations of symbols used.



This symbol indicates an important note. For this reason, read these sections carefully.



This symbol indicates an example.



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# 1 Test Certificate

Testing center: **SMA** Solar Technology AG  
Sonnenallee 1  
D-34266 Niestetal  
EMC and Environmental Laboratory  
Building 11

Manufacturer: **SMA** Solar Technology AG  
Sonnenallee 1  
D-34266 Niestetal

Client: **SMA** Solar Technology AG  
Sonnenallee 1  
D-34266 Niestetal  
R. Knoke

Order number/ account allocation: 850120

Type of Test / Thresholds and Requirements: Sound level measurement according to EN 3744-3-2 of sinusoidal, irregularly-shaped, transient signals. Classification of ambient conditions in compliance with the German Noise Control Guidelines (TA Lärm).

Type of device: Central inverter  
Type name: SC500HE-US  
Serial number: SC500HE-US:P0003 / SCC: 180160014  
Hardware version: SCC P03  
Software: DSP:1030 / BFR:5.0  
Test specification: Emission level in accordance with the Noise Control Guidelines (TA-Lärm)

Result: The requirements of the above tests were met.

---

Tested by: S.Vorderbrügge Signature:

Datum: 2010-04-14

---

## 2 Overview of results

Test basis for the limit values and requirements according to EN 3744 :04/2005 and the Noise Control Guidelines (TA Lärm)	Requirement	Results [dB <sub>A</sub> ]/ Comments
EN 3744: 1995+A1:1998+A2:2001 L <sub>pA</sub>	A	74,97
§48 of Federal ambient pollution control act (BImSchG) :09-2002 Noise Control Guidelines (TA Lärm) L <sub>Aeq</sub>	A	74,82 (1m distance)
Sound power L <sub>WA</sub>	A	87,38
Sound pressure level L <sub>xpa50</sub>	A	45,43
Pulses of temporary noise peaks L <sub>Apeak</sub>	–	No measurements
<b>Overall result (if applicable)</b>		Standard requirements: met

### Emission guideline values for the evaluation level in accordance with the Noise Control Guidelines (TA Lärm)

Criterion	Evaluation level in rooms within buildings where protection is required in dBA	Evaluation level outside buildings in dBA
<b>A</b> Industrial areas	During the day 35	During the day 70
	At night 25	At night 70
<b>B</b> Retail areas	During the day 35	During the day 65
	At night 25	At night 50
<b>C</b> Center, vil- lage - mixed areas	During the day 35	During the day 60
	At night 25	At night 45
<b>D</b> Small resi- dential areas	During the day 35	During the day 55
	At night 25	At night 40
<b>E</b> Purely resi- dential areas	During the day 35	During the day 50
	At night 25	At night 35
<b>F</b> Spa - hospit- als	During the day 35	During the day 45
	At night 25	At night 35
Noise peaks above the evaluation level	During the day 10	During the day 30
	At night 10	At night 20



## 3 Conducting the test

### 3.1 General

The noise level of a device must be agreed by the manufacturer and operator. This agreement must fulfill the local requirements (German Noise Control Guidelines / TA Lärm). Upon agreement by the manufacturer and operator, a test must be carried out to determine the effects of the noise emitted by the device. If other sources of noise are required for operation, e.g. fans, drives or hydraulically and pneumatically driven mechanisms, they must also be incorporated.

#### **Test Reference according to EN ISO 3744:11-1997**

The EN ISO 3744 standard is to be used as a basis for determining the noise emissions from the device being tested in accordance with EN ISO 12001:05-1997.

In the context of acoustics, EN ISO 3744 addresses the determination of sound levels of noise sources, using the enveloping surface method, accuracy class 2, in essentially free field conditions over a reflecting plane. Measurements must be performed in accordance with IEC 551 and DIN EN 45645-1 and must follow DIN EN ISO 3744. When positioning the measurement instruments, the housing of the test unit must be viewed as the main emission surface.

## 4 Operating conditions and test setup

### 4.1 Operating conditions

The following modes and configurations were defined as operating conditions:

- Inverter operation.
- Operating conditions:  $U_{DC} = 480V$ .
- Sunny Data was used to record the communication for the RS485 and TeraTerm was used for the CAN interface.

The following operating conditions and limit values must be observed:

- The external noise level in the measurement environment must be kept as low as possible.
- The test unit may not leave the MPP operation or the load case to be tested.
- No error messages may be shown/output

## 4.2 Test setup

Depending on the sound source, two different measurement setups are possible, which result in the same measurement values evaluated as **A**.

### Procedure 1

Microphone layout on the hemispherical measurement surface.

Values are recorded at 20 measurement points. The position can be seen from the table and the sketches in the standard.

### Procedure 2

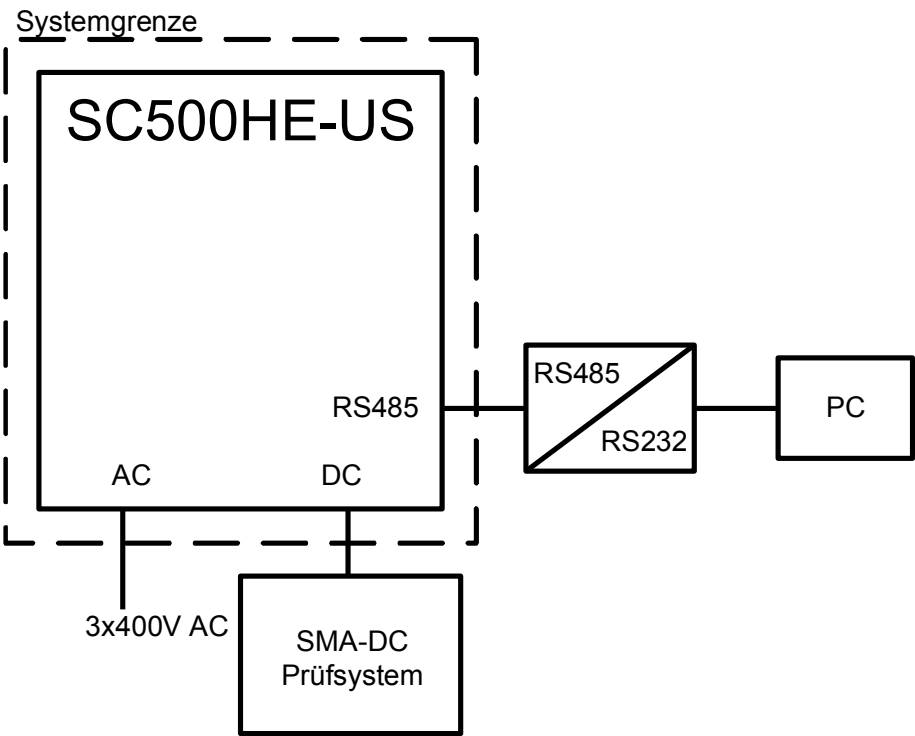
Microphone layout on a cubical measurement surface.

If you do not have enough microphones, or only one microphone, or if the test unit is small, a mobile microphone can be used for measurement. In this procedure, every level surface, or housing side of the unit is considered on its own, and divided such that equal sized rectangular sub-surfaces with an edge length of 1 m result. The measurement microphone is now aligned with the mid-point of these imaginary rectangles at a measurement distance of 1 m from the surface of the test unit.

### Installation and guiding the measurement units

The microphones must be aligned on a tripod above the base of the test unit on the middle of the respective source of sound and with a measurement distance of 1 m. The measurement duration per coordinate or housing side should be at least 10 seconds to rule out fluctuations safely.

System layout (sketch):



Cables and auxiliary equipment used			
EUT connection	Cable	Auxiliary equipment/receiver	Remarks
DC power supply	2x240mm <sup>2</sup>	SMA DC test system	
AC feed-in	3x240mm <sup>2</sup>	Medium-voltage transformer / grid	
Communication	2x4x0.6 SFTP	Noise converter / PC	Connection for initial commissioning only.

## 4.3 Sound level measurements according to EN ISO 3744

### 4.3.1 Test requirements in accordance to §48 Federal ambient pollution control act(Noise Control Guidelines (TA Lärm))

Test parameters		
For application on housings at a measurement distance of 1m to the microphone		
Test statistic	Min. found evaluation criterion	Remarks
Pulses / individual events 20 Hz - 20 kHz, 0 - 140 dBA	A	The specified test level is the maximum value for individually occurring levels permitted by the Noise Control Guidelines (TA Lärm).
Continuous level 20 Hz - 20 kHz, 0 - 140 dBA	A	The specified test level is the maximum sound level permitted by the Noise Control Guidelines (TA Lärm).

### 4.3.2 Test plan

- Dimensions: W x D x H 2540 mm x 950 mm x 2280 mm
- Type of device of the test unit:
  - ☐ Table-top unit (80cm above the ground)  
The test unit is positioned on the table. The measurements are made at a distance of 1 m:
  - ☒ Floor-mounted unit with a height > 90cm .  
The test unit is positioned on the floor.  
The measurements are made at a distance of 1m.



### 4.3.3 Test report

Date of the test:	03/16/2010
Ambient conditions:	25°C; 39%r.F.; the air pressure meets the requirements of the standard
Sound level:	20 dBA - 100 dBA
Frequency range:	20 Hz - 20 kHz, +/- 1.0%
Distance from microphone to test unit:	1.0 m
Duration:	≥ 10 s
Resolution:	log 1%
Peak measurement:	greatest value within 10 sec.
RMS measurement:	average over 10 sec.
Event measurement:	switch processes, auxiliary devices etc.
Tested by:	S.Vorderbrügge

S=Measurement Surface of EUT 60,14m<sup>2</sup>  
 A=Equivalent Surface of measurement-room 140m<sup>2</sup>  
 K2=4,34 K1=1,47 Lpa=74,974 Lwa=87,38



The event measurements record the transient effects and the switching processes of the device.



The measurements of the sound level must be determined in various operating and load conditions relevant for the respective test unit according to the specifications of the development department.  
Minimum, partial, nominal and maximum load.



The typical  $L_{Aeq}$  dBA - value is the arithmetic average of the 5 dBA-RMS<sub>10sec</sub> of the respective sides of the unit calculated previously.



The dBA<sub>Hz</sub> peak of the spectrum designates the dominant frequency of the spectrum and its level in dBA.

### Device in operation at a nominal load of 630 KW mode: Full fan load

Sound level throughout the frequency range: 20 Hz – 20 kHz				
Measurement	dB <sub>A</sub> -Peak	L <sub>Aeq</sub> [dB <sub>A</sub> ]- RMS <sub>10sec</sub>	Event peak	Typical dBA value
Front (0°)	71,3	74,0	No measurements	--
Right (90°)	69,0	72,3	No measurements	--
Rear (180°)	78,3	79,9	No measurements	--
Left (270°)	72,2	74,8	No measurements	--
Top	71,9	73,1	No measurements	--
Manually guided	No measurements	No measurements	No measurements	--
<b>Overall result of this test</b>			Standard threshold requirements: met	

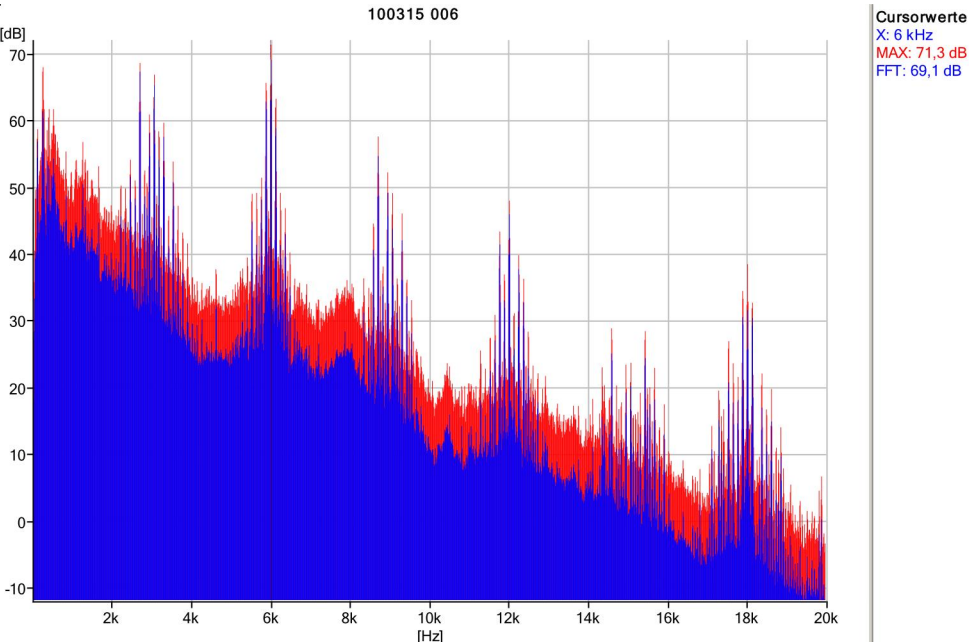


Definition of the device sides from the viewpoint of the test unit.  
The angles represent the position of the test unit relative to the microphone.

### Graphics

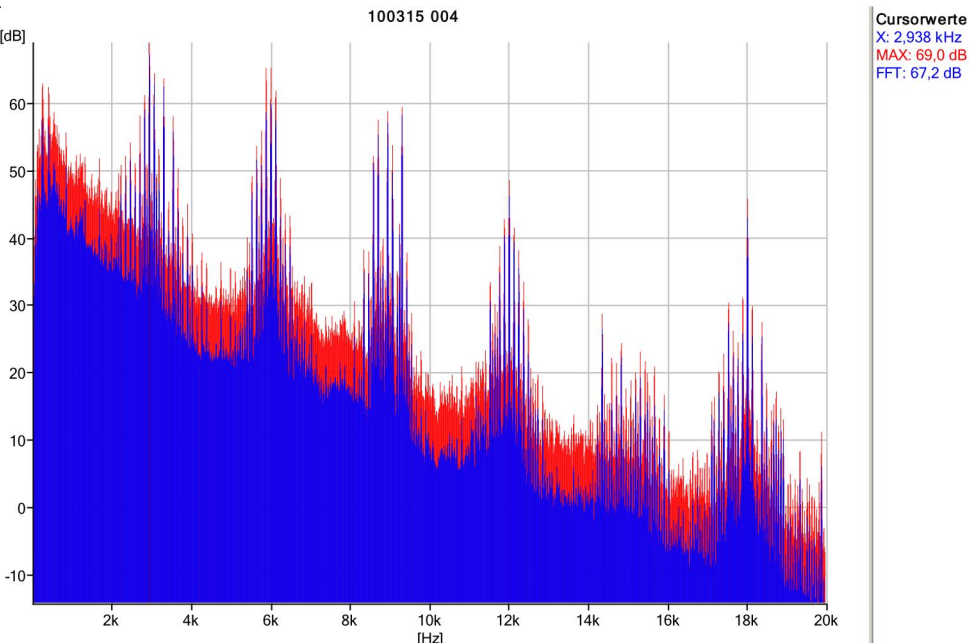
The following graphics show the (FFT)-spectra for the sound level measurement in a range from 20dBA to 100dBA with a frequency bandwidth from 20 Hz to 20 kHz in the respective test unit position and at a distance of 1 m.

Spectrum at 0°



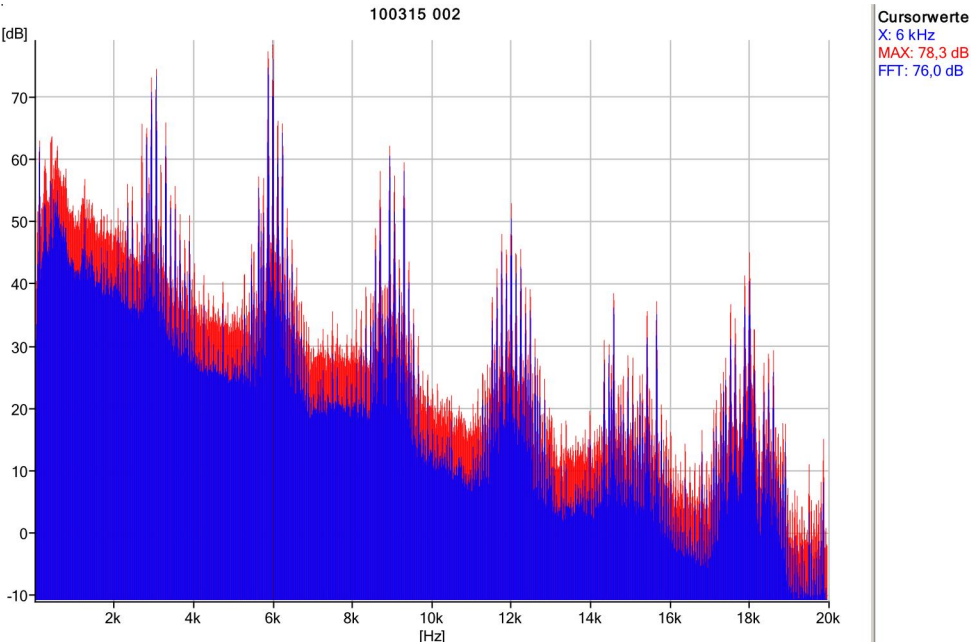
Front

Spectrum at 90°



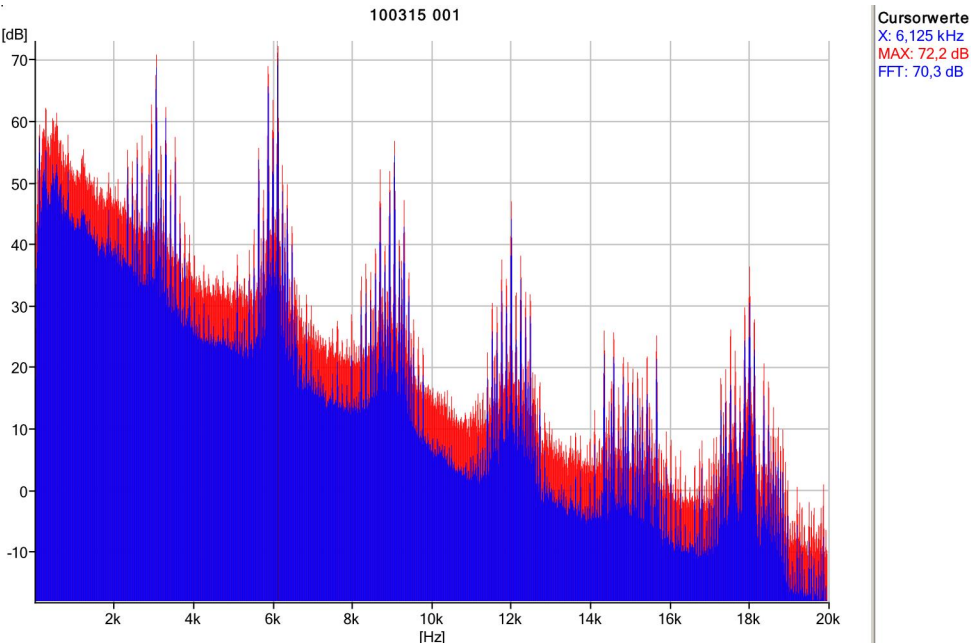
Right

Spectrum at 180°



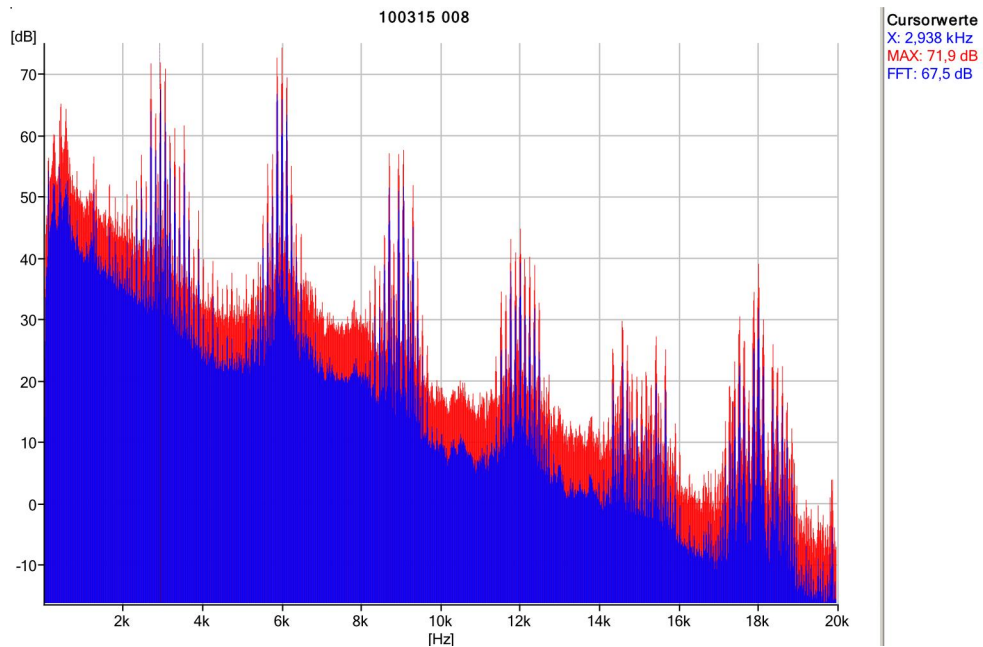
Rear side

Spectrum at 270°



Left

## Spectrum at top



Test unit position 1 m below the microphone.



## Measuring equipment used

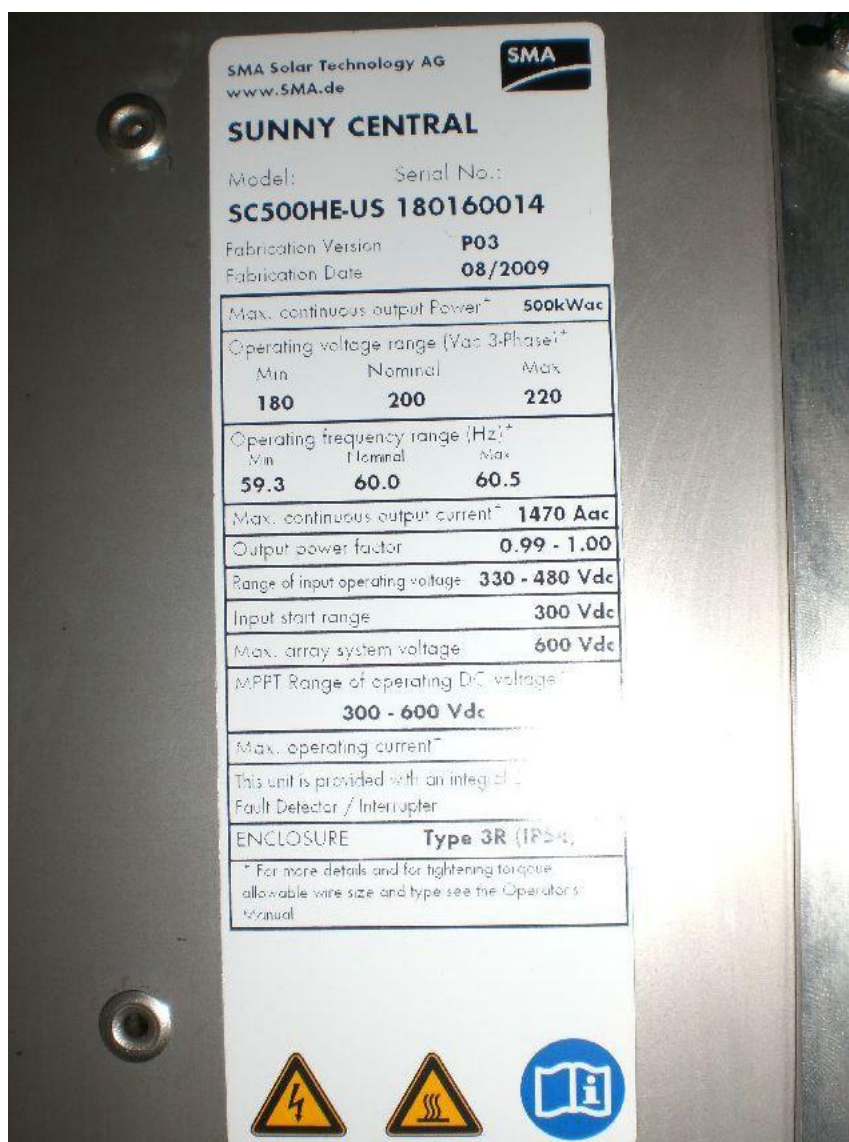
	Type	Model	Manufacturer	Series/inventory number
	Full anechoic test chamber	Measuring section up to 3 m	Schaffner/SMA	
	Free field measurement			
X	SMA Prototyping	Manufacturing hall		
X	Sound level meter	2250 A / E	BRÜEL&KJÄR	2611671
X	Class 1 acoustic calibrator	Kal-4231	BRÜEL&KJÄR	
X	Class 1 Falcon microphone	MI-4189	BRÜEL&KJÄR	2616324
	Class 1 Studio microphone	ECM 8000	BEHRINGER	
X	Frequency analysis software	BZ-7230	BRÜEL&KJÄR	
X	Signal recording	BZ-7223	BRÜEL&KJÄR	
X	FFT measurement software	BZ-7226	BRÜEL&KJÄR	
	TESYS measurement software			
	Matlab			
	Microphone amplifier	XLR-BNC	SMA	
X	Tripod	C 3060	CULLMANN	
	LAN camera	TV-7214	DigiLAN	0002D101E02F
	Measuring station	Testing station 2	SMA	

### 4.3.4 Test setup

The test setup was implemented in accordance with the requirements of the standard and is documented in the following appendix of images.

### 4.3.5 Appendix of images

#### Test setup





Test setup for sound level measurement with FFT determination of the frequency range and the amplitudes frontally in accordance with EN 3744



Test setup for sound level measurement with FFT determination of the frequency range and the amplitudes from the backside in accordance with EN 3744-3-2



Test setup for sound level measurement with FFT determination of the frequency range and the amplitudes from the left in accordance with EN 3744-3-2



Test setup for sound level measurement with FFT determination of the frequency range and the amplitudes from the right in accordance with EN 3744

## 5 Appendix

### 5.1 Explanation of terms

#### **Area of effect of a system**

The area of effect of a system refers to the spaces in which the noise emitted by the system:

- a) Cause an evaluation level less than 10 dB(A) below the emission value specified for this area or
- b) Cause noise peaks which reach the emission value specified for the evaluation.

#### **Definition of a determinant emission location (Noise Control Guidelines - TA Lärm)**

The determinant emission locations are:

- a) For built-up areas: 0.5 m outside in front of the center of the open window of the room where protection is required in accordance with DIN 4109 from November 1989 which is most affected by noise;
- b) For non-built-on areas or built-up areas which do not contain buildings with rooms where protection is required, at the most affected edge of the area where buildings with rooms for which protection is required can be built under building and planning law; for rooms for which protection is required which are structurally connected to the system to be evaluated, for structural sound transmission and exposure to low-frequency noises in the room for which protection is required which is most affected. The provisions of DIN 45645-1 from July 1996, Section 6.1 on alternative measurement locations and on microphone positioning and measurement also apply.



## **Sound pressure p**

The alternating pressure caused by sound, which overlies the static air pressure. It is specified in Pascals.

## **Sound pressure level Lp or LAF(t)**

Definition: The tenfold decadal logarithm of the ratio of the sound pressure squared to the square of the reference sound pressure. Sound pressure levels are specified in decibels. The reference sound pressure is 20µPa ( $2 \times 10^{-5}$  Pa).

The sound pressure level LAF(t) is the current value of the sound pressure level formed using frequency evaluation A and the time evaluation F to DIN EN 60651 from May 1994. It is the main figure for determining the level in accordance with this Technical Manual.

## **Averaging level LAeq**

The sound pressure level of a continuous stationary noise which has the same squared average sound pressure during the averaging period T as the noise under examination which changes with time.

The averaging level LAeq is the average sound pressure level calculated over time in accordance with DIN 45641 from June 1990 from the chronological sequence of the sound pressure level or using sound level meters compliant with DIN EN 60804 from May 1994.

## **Temporary noise peaks**

Temporary noise peaks for the purposes of this Technical Manual are maximum sound pressure level values caused by individual events, which occur during normal operation. Temporary noise peaks are described by the maximum level LAFmax of the sound pressure level LAFL(t).



## **Sound power W**

The sound energy emitted from a source as airborne noise divided by the time. It is specified in watts.

Average sound power level

The average sound power level  $L_{Weq}$  is the level of the average sound power over the residence time. The frequency evaluation or the frequency range for which the average sound power level applies are identified by indices, e.g.  $L_{WA}$ ,  $L_{WOkt}$ .

## **Emission-effective sound power level**

Definition: The tenfold decadal logarithm of the ratio of the sound power radiated by the inverter station to be examined relative to the reference sound power. It is specified in decibels.

The emission-effective sound power level of a system is the sound power level which results from the total of all sound power from all sources of noise of the system minus the losses over the dispersion distance within the system and taking the guideline effect dimensions of the noise sources into account. For example this can be determined via an all-round measurement in accordance with ISO 8297 from December 1994.

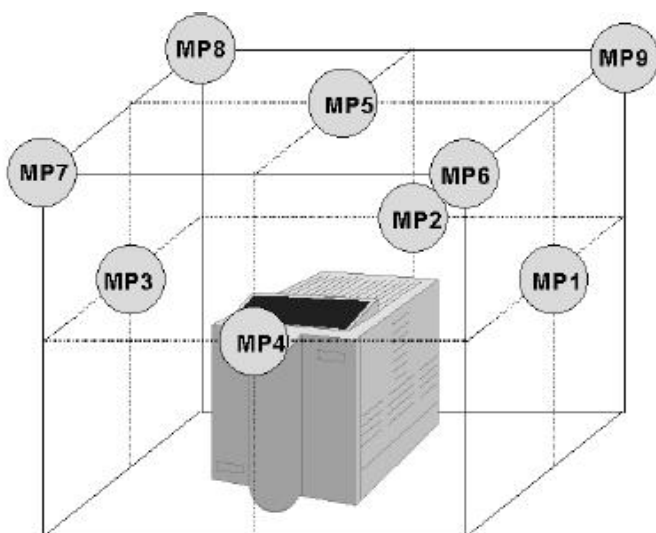
## **Structural sound transmission**

Structural sound transmission refers to the transmission of sound from the source via the base and/or components to the adjacent surfaces of rooms where protection is required.

## 5.2 Determining the sound power $L_{WA}$

### 5.2.1 Specification of the measurement area $S$ and the measurement points $MP$

The surface of the measurement cube (without the base) is the measurement area  $S$  in  $m^2$



Cubical measurement area with at least 9 measurement points  
Measuring distance  $d = 1\text{ m}$

Measuring point	Sound pressure level $L_{Aeq}$ [dB <sub>A</sub> ]	Maximum value $L_{Apeak}$ [dB <sub>A</sub> ]	Empty measurement of background noise $L_{Aeq}$ [dB <sub>A</sub> ]
1	74,8	76,0	28
2	79,9	81,1	28
3	72,3	73,9	28
4	74,0	75,3	27
5	73,7	75,7	25
6	73,1	76,0	28
7	72,9	74,8	26
8	74,9	77,9	27
9	72,7	76,1	27

## 5.2.2 Deriving the emission sound pressure level at a distance

The determined sound power can be used to derive an A – evaluated sound power level  $L_{xpA}$  for non-directional sources at any distance  $x$ .

$$L_{xpA} = L_{WA} + K_0 - 10 \cdot \log \left( 4 \cdot \pi \cdot \frac{X^2}{S_0} \right)$$

$K_0$  = Room angle dimension on the base 3 [dB]

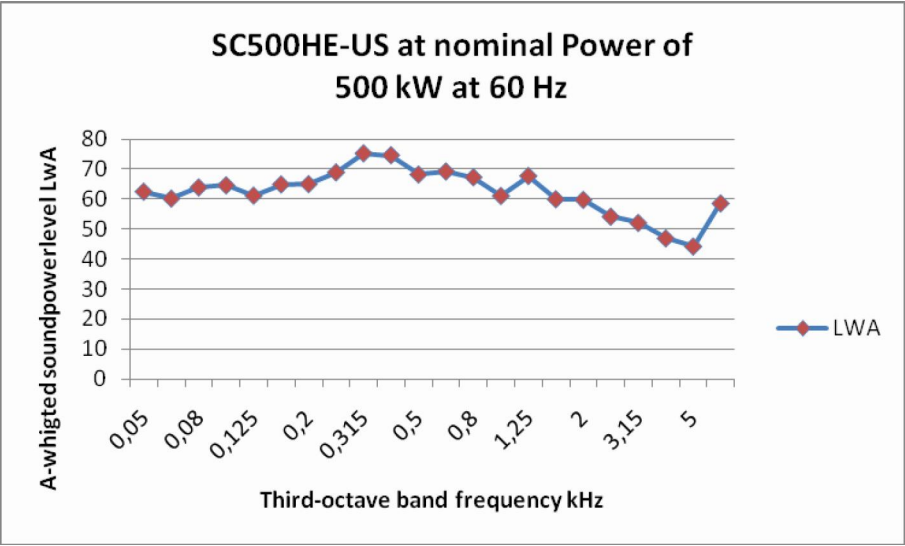
$X$  = Distance to the source [m]

$S_0$  = 1 m

Device	Distance X [m]	Sound pressure level $L_{xpA}$ [dB <sub>A</sub> ]
SC500HE-US	10	59,38
SC500HE-US	20	53,36
SC500HE-US	25	51,43
SC500HE-US	50	45,40
SC500HE-US	100	39,39

## 5.3 Soundpower at third-octave band frequency

Terz-frequency [kHz]	Soundpower-level $L_{pA}$ [dB <sub>A</sub> ]500kW
0,05	62,50
0,063	60,20
0,08	63,90
0,1	64,60
0,125	61,20
0,16	64,90
0,2	65,00
0,25	68,90
0,315	75,20
0,4	74,60
0,5	68,20
0,63	69,20
0,8	67,30
1	61,10
1,25	67,70
1,6	60,00
2	59,80
2,5	54,20
3,15	52,10
4,0	47,00
5,0	44,30
6,3	58,60



## Transformer Noise Calculation

Transformer Maximum Rating (MVA) = **1** MVA

### NEMA Calculation:

PWL1 = 55 + 12log (MVA).....(dB)

### Area factor Correction:

PWL2 = 14 + 2.5log (MVA)..... (dB)

### Overall PWL

PWL(overall) = PWL1 + PWL2.....(dB)

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Octave band Adjustments →	-3	3	5	0	0	-6	-11	-16	-23
Conversion from linear to A-weighted →	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1

Resulting PWL Octave Band (A-weighted)....(dBA)

**26.6 45.8 57.9 60.4 65.8 63.0 59.2 54.0 44.9**

PWL + 5 dB tonal penalty.....(dBA)

**31.6 50.8 62.9 65.4 70.8 68.0 64.2 59.0 49.9**

PWL + 5 dB tonal penalty.....(dB)

**71.0 77.0 79.0 74.0 74.0 68.0 63.0 58.0 51.0**

## Transformer Noise Calculation

Transformer Maximum Rating (MVA) = **11.5** MVA

### NEMA Calculation:

PWL1 =  $55 + 12\log(\text{MVA})$ .....(dB)

### Area factor Correction:

PWL2 =  $14 + 2.5\log(\text{MVA})$ ..... (dB)

### Overall PWL

PWL(overall) = PWL1 + PWL2.....(dB)

	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Octave band Adjustments →	-3	3	5	0	0	-6	-11	-16	-23
Conversion from linear to A-weighted →	-39.4	-26.2	-16.1	-8.6	-3.2	0	1.2	1	-1.1

Resulting PWL Octave Band (A-weighted)....(dBA)

<b>42.0</b>	<b>61.2</b>	<b>73.3</b>	<b>75.8</b>	<b>81.2</b>	<b>78.4</b>	<b>74.6</b>	<b>69.4</b>	<b>60.3</b>
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PWL + 5 dB tonal penalty.....(dBA)

<b>47.0</b>	<b>66.2</b>	<b>78.3</b>	<b>80.8</b>	<b>86.2</b>	<b>83.4</b>	<b>79.6</b>	<b>74.4</b>	<b>65.3</b>
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PWL + 5 dB tonal penalty.....(dB)

<b>86.4</b>	<b>92.4</b>	<b>94.4</b>	<b>89.4</b>	<b>89.4</b>	<b>83.4</b>	<b>78.4</b>	<b>73.4</b>	<b>66.4</b>
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# **Appendix B**

## **NOISE RECEPTOR COORDINATES**



# **Appendix C**

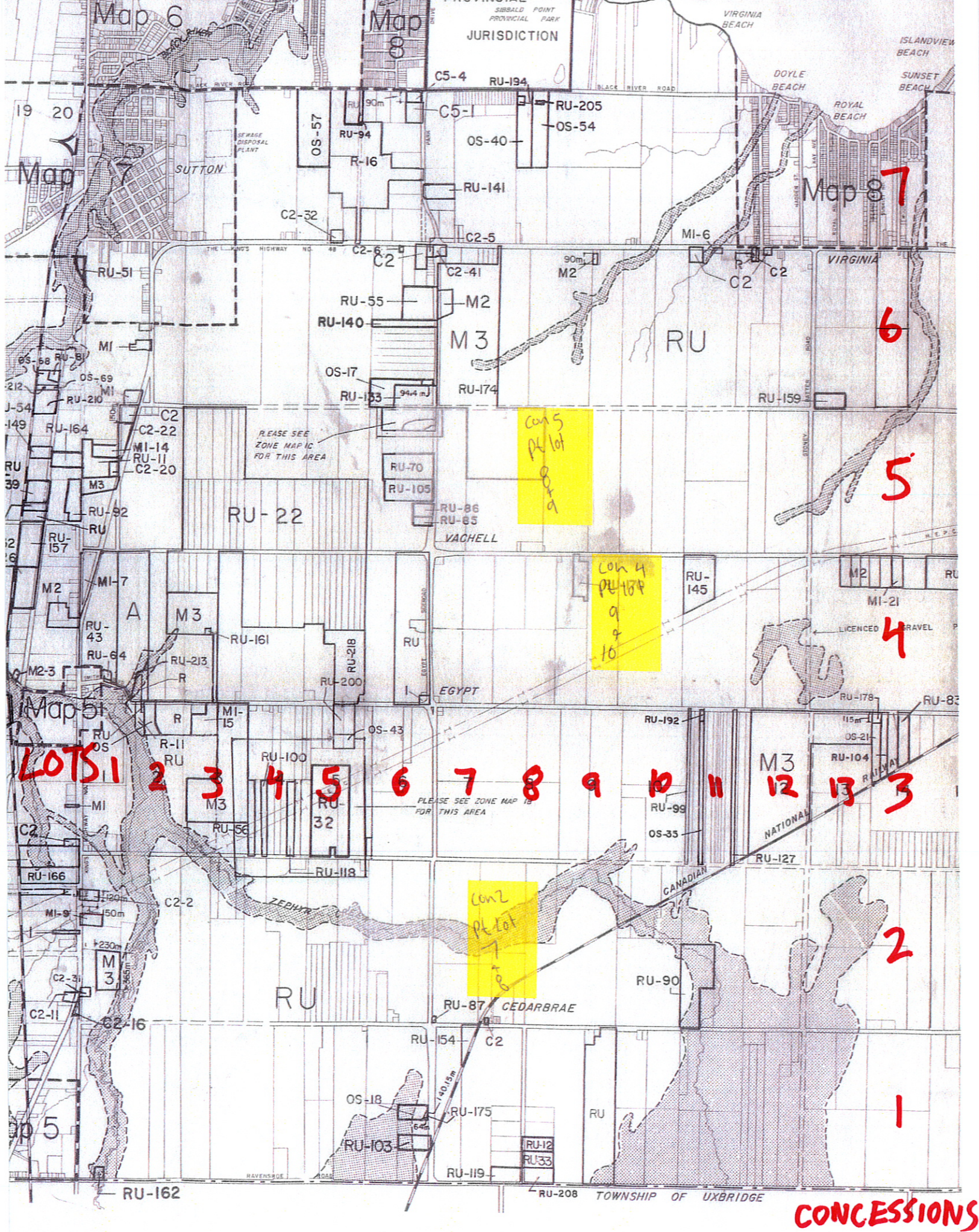
## **ZONING SCHEDULE – LAND USE ZONING**



The following Zoning By-law mapping was provided by the Town of Georgina via email on  
November 18, 2011







## CONCESSIONS





# **Appendix D**

## **ENVIRONMENTAL EFFECTS MITIGATION AND MONITORING PLAN**



Appendix D: Environmental Effects Mitigation and Monitoring Plan

Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
CONSTRUCTION PHASE								
Cultural Heritage and Archaeological Resources								
Disruption or destruction of cultural or archaeological materials.	Cultural heritage resources.	Low	Low	A Stage 3 Archaeological Assessment will be undertaken prior to development for the two archaeological sites within the project location. This will be done as prescribed by the Ministry of Tourism and Culture's 2011 Standards and Guidelines.	Mitigation for archaeological resources will be implemented as required by the Stage 3 Assessment (currently ongoing).	N/A	N/A	Should a previously undocumented cultural or archaeological resource be discovered, alteration of the site will immediately cease, and additional fieldwork will be undertaken by a licensed archaeologist in accordance with Section 48(1) of the <i>Ontario Heritage Act</i> .  Should human remains be found, the police or regional coroner’s office and the Registrar of Cemeteries will be contacted in accordance with the <i>Cemeteries Act</i> .
	Archaeological resources.	High	Moderate					
Natural Heritage Features								
<b>Site Preparation and Construction</b> <u>Direct Impacts</u> Removal of 1.36 ha of White Cedar Coniferous Forest.  Creation of a new/revised woodland edge.	Vachell Provincially Significant Wetland Complex (5 units).  Wetland 9.  Significant Woodland A.  Turtle Over-Wintering Habitat.*	High likelihood of direct impacts needed for site preparation.  Low likelihood for indirect/disturbance effects after implementation of mitigation measures.	Low	Restore woodland area removed and functions either in an area directly adjacent to Woodland A and outside of the project location or elsewhere in the region.  Minimize negative effects on Woodland A.	<u>Erosion and Sediment Control</u> <ul style="list-style-type: none"><li>Minimize soil exposure.</li><li>Install erosion and sediment control measures prior to vegetation clearing, grubbing and grading to prevent mobilization of sediment from the project location</li></ul>	Around the perimeter of project location where ESC measures implemented.  Monitor for surface water run-off flow and evidence of	Monitor ESC measures regularly during construction.  Post-construction ESC monitoring to occur monthly or after rain events 10 millimetres or	Repair deficiencies in ESC structures as soon as possible upon notification of breach in ESC structure and buffer fencing.  If use of turtle over-winter habitat by turtle species is not documented at levels equal to pre-construction

<sup>1</sup> Please refer to the *Natural Heritage Assessment Environmental Impact Study* for additional monitoring information for natural features and to the *Water Assessment* for additional monitoring information for water bodies



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
<p>Removal of 5.54 ha of Dry-Moist Old Field Meadow, and 43.88 ha of Hedgerows.</p> <p><u>Indirect/Disturbance Effects</u></p> <p>Reduction of habitat.</p> <p>Change in land topography associated with vegetation clearing, grubbing and subsequent grading.</p> <p>Change in surface water run-off volumes/patterns.</p> <p>Potential for changes in water quality.</p> <p>Displacement of species during construction and operation of the facility; decrease in species abundance and diversity.</p> <p>Reduced foraging and breeding area for birds.</p> <p>Decreased shade.</p>	<p>Generalized Candidate Significant Wildlife Habitat</p> <p>See Table 10 in the <i>Natural Heritage Assessment Site Investigation Report</i> for a list of all natural features identified within 120 metres of the project location.</p>			<p>Maintain overall site drainage patterns.</p> <p>No excessive mortality of tree species exposed to edge effects after vegetation clearing.</p> <p>Ensure surface water flow is maintained to the wetland areas to prevent abnormal water level fluctuations for turtle over-wintering area.</p> <p>Minimize soil exposure and erosion to adjacent lands.</p>	<p>into the surrounding landscape.</p> <ul style="list-style-type: none"><li>▪ Restrict vegetation clearing to only within project location.</li></ul> <p><u>Stormwater Management</u></p> <ul style="list-style-type: none"><li>▪ Ensure drainage patterns are not significantly altered from existing off-site conditions due to road drainage, reduction in surface permeability, etc.</li></ul> <p><u>Vegetation Considerations</u></p> <ul style="list-style-type: none"><li>▪ No persistent use of heavy machinery within 5 metres of the dripline of the woodland to prevent soil compaction.</li><li>▪ Re-vegetate cleared lands with native low shrub and/or grassland species</li></ul> <p><u>Timing</u></p> <ul style="list-style-type: none"><li>▪ Limit vegetation clearing outside of the core bird breeding period (May 1 - July 15) to avoid disturbance to breeding birds; if any vegetation clearing must occur during this period a qualified biologist will conduct nest searches prior to clearing.</li></ul> <p><u>Wildlife</u></p> <ul style="list-style-type: none"><li>▪ Visual monitoring for and avoidance of wildlife</li></ul>	<p>erosion to the swamp area supporting ABH and to the open aquatic areas supporting turtle over-wintering.</p>	<p>greater until vegetation is re-established.</p> <p>One-year post construction turtle surveys to determine species presence, abundance and richness is not significantly different from pre-construction levels</p>	<p>densities, consultation with the MNR will be undertaken to discuss results.</p>





Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
					species encountered during construction activity. ▪			
<b>Electrical Cable Trenching</b> <u>Direct Impacts</u> Disruption of underground roots along woodland edge during construction of trenches to bury electrical cables.	Significant Woodland A.  See Table 10 in the <i>Natural Heritage Assessment Site Investigation Report</i> for a list of all natural features identified within 120 metres of the project location.	Low likelihood of physical impacts during construction.  Low likelihood for functional effects after implementation of mitigation measures.	Low	Maintain woodland edge.	Maintain a buffer from woodland vegetation of at least 1 metre from the dripline of woodland edge species.  Maximize the distance of all construction equipment used from the woodland edge; operate machinery in the project location area only.	Woodland edges where trenches are to be excavated.	Biweekly during the growing season for persistence of edge vegetation.  Regular monitoring of trench excavation and after rainfall events.	Health assessment by a qualified biologist, arborist or forester if visual evidence suggests dieback of the woodland edge. Edge of woodland to be maintained by re-planting at a 1:1 ratio where hazard trees are required to be removed.
<b>Water Bodies</b>								
Vegetation clearing and grading may increase surface runoff and soil mobilization may impact receiving water bodies.	No water bodies, as defined by <i>Ontario Regulation 359/09</i> , have been identified within the project location, or adjacent lands within 120 meters. Mitigation measures have been put <u>in</u> place to protect water bodies within 300 metres of the project location.	Low likelihood for effects after implementation of mitigation measures.	Low. Existing vegetation adjacent to the water bodies will be maintained as natural buffers.	Appropriate ESC measures are implemented prior to and during construction. ESC controls are maintained during the construction phase.	An erosion and sediment control plan will be developed for the site. This plan will include standard erosion and sediment control measures such as silt fencing, erosion control blankets and/or hay bales, etc.  Minimize changes in land contours and maintain natural off-site drainage patterns where possible; Develop grading and water flow management plans to emulate pre-construction conditions.  Operate machinery in the areas disturbed for construction only.	At areas where ESC controls are constructed.	Check to occur regularly and/or after rain events greater than 10 millimetres until vegetative cover is established.	All breaches to ESC controls will be repaired within 24 hours of notification.  If during the routine checks it is determined that ESC controls are not sufficient, all work will stop until appropriate ESC controls can be established.



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
					Upon completion of project construction, the project location will be vegetated with a mix of native grasses and/or monitored to ensure land naturally re-vegetates within one growing season.			
Air, Odour and Dust								
Deposition of dust on adjacent lands.	Neighbouring landuses.	Low	Low	Construction activities causing increased odour or dust will be carried out in accordance with all applicable regulations and standards.	Vehicle idling will be prohibited where possible.	N/A	N/A	N/A
Odour nuisance.	Neighbouring landowners				Equipment will be maintained in good working order.			
Noise								
Noise Disturbance.	Neighbouring landowners.	Moderate	Low	Construction activities causing noise will be carried out in accordance with all applicable regulations and standards.	Vehicle idling will be prohibited, where possible.	N/A	N/A	Documentation of any complaints as outlined in the <i>Design and Operations Report</i> (Section 8.3.2) and follow up as required.
					Construction activities resulting in noise emissions will typically take place during normal business hours (anticipated Monday through Friday from 7:00 AM until 6:00 PM) or in accordance with local By-laws.			
					Should work need to be conducted on weekends, this			



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
					<p>work will be done in accordance with local regulations and policies to minimize disturbance to the surrounding community.</p> <p>All equipment will be maintained in good working order, with muffler devices, where appropriate.</p> <p>Any noise complaints will be investigated as discussed in the Communications Plan (see the <i>Design and Operations Report</i>).</p>			
Land Use and Resources								
Removal of land from agricultural production.	Land use at the project location.	High	Low	N/A	N/A	N/A	N/A	Lands could be restored to their pre-construction condition, or a similar state at the time of decommissioning.
Visual impact.	Neighbouring landowners.	Low	Low	N/A	<p>Visual impact studies will be undertaken as necessary.</p> <p>Landscaping as required to minimize view of project location.</p>	N/A	N/A	N/A
Provincial and Local Infrastructure								
Periodic traffic disruption.	Old Homestead Road.	Moderate	Low	Limit traffic flow disruption.	N/A	N/A	N/A	N/A
Damage to local roads.	Old Homestead Road.	Moderate	Low	Roads will be returned to or maintained at pre-construction condition.	All half-load restrictions as required by local municipalities will be respected by the EPC	N/A	N/A	N/A



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
					contractor for the duration of the construction period.  GoldLight LP will work with the municipality to address any concerns that may arise during construction with respect to potential road damage.			
Temporary power outages to local customers during commissioning of the facility.	Neighbouring landowners and local community.	Low	Moderate	N/A	Any mitigation measures to minimize outages will be undertaken by Hydro One.	N/A	N/A	N/A
Public Health and Safety								
Noise, vibration and equipment emissions.	Neighbouring landowners and other members of the community.	Moderate	Low	N/A	The project will comply with the <i>Occupational Health and Safety Act</i> regulation requirements during the construction phase.	N/A	N/A	N/A
Injury or death to construction workers or members of the public due to accidents related to construction equipment or traffic.	Construction workers.  Neighbouring landowners and other members of the community.	Low	High	No injuries or deaths		N/A	N/A	N/A
Fires (electrical, wildfire, etc.) at the project location during construction.	Construction workers.	Low	Moderate	Minimize fire potential at project location.	All construction activities will be conducted by licensed contractors in accordance with required standards and codes. All activities will abide by local laws and regulations.	N/A	N/A	Implementation of Emergency Response and Communications Plans.
	Neighbouring landowners and other members of the community.	Low	Low					
	Municipal firefighters.	Low	Moderate					
					The contractor will create a site-specific health and safety plan. The contractor will also provide job safety assessment information prior to			





Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
					<p>construction start up.</p> <p>All equipment will be maintained in good working order.</p> <p>The project location will be under surveillance during construction and a perimeter fence with a locked gate will be installed to ensure public safety.</p> <p>Restricted areas will also be flagged at the surface, as appropriate.</p> <p>The project will have a fire prevention and response plan</p> <p>GoldLight LP will work with the local fire department to develop a fire prevention plan for the project location that includes the construction phase. This plan will be outlined in the Emergency Response and Communications Plans. (See the <i>Design and Operations Report</i>).</p> <p>An <i>Emergency Response and Communications Plan</i> will be prepared in the event of an emergency on the site and will provide key contact information for relevant responders, regulators,</p>			



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
					landowners and other stakeholders.			
Areas Protected Under Provincial Plans and Policies								
No potential negative effects are anticipated to the Greenbelt Protected Countryside, Greenbelt Natural Heritage System and/or Lake Simcoe Watershed. Additional natural environment studies, as stipulated by <i>Ontario Regulation 359/09</i> for project locations within Plan Areas will be conducted and will consider the full intent of the <i>Greenbelt Act</i> and Lake Simcoe Watershed Protection Plan.								
OPERATIONS PHASE								
Natural Heritage Features								
There are no potential negative effects anticipated to natural heritage features during the operations phase of the project.								
Water Bodies								
There are no potential negative effects anticipated to water bodies during the operations phase of the project.								
Air, Odour and Dust								
Operation of the facility will have no impact on air, odour or dust.								
Noise								
Noise Disturbance.	Neighbouring landowners.	Low	Low	Minimize the amount of noise caused by the inverters and substation to comply with the MOE publication NPC-232.	Perform a noise assessment in accordance with the requirements of the MOE publication NPC-233.  No mitigation measures are required to comply with the MOE publication NPC-232 requirements.	N/A	N/A	On-site noise testing and re-modelling, if required.
Land Use and Resources								
There are no potential negative effects anticipated to land use and resources during the operations phase of the project. See <b>Section 4.3</b> of the <i>Design and Operations Report</i> .								



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
Provincial and Local Infrastructure								
There are no potential negative effects anticipated to provincial and local infrastructure during the operations phase of the project.								
Public Health and Safety								
Electrocution or other injury from operating components.	Maintenance employees.	Low	Low	N/A	The project will comply with the <i>Occupational Health and Safety Act</i> regulation requirements during the maintenance. The project location will be fenced as per ESA requirements to prevent unauthorized access.	N/A	N/A	Implementation of Emergency Response and Communications Plans, should an injury occur.
	Members of the public.	Low	Low					
Fire (e.g., electrical or wildfires) at the project location during operation.	Neighbouring landowners and other members of the community.	Low	Low	N/A	GoldLight will work with the local fire department to develop a fire prevention plan for the project location. This plan will be outlined in the Emergency Response and Communications Plans. (See the <i>Design and Operations Report</i> ). This plan will include measures such as regular maintenance of vegetation and electrical equipment. (See the <i>Design and Operations Report</i> for more information).  The Emergency Response and Communications Plans will outline key contact information for emergency responders, landowners, contractors and stakeholders.	Project location	Ongoing (remotely)	Implementation of Emergency Response and Communications Plans.
	Maintenance workers.	Low	Low					
	Municipal firefighters.	Low	Moderate					





Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
Provincial Plans and Policies								
No potential negative effects are anticipated to the Greenbelt Protected Countryside, Greenbelt Natural Heritage System and/or Lake Simcoe Watershed. Additional natural environment studies, as stipulated by <i>Ontario Regulation 359/09</i> for project locations within Plan Areas will be conducted and will consider the full intent of the <i>Greenbelt Act</i> and Lake Simcoe Watershed Protection Plan.								
DECOMMISSIONING PHASE								
Natural Heritage Features								
Decommissioning activities have the potential to cause negative environmental effects as described for the construction phase and the same mitigation and monitoring activities would apply with the exception that the final site restoration activities will return the project location to its original condition or future anticipated use, as most appropriate. See Table 11 in the <i>Natural Heritage Assessment Environmental Impact Study</i> for a list of all potential environmental effects that may occur during decommissioning and mitigation measures for significant/provincially significant natural features.								
Water Bodies								
Decommissioning activities have the potential to cause negative environmental effects as described for the construction phase and the same mitigation and monitoring activities would apply with the exception that the final site restoration activities will return the project location to its original condition or future anticipated use, as most appropriate.								
Air, Odour and Dust								
Decommissioning activities have the potential to cause negative environmental effects similar to those described for the construction phase and the same mitigation and monitoring activities would apply.								
Noise								
Decommissioning activities have the potential to cause negative environmental effects similar to those described for the construction phase and the same mitigation and monitoring activities would apply.								
Land Use and Resources								
There are no anticipated negative environmental effects to land use and resources during the decommissioning phase of the project. At the time of decommissioning, the land will be restored to its pre-construction condition or a similar state. All project components will be removed and the project location lands will be restored through the spreading of topsoil, re-vegetation and seeding. Materials will be reused and recycled where available. See <b>Section 5</b> of the <i>Decommissioning Plan Report</i> .								
Public Health and Safety								
In addition to the effect listed below, decommissioning activities have the potential to cause negative environmental effects similar to those described for the construction phase and the same mitigation and monitoring activities would apply.								
Hazards and health impacts from debris left on-site.	Project location lands Neighbouring lands Persons encountering	Low	Low	N/A	The site will be cleared of debris and hazards and could be returned to its original			



Potential Effect	Affected Feature(s) or Environmental Component	Likelihood	Magnitude	Performance Objective	Mitigation Measures	Monitoring <sup>1</sup>		Contingency Measures
						Monitoring Location	Frequency and Duration	
	hazards.				condition or future anticipated land use.			
Provincial Plans and Policies								
No potential negative effects are anticipated to the Greenbelt Protected Countryside, Greenbelt Natural Heritage System and/or Lake Simcoe Watershed. Additional natural environment studies, as stipulated by <i>Ontario Regulation 359/09</i> for project locations within Plan Areas will be conducted and will consider the full intent of the <i>Greenbelt Act</i> and Lake Simcoe Watershed Protection Plan.								
N/A – Not Applicable								
*These natural features are treated as significant until appropriate studies can be undertaken pre-construction. Should these features be evaluated significant, mitigation measures and monitoring commitments will be implemented as indicated.								