



**NORTHLAND  
POWER**

# Crosby Solar Project

## Draft Natural Heritage Environmental Impact Study

December 22, 2010



Northland Power Inc.  
on behalf of  
Northland Power Solar  
Crosby L.P.  
Toronto, Ontario

DRAFT Natural Heritage  
Environmental Impact Study

Crosby Solar Project

H334844-0000-07-124-0063  
Rev. E  
December 22, 2010

**Disclaimer**

This report has been prepared solely for the use of Northland Power Inc., who is submitting this document to the Ministry of the Environment as part of the Renewable Energy Approval process. This document is in DRAFT form and subject to further revision. The content of this document is not intended for the use of, nor is it intended to be relied upon by any person, firm or corporation.

Project Report

December 22, 2010

**Northland Power Inc.  
Crosby Solar Project**

**DRAFT Natural Heritage Environmental Impact Study**

**Table of Contents**

<b>1. Introduction .....</b>	<b>5</b>
1.1 Renewable Energy Approval Legislative Requirements .....	5
1.1.1 Records Review Report .....	5
1.1.2 Site Investigation Report .....	6
1.1.3 Evaluation of Significance Report .....	6
1.1.4 Environmental Impact Study Report.....	9
1.2 Background Information on Natural Heritage Features .....	9
1.3 Environmental Impact Study Format.....	10
<b>2. Methodology .....</b>	<b>10</b>
<b>3. Project Components and Activities .....</b>	<b>11</b>
3.1 Construction .....	11
3.2 Operation .....	12
3.3 Decommissioning .....	12
<b>4. Potential Negative Environmental Effects and Proposed Mitigation Measures .....</b>	<b>13</b>
4.1 Vegetation Communities/Wildlife Habitat .....	13
4.1.1 Construction Phase.....	14
4.1.1.1 Direct Encroachment on the Natural Heritage Features.....	14
4.1.1.2 Fugitive Dust Generation.....	14
4.1.1.3 Surface Water Runoff.....	15
4.1.2 Operations Phase .....	15
4.1.2.1 Surface Water Runoff.....	15
4.1.2.2 Presence of Project Within Significant Wildlife Habitat for Milksnake.....	15
4.1.3 Decommissioning Phase .....	16
4.1.3.1 Direct Encroachment on the Natural Heritage Features.....	16
4.1.3.2 Fugitive Dust Generation.....	16
4.1.3.3 Surface Water Runoff.....	16
4.2 Wildlife Communities .....	16
4.2.1 Construction Phase.....	16
4.2.2 Operations Phase .....	17
4.2.3 Decommissioning Phase .....	18
<b>5. Environmental Effects Monitoring Plan – Design and Operations Report .....</b>	<b>18</b>

**6. Construction Plan Report ..... 19**

**7. Summary and Conclusions ..... 19**

**8. References..... 19**

**Appendix A    Site Layout**

## List of Tables

Table 3.1	General Description of Construction Activities (From Hatch Ltd., 2010h).....	11
Table 5.1	Summary of Environmental Effects Monitoring Requirements with Respect to Significant Natural Features .....	21

## List of Figures

Figure 1.1	Project Components and Significant Natural Heritage Features.....	7
------------	---	---

Back

## 1. Introduction

Northland Power Solar Crosby L.P. (hereinafter referred to as “Northland”) is proposing to develop a 10-megawatt (MW) solar photovoltaic project titled the Crosby Solar Project (hereinafter referred to as the “Project”). The Project will be located on approximately 52 hectares (ha) of land, located at 249 Little Rideau Lake Road in the Township of Rideau Lakes, within the United Counties of Leeds and Grenville (Figure 1.1).

As stated in Sections 37 and 38 of Ontario Regulation (O. Reg.) 359/09 *Renewable Energy Approvals Under Part V.0.1 of the Act*, (herein referred to as the “REA Regulation”), an Environmental Impact Study (EIS) is required for all significant natural heritage features determined to be within a specified setback in order to obtain a Renewable Energy Approval (REA). The EIS identifies the potential negative environmental effects, documents the proposed mitigation measures, and describes the environmental effects monitoring plan for the natural heritage features.

### 1.1 Renewable Energy Approval Legislative Requirements

Per Section 4 of the REA Regulation, ground-mounted solar facilities with a nameplate capacity greater than 10 kilowatts (kW) are classified as Class 3 solar facilities and require a REA.

The REA process requires the preparation of several reports with respect to natural heritage features on and adjacent to the Project location, including the Records Review Report, Site Investigation Report, Evaluation of Significance, and if necessary, the EIS. The legislative requirements for these reports are summarized in the following sections.

#### 1.1.1 Records Review Report

Section 35 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage records review to identify “whether the Project is

1. in a natural feature
2. within 50 m of an area of natural and scientific interest (earth science)
3. within 120 m of a natural feature that is not an area of natural or scientific interest (earth science).” (O. Reg. 359/09, s. 25, Table).

Natural features are defined in Section 1(1) of the REA Regulation to be all or part of

- a) an area of natural and scientific interest (ANSI) (earth science)
- b) an ANSI (life science)
- c) a coastal wetland
- d) a northern wetland
- e) a southern wetland
- f) a valleyland

- g) a wildlife habitat, or
- h) a woodland.

Subsection 2 of Section 30 of the REA Regulation requires the proponent to prepare a report “setting out a summary of the records searched and the results of the analysis” (O. Reg. 359/09). The Natural Heritage Records Review Report (Hatch Ltd., 2010a) was prepared to meet these requirements.

### **1.1.2 Site Investigation Report**

Section 26 of the REA Regulation requires proponents of Class 3 solar projects to undertake a natural heritage site investigation for the purpose of determining

- whether the results of the analysis summarized in the (natural heritage records review) report prepared under Subsection 25(3) are correct or require correction, and identifying any required corrections
- whether any additional natural features exist, other than those that were identified in the (natural heritage records review) report prepared under Subsection 30(2)
- the boundaries, located within 120 m of the Project location, of any natural feature that was identified in the records review or the site investigation
- the distance from the Project location to the boundaries determined under clause (c).

The Natural Heritage Site Investigation Report (Hatch Ltd., 2010b) was prepared to meet these requirements.

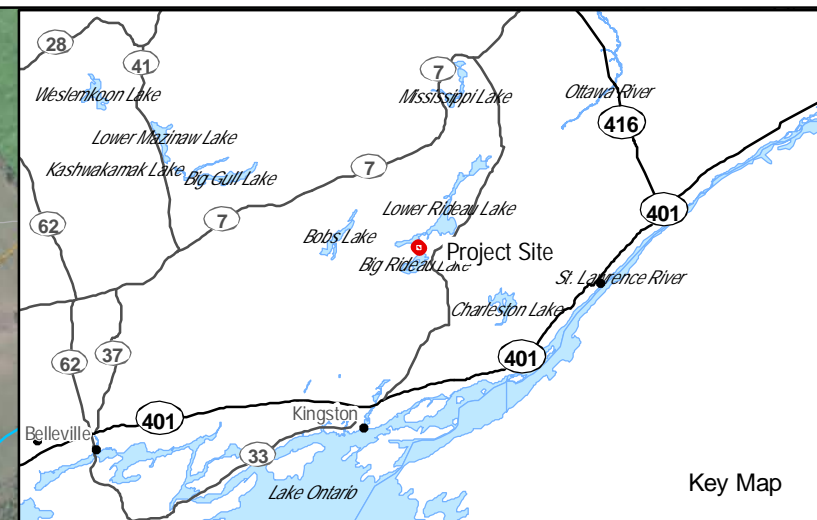
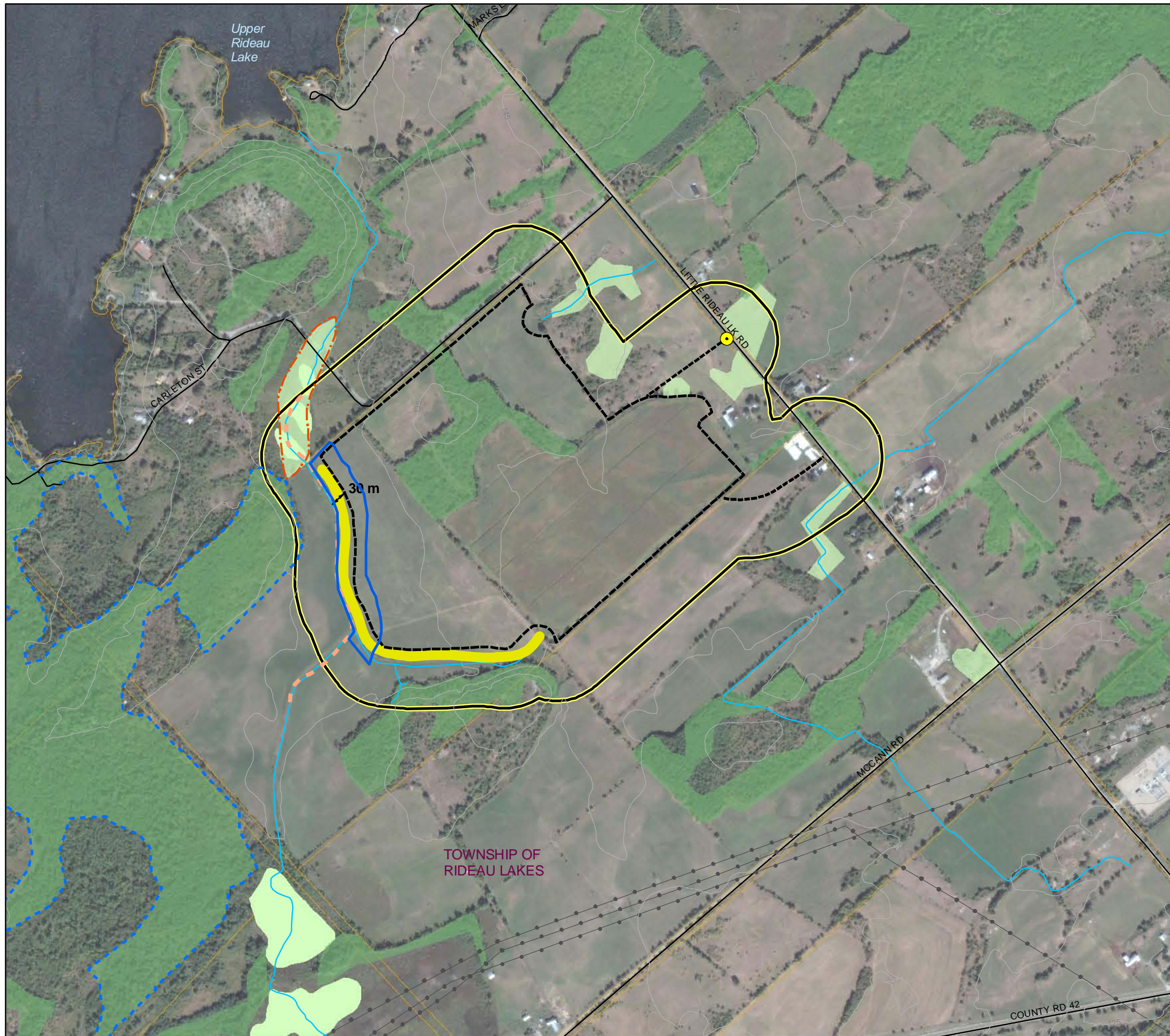
### **1.1.3 Evaluation of Significance Report**

Section 27(1) of the REA Regulation requires proponents of Class 3 solar projects to undertake an evaluation of significance for natural heritage features identified during the records review and site investigation that sets out

- a determination of whether the natural feature is
  - ◆ provincially significant
  - ◆ significant
  - ◆ not significant
  - ◆ not provincially significant
- a summary of the evaluation criteria or procedures used to make the determinations
- the name and qualifications of any person who applied the evaluation criteria or procedures.

The Evaluation of Significance Report (Hatch Ltd., 2010c) for the natural features identified on and within 120 m of the Project location was prepared to meet these requirements.





**Legend**

- Roads
- Transmission Line
- Topographic Contour (5m interval)
- Watercourse
- ▭ Parcels
- Woodland
- Wetland

**Significant Natural Heritage Features**

- ▭ Significant Woodland

*Significant Wildlife Habitat*

- ▭ Animal Movement Corridor (Semi-aquatic)
- ▭ Bullfrog Concentration Area/American Bullfrog Habitat
- ▭ Milksnake Habitat

**Project Components**

- Connection Point With Distribution Line
- ▭ Annual Vegetation Management Zone (Operations)
- ▭ Project Location
- ▭ 120m from Project Location
- ▭ 60m Buffer from Animal Movement Corridor (Semi-Aquatic)/Bullfrog Habitat (Construction)

0 75 150 300 Metres NORTH  
1:8,000

Notes:  
 1. OBM and NRVIS data downloaded from LIO, with permission.  
 2. Spatial referencing UTM NAD 83.  
 3. Satellite imagery from Google Earth Pro

Figure 1.1  
 Northland Power Inc.  
**Crosby Solar Energy Project  
 Project Components  
 and Significant  
 Natural Heritage Features**

Blank back

### **1.1.4 Environmental Impact Study Report**

Section 38(1) of the REA Regulation prohibits the construction, installation or expansion of any component of a solar project within the following locations:

- provincially significant northern wetland or within 120 m of a provincially significant northern wetland
- within 120 m of a provincially significant southern wetland
- within 120 m of a provincially significant coastal wetland
- a provincially significant area of natural and scientific interest (ANSI) (earth science) or within 50 m of a provincially significant ANSI (earth science)
- a provincially significant ANSI (life science) or within 120 m of a provincially significant ANSI (life science)
- a significant valleyland or within 120 m of a significant valleyland
- a significant woodland or within 120 m of a significant woodland
- a significant wildlife habitat or within 120 m of a significant wildlife habitat
- within 120 m of a provincial park
- within 120 m of a conservation reserve.

However, Section 38(2) allows proponents to construct within the locations noted above, subject to the completion of an EIS to assess negative effects and evaluate appropriate mitigation and monitoring measures.

Section 38(2) of the REA Regulation indicate that the EIS report must

- identify and assess any negative environmental effects of the projects on natural features, provincial parks or conservation reserves referred to in Section 38(1)
- identify mitigation measures in respect of any negative environmental effects
- describe how the environmental effects monitoring plan in the Design and Operations Report (Hatch Ltd., 2010e) addresses any negative environmental effects
- describe how the Construction Plan Report (Hatch Ltd., 2010d) addresses any negative environmental effects.

This EIS has been prepared to address these requirements for the construction of Project components within 120 m of significant natural heritage features noted in Section 1.1 and described in Section 1.2.

## **1.2 Background Information on Natural Heritage Features**

The Natural Heritage Records Review Report (Hatch Ltd., 2010a) and Natural Heritage Site Investigation Report (Hatch Ltd., 2010b) confirmed that the Project will be constructed within 120 m

of several natural features. Of these natural features, several were identified as a significant natural heritage feature during the evaluation of significance (Hatch Ltd., 2010c).

The natural heritage features that are classified as significant are

- woodland within 120 m northwest of the Project location
- wetland within 120 m northwest of the Project location as bullfrog concentration area
- all lands outside of the wetland on and within 120 m of the Project location as suitable habitat for Milksnake
- watercourse within 120 m west of the Project location as an animal movement corridor for semi-aquatic species, such as amphibians and reptiles.

These significant natural heritage features and their location in relation to the Project location are shown in Figure 1.1.

### **1.3 Environmental Impact Study Format**

Section 1 of this EIS has identified the legislative requirements for an EIS under the REA Regulation and identified the reasons why an EIS is required for the Project. Section 2 provides the methodology of the EIS. Section 3 summarizes the activities associated with Project construction, operation and decommissioning, as described in the Project Description Report (Hatch Ltd., 2010h). Section 4 identifies and assesses negative environmental effects and the proposed mitigation measures to prevent/minimize the potential effects. Section 5 describes the environmental effects monitoring plan from the Design and Operations Report (Hatch Ltd., 2010e), and Section 6 describes how the Construction Plan Report (Hatch, 2010d) addresses the potential negative environmental effects. Section 7 summarizes the results of the EIS. References are included in Section 8.

## **2. Methodology**

The following steps outline the methodology that was used to prepare this EIS:

1. Documentation of Project components and activities during all Project phases, including construction, operations and decommissioning, including identification of temporal and spatial boundaries.
2. Background data collection on the natural features within 120 m of the Project location through the Records Review and Site Investigation processes.
3. Identification of the effects that is likely to occur on the environmental components as result of implementing the Project.
4. Development of mitigation measures to eliminate, alleviate or avoid the identified negative effects.
5. Design of an environmental effects monitoring program to confirm the predicted effects and the effectiveness of mitigation measures.

### 3. Project Components and Activities

The following sections briefly describe the construction, operation and decommissioning phases of the Project. The information is taken from the Project Description Report (Hatch Ltd., 2010h). More detailed information can be found in the Construction Plan Report (Hatch Ltd., 2010d), Design and Operations Report (Hatch Ltd., 2010e) and Decommissioning Plan Report (Hatch Ltd., 2010f). The Site Layout from the Construction Plan Report (Hatch Ltd., 2010d) is provided in Appendix A to show the detailed components of the facility including solar panel, inverter, transformer and access road locations.

#### 3.1 Construction

Construction is anticipated to occur over an approximately 6-month period, likely commencing in April 2011 with commissioning scheduled for late October 2011. The activities associated with construction are summarized in Table 3.1.

**Table 3.1 General Description of Construction Activities (From Hatch Ltd., 2010h)**

Activity	Description
Access Road Construction	Activities associated with construction of internal access roads will include <ul style="list-style-type: none"> <li>• removal of topsoil and subsoil</li> <li>• placement of granular base (at least 30 cm)</li> <li>• installation of ditches and culverts</li> <li>• installation of sediment and erosion control features as necessary</li> <li>• replacement of topsoil on the temporary access roads if the roads are to be removed.</li> </ul>
Site Preparation	Activities associated with the site preparation will include <ul style="list-style-type: none"> <li>• consultation with the landowner to determine the locations of topsoil and subsoil stockpiles where topsoil is stripped. Note that the piles will not be within 30 m of waterbodies and drainage routes.</li> <li>• accumulation of uncut or shredded crops on the soil surface where topsoil is not stripped</li> <li>• installation of sediment and erosion control features as necessary.</li> </ul>
Installation of Support Structures	Activities associated with the installation of support structures will include <ul style="list-style-type: none"> <li>• creation of drilled holes for the purposes of stabilizing the support structures of the photovoltaic arrays</li> <li>• construction of foundations and/or support structures beneath transformers, inverters and photovoltaic panels</li> <li>• installation of photovoltaic panels on fixed racking structures</li> <li>• inspection of foundation construction and of support structures prior to the installation of photovoltaic modules, and wiring.</li> </ul>
Underground Cable Installation	Activities associated with underground cable installation will include <ul style="list-style-type: none"> <li>• installation of direct current (DC) wiring along the structural supports of the photovoltaic arrays. A network of underground DC cabling will be required at the termination point of the photovoltaic arrays to centrally located inverters which will then convert the electricity to alternating current (AC).</li> <li>• utilization of a simple trenching device to install the cables; whereby a slot will be opened, the cable will be laid, and the soil replaced.</li> </ul>

Activity	Description
Distribution Line Erection	<p>Activities associated with distribution line erection will include</p> <ul style="list-style-type: none"> <li>• construction of an underground distribution line which transports the electricity from the inverters to the transformer</li> <li>• erection of a overhead distribution connection from the transformer to transport the generated power from the Project to the 44-kV connection point</li> <li>• utilization of new or existing wooden poles.</li> </ul>
Site Security	<p>Activities associated with site security will include</p> <ul style="list-style-type: none"> <li>• installation of gate and fence on Project location (in the vicinity of the watercourse, the fence will be installed 30 m away from the high water mark)</li> <li>• installation of additional security measures (e.g., security cameras, motion sensor flood lighting) if deemed necessary.</li> </ul>

### 3.2 Operation

The expected commercial operation date (COD) is November 3, 2011. The facility will operate 365 d/yr when sufficient solar radiation exists to generate electricity. The facility will be remotely monitored with no regular on-site employees. Maintenance is anticipated to occur quarterly. Maintenance activities will involve checking the structures and interconnections and cleaning the photovoltaic panels, as necessary. Maintenance activities associated with maintaining the fence, if required, will be conducted from the Project side (i.e., within the fence). All maintenance materials such as hydraulic fluids will be brought on site as required and non on-site storage will be made available. Rain and snowfall are anticipated to be sufficient for the cleaning of the panels. Should extra water be required, it will be brought on site. The system does not produce waste of any type. All debris as a result of maintenance or cleaning will be removed from the site immediately by the contracted party. The Project will also be inspected whenever the power output is lower than anticipated as this would be indicative of a mechanical problem. The Project is expected to have a lifespan of 35 to 40 years.

Unless access is required for annual vegetation control, there will be no activities occurring within the 30-m vegetated buffer from the watercourse west of the Project location.

### 3.3 Decommissioning

Decommissioning would occur when the decision has been made that it is no longer economically feasible to continue operation or refurbish generating equipment. It is anticipated that decommissioning would not occur for at least 35 years unless a power purchase agreement cannot be secured after the 20-yr duration of the Feed-In-Tariff (FIT) contract that has been obtained.

All decommissioning and site restoration activities would adhere to the requirements of appropriate regulatory authorities and would be conducted in accordance with all applicable federal, provincial and municipal permits and other requirements. The decommissioning and restoration process comprises the following activities:

- removal of the scrap metal and cabling. Where possible, these materials will be recycled, with nonrecyclables taken to an approved disposal site.

- removal of support structures and foundations unless the landowner requests otherwise. These materials will be recycled where possible.
- site cleanup and regrading to original contours, and any damage to tile drainage system to be repaired/replaced
- planting of leguminous crops to provide a rapid return of nutrients and soil structure.

Once the Project, other materials, and road network are removed from the site, the fields will be returned to their condition prior to the Project at the discretion of the landowner.

## 4. Potential Negative Environmental Effects and Proposed Mitigation Measures

This section describes the anticipated negative environmental effects on the identified significant natural features that could occur as a result of construction, operation and decommissioning phases of the Project (as described in Section 3).

Mitigation measures are proposed to minimize, eliminate or alleviate any negative effects. Potential negative effects are discussed by environmental component, where effects on the land could negatively affect the significant natural features. Relevant environmental components of the significant woodland and wildlife habitats that may be impacted by the proposed Project include

- vegetation communities/wildlife habitat
- wildlife communities.

### 4.1 Vegetation Communities/Wildlife Habitat

Vegetation communities/wildlife habitat can be impacted by a number of activities, including the following:

- Direct encroachment on the feature – The removal of vegetation from the significant natural feature would have an impact on the vegetation community as a whole and the wildlife habitat that is provided therein.
- Fugitive dust generation – Fugitive dust generation has the potential to impact vegetation communities within the significant natural features as heavy dust loads on the photosynthetic surfaces of plants can retard growth and ultimately result in loss of the individual.
- Changes in surface water runoff altering the moisture regime of the feature – Alterations in surface water runoff may impact the moisture regime of the receiving significant natural feature. If the moisture regime of the receiving natural feature was altered significantly, the composition of this community may change as a result.

The potential negative effects and proposed mitigation measures associated with these activities are discussed by Project phase in the following sections.

Impacts are addressed below with respect to the habitat structure alone, while impacts to the wildlife communities are addressed within Section 4.2.

#### 4.1.1 Construction Phase

##### 4.1.1.1 Direct Encroachment on the Natural Heritage Features

Construction of the Project will require direct encroachment onto the significant wildlife habitat for Milksnake that is present on the Project location. This will result in a loss of general use habitat for Milksnake during construction.

The significant woodland is located nearly 120 m from the Project location, and therefore no impacts on this feature are anticipated as a result of either direct or indirect effects given the distance.

The bullfrog concentration area and animal movement corridor for semi-aquatic species are located 30 m from the Project location. This setback from these features will provide adequate protection from direct encroachment.

In order to prevent any encroachment from occurring, work areas will be clearly flagged and workers will be made aware not to work beyond the extent of the cleared areas. Workers will be advised not to trespass beyond the bounds of the areas that had been previously flagged for vegetation removal.

##### 4.1.1.2 Fugitive Dust Generation

Dust may be mobilized due to vehicular traffic and heavy machinery use, drilling (if necessary for solar panel installation) and soil moving activities (e.g., excavation, trenching).

However, it is not anticipated that dust generation will result in adverse effects on vegetation communities and associated wildlife habitat, since the potential impacts can be substantially mitigated through the use of standard construction site best management practices and mitigation measures. In this regard, the document entitled "Best Practices for the Reduction of Air Emissions from Construction and Demolition Activities" (Cheminfo Services Inc., 2005) will be used as a guideline for contractors. Mitigation measures to be used, as required, to control dust generation on the Project location include

- use of approved dust suppression (i.e., water or non-chloride based materials) on exposed areas including access roads, stockpiles and works/laydown areas as necessary
- hard surfacing (addition of coarse granular A material, free of fine soil particles) of access roads or other high-traffic working areas
- phased construction, where possible, to limit the amount of time soils are exposed
- avoid earth moving works during excessively windy weather. Stockpiles to be worked (e.g., loaded/unloaded) from the downwind side to minimize wind erosion.
- stockpiles and other disturbed areas to be stabilized as necessary (e.g., tarped, mulched, graded, revegetated or watered to create a hard surface crust) to reduce/prevent erosion and escape of fugitive dust.

Visual monitoring of dust generation will occur during the construction period, and if dust is observed to be of concern, additional mitigation will be implemented. Given the mitigation and monitoring proposed, it is anticipated that dust generation will be relatively low in magnitude and limited in duration and geographical area, such that no negative effects on vegetation communities will occur as a result of dust.



#### 4.1.1.3 *Surface Water Runoff*

Activities that could occur during the construction phase that would have the potential to affect surface water runoff patterns and rates include

- land grading and ditching associated with access roads
- soil compaction due to heavy equipment or stockpiling
- vegetation removal.

The potential negative effects and proposed mitigation measures associated with these activities are discussed in the Waterbodies Environmental Impact Study (Hatch Ltd., 2010g). The study concluded that through the use of effective mitigation measures there will be no significant change in surface water runoff as a result of Project construction. Measures will be employed to ensure that surface water runoff patterns and rates remain similar to existing conditions. Therefore, no alterations in the moisture regime in the significant wildlife habitat are anticipated to occur.

#### 4.1.2 *Operations Phase*

With the Project operating unmanned and regular maintenance only expected to occur periodically throughout a year, potential impacts on the significant natural features are expected to be limited to changes in surface water runoff and presence of the Project within the significant wildlife habitat for Milksnake.

There are no impacts to the habitat structures of the significant woodland within 120 m of the Project location during operations, however, potential impacts to wildlife communities present within these features are addressed in Section 4.2.

##### 4.1.2.1 *Surface Water Runoff*

Long-term site alterations associated with the operational phase of the Project that could potentially affect surface water runoff include

- long-term changes in land grading and ditches
- presence of impervious or less pervious surfaces
- changes in vegetation structure and density.

The potential negative effects and mitigation measures associated with these activities are discussed in the Waterbodies Environmental Impact Study (Hatch Ltd., 2010g). The study concluded that through the use of effective mitigation measures there will be no significant change in surface water runoff as a result of Project operations. Measures will be employed to ensure that surface water runoff patterns and rates remain similar to existing conditions. Therefore, no alterations in the moisture regime in the significant wildlife habitat are anticipated to occur.

##### 4.1.2.2 *Presence of Project Within Significant Wildlife Habitat for Milksnake*

The presence of Project components on significant wildlife habitat for Milksnake is not expected to impact the amount of available habitat. Milksnake are a habitat generalist and are commonly found around manmade structures, and as such it can be anticipated that the presence of the structures will not result in an impact on the amount of habitat available in the local area.

### **4.1.3 Decommissioning Phase**

Certain decommissioning activities will be similar to those activities that occurred during the construction phase of the Project, and as such mitigation measures from the construction phase will be similar to those employed in the decommissioning phase.

#### **4.1.3.1 Direct Encroachment on the Natural Heritage Features**

As during construction, decommissioning activities will require direct encroachment onto significant wildlife habitat for Milksnake, as well as work 30 m from the significant animal movement corridor and bullfrog concentration areas. Mitigation measures identified with respect to construction activities will prevent accidental encroachment onto significant natural heritage features.

Decommissioning of the Project will require direct encroachment onto the significant wildlife habitat for Milksnake that is present on the Project location. This will result in a loss of general use habitat for Milksnake during decommissioning.

#### **4.1.3.2 Fugitive Dust Generation**

The potential for dust generation during decommissioning will be the same as that previously discussed for construction (see Section 4.1.1.2). The mitigation measures previously identified with respect to construction will also be effective at mitigating potential impacts during decommissioning.

#### **4.1.3.3 Surface Water Runoff**

Short-term activities and long-term site alterations associated with the decommissioning of the Project that could potentially affect surface water runoff include

- long-term changes in land grading
- changes in vegetation structure and density.

The potential negative effects and mitigation measures associated with these activities are discussed in the Waterbodies Environmental Impact Study (Hatch Ltd., 2010g). The study concluded that decommissioning will restore the Project location to pre-existing conditions and there will therefore be no long-term effect on surface water runoff and, therefore, no effect on the significant natural features.

## **4.2 Wildlife Communities**

Some Project activities (e.g., tree clearing and solar panel installation) will occur within, or within 120 m of the significant wildlife habitats, and could cause direct impacts to the wildlife present within these features.

### **4.2.1 Construction Phase**

The installation of the fence may trap wildlife within the Project location, such as turtle species that may occasionally enter the Project location from the animal movement corridor. Once the fence is completed, a visual search of the Project location will be conducted to search for any trapped wildlife species. If species are observed, they will be either directed off of the Project site or collected by a designated employee, who has been provided with protocols for the safe handling and transport of wildlife, and transported to the nearest available location off site and released.

At any point in time during construction, if wildlife are observed in a work area, they will be either directed off of the Project location by the worker (without the use of vehicles) or collected by a designated employee, who has been provided with protocols for the safe handling and transport of wildlife, and transported to the nearest available location off site and released.

Known occurrences of incidental take will be documented in the monthly environmental report. If a species of conservation concern is noted, work within the area will be ceased immediately, and the MNR/EC will be contacted to make them aware of the occurrence. Work in the area will remain ceased until a survey is conducted by a trained biologist to ensure that there are no species of conservation concern present in the area.

The presence of the construction workforce and construction activities associated with the Project will also result in auditory and visual disturbance of local wildlife populations. Wildlife populations within the woodland will not be impacted by construction activities given the separation from these features (i.e., more than 100 m). Wildlife communities within the animal movement corridor and bullfrog concentration area may be disrupted by construction activities. Wherever possible, work within 100 m of these features will be timed outside of the amphibian movement and bullfrog breeding period (April through June, and September/October). However, if this is not possible, a 60-m setback from these features will be maintained during construction in sensitive time periods. Further, since movement through the corridor and amphibian breeding commonly occurs at night, a period during which construction will not be occurring, there will be minimal overlap between construction activities and amphibian breeding/movement. Overall, no impact on form or function would be anticipated.

It is expected that wildlife populations that typically occurred on the Project location will abandon these sites throughout the duration of construction. In respect of Milksnake, Milksnake may temporarily retreat from these areas during construction as a result of the disturbance; however, as they are habitat generalists, this is not expected to impact the local population.

#### **4.2.2 Operations Phase**

As regular maintenance is anticipated to occur infrequently throughout a year, this would be consistent with existing disturbances on the Project location from agricultural operations.

In order to minimize the potential for incidental take of wildlife, speeds on access roads of the Project location will be restricted. Further, visual monitoring of the access roads will be completed. In addition, the construction workforce will be made aware of the potential for wildlife occurring on the Project location and that measures should be taken to avoid wildlife wherever possible. If wildlife are observed on the Project location, they will be either directed off of the Project location by the worker (without the use of vehicles) or collected by a designated employee, who has been provided with protocols for the safe handling and transport of wildlife, and transported to the nearest available location off site and released.

As the Projects are unmanned, and little noise disturbance is produced as a result of their operation, given the 30-m setback from most natural heritage features, no impact on the form or function of these features is expected.

There will be no Project activities, including vegetation management, within 30 m of the bullfrog concentration area. Annual mowing may be required within the 30-m setback from the animal movement corridor within the watercourse. Mowing within these areas will be scheduled for late fall (i.e., November) in order to ensure that amphibians have moved through the movement corridor to wintering areas.

Mowing of vegetation beneath and around the solar panels, if required, may result in incidental take. Known occurrences of incidental take will be reported, and the species impacted will be determined. If the species is determined to be a Species of Conservation Concern, work within the area will be ceased immediately, and the MNR/EC will be contacted to make them aware of the occurrence. Work in the area will remain ceased until a survey is conducted by a trained biologist to ensure that there are no further species of conservation concern present in the area. Milksnake are habitat generalists and may be impacted through incidental take.

#### **4.2.3 Decommissioning Phase**

During the decommissioning phase, disturbances present in the area will be similar to those that may occur during the construction phase as described in Section 4.2.1. In order to minimize potential impacts to wildlife communities of the significant natural features, decommissioning will be scheduled to occur outside of breeding wildlife period. Though there may be some avoidance of the significant natural features near the Project location during decommissioning, these effects are temporary, and following decommissioning the site will be restored to existing conditions.

## **5. Environmental Effects Monitoring Plan – Design and Operations Report**

As discussed in the Design and Operations Report (Hatch Ltd., 2010c), environmental effects monitoring is proposed in respect of any negative environmental effects that may result from engaging in the Project. As per the REA Regulation, the monitoring plan identifies

- performance objectives in respect of the negative environmental effects
- mitigation measures to assist in achieving the performance objectives
- a program for monitoring negative environmental effects for the duration of the time the Project is engaged in, including a contingency plan to be implemented if any mitigation measures fail.

For the purposes of this EIS report, the effects monitoring measures with respect to negative effects on the significant natural features have been reproduced here, in Table 5.1.

The monitoring proposed in Table 5.1 will confirm that mitigation measures are functioning as designed to meet performance objectives. If monitoring shows that performance objectives are not being met, the contingency measures documented in Table 5.1 will be used to ensure that remedial action is undertaken as necessary to meet the performance objectives.

## 6. Construction Plan Report

The REA Regulation requires proponents of Class 3 solar projects to prepare a Construction Plan Report (CPR). Hatch Ltd. completed the CPR for this Project (Hatch Ltd., 2010d). The CPR details the construction and installation activities, location and timing of construction and installation activities, any negative environmental effects that result from construction activities within 300 m of the Project, and proposed mitigation measures for the identified negative environmental effects. The CPR addresses all potential effects of construction on natural features within 300 m of the Project location in a general manner. The mitigation proposed in the CPR with respect to preventing/minimizing negative effects on natural features is the same as that discussed in this EIS. Additional mitigation is proposed to address negative effects during construction not related to natural features. Therefore, the CPR and this EIS should be read in conjunction with each other, although all negative effects and mitigation requirements with respect to significant natural features are contained within this EIS and duplicated in the CPR.

## 7. Summary and Conclusions

As discussed in the Natural Heritage Records Review Report (Hatch Ltd., 2010a), the Natural Heritage Site Investigation Report (Hatch Ltd., 2010b) and the Evaluation of Significance (Hatch Ltd., 2010c), there is significant Milksnake habitat on and within 120 m of the Project location, and a significant woodland, significant wildlife movement corridor, and significant bullfrog concentration area within 120 m of the Project location.

The EIS has been prepared to identify potential negative environmental effects that all phases of the Project may have on the significant natural features. Potential negative effects are associated with

- alterations to vegetation communities/wildlife habitat as a result of
  - ◆ direct encroachment on the features
  - ◆ fugitive dust generation
  - ◆ changes to surface water runoff
- disturbance of wildlife communities as a result of Project activities.

Mitigation measures have been proposed to prevent these effects from occurring or minimize the magnitude, extent, duration and frequency in the event that they do occur. The primary mitigation measure that will prevent adverse effects on the natural features is avoidance of direct encroachment onto the features themselves, clear demarcation of areas where vegetation removal is required, and timing of activities to avoid periods of increased use by wildlife. Monitoring measures have been proposed to confirm that mitigation measures are having the intended effect and that performance objectives are being met.

## 8. References

Cheminfo Services Inc. 2005. Best Practices for the Reduction of Air Emissions From Construction and Demolition Activities. Prepared for Environment Canada. March 2005. 49 pp.

DeJong-Hughes, J., J. F. Moncreif, W. B. Vorhees, and J. B. Swan. 2001. Soil Compaction Causes, Effects and Control. Regents of the University of Minnesota. Available on-line at <http://www.extension.umn.edu/distribution/cropsystems/DC3115.html>. Accessed November 28, 2007.

Hatch Ltd. 2010a. Crosby Solar Project – Natural Heritage Records Review Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. August 2010.

Hatch Ltd. 2010b. Crosby Solar Project – Natural Heritage Site Investigation Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. August 2010.

Hatch Ltd. 2010c. Crosby Solar Project – Natural Heritage Evaluation of Significance Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. August 2010.

Hatch Ltd. 2010d. Crosby Solar Project – Construction Plan Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. July 2010.

Hatch Ltd. 2010e. Crosby Solar Project – Design and Operations Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. July 2010.

Hatch Ltd. 2010f. Crosby Solar Project – Decommissioning Plan Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. July 2010

Hatch Ltd. 2010g. Crosby Solar Project – Waterbodies Environmental Impact Study. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. July 2010.

Hatch Ltd. 2010h. Crosby Solar Project – Project Description Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar Crosby L.P. May 2010.

**Table 5.1 Summary of Environmental Effects Monitoring Requirements with Respect to Significant Natural Features**

Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan				Contingency Measures	
			Methodology	Monitoring Locations	Frequency	Rationale		Reporting Requirements
<b>Construction Phase</b>								
Incidental take of wildlife	Daily visual monitoring of work areas and construction equipment prior to start of work. Wildlife observed will be removed from areas of impact through established protocols.  Speeds to be limited on Project location and construction workforce to be made aware of potential for wildlife on the Project location.	Avoid occurrences of incidental take.	Daily visual monitoring will be conducted by workers on foot of the areas to be worked on the given day.  Any wildlife observed will be either directed off of the Project location or collected by a designated employee and transported to the nearest available location off-site and released.	Throughout construction site.	Ongoing during construction on a continued basis.	Incidental take will be reported by construction workforce to the on-site personnel responsible for environmental protection if incidents occur.	Reported in monthly environmental monitoring report during construction, unless the species is a species of conservation concern in which case reporting will be immediate to the MNR/EC.	If incidental take of species of conservation concern are recorded, work will be ceased until such time as a trained biologist can state that the species is no longer present in the area.
Wildlife becoming trapped within the fence	Visual inspection following completion of fence and removal of wildlife.	Ensure all trapped wildlife species are removed from the Project location.	Visual search of the Project location for trapped wildlife species.  Any wildlife observed will be either directed off of the Project site or collected by a designated employee and transported to the nearest available location off-site and released.	Entire Project location within the fence.	Once following completion of fence.	Visual search will ensure all trapped wildlife species are detected and removed.	Reported in monthly environmental monitoring report following completion of search.	If any wildlife are recorded trapped within the fence following this activity, previously described protocols will be followed to remove wildlife species from the Project location.
Disruption of wildlife within watercourse animal movement corridor and bullfrog concentration area	Construction activities within 100 m of these features to occur outside of the amphibian breeding period (generally April through June and September/October).	Minimize impacts to amphibian and reptile movement within watercourse and bullfrog breeding within wetland habitat.	Inspection to ensure construction occurs outside of timing restriction.	Within 100 m of watercourse and wetland west of Project location.	Periodically during all construction activities.	Inspection will ensure restriction window is followed.	Reported in monthly environmental monitoring report during construction.	If avoidance of this period is not possible, a 60-m setback from the features will be in place during construction activities in sensitive time periods, and workers will be instructed of prospect for increased wildlife activity within this portion of the Project location.
Dust generation and off-site transport	Standard construction site best management practices to prevent fugitive dust.	Minimize fugitive dust from the construction site.	Visual monitoring of visible dust plumes during construction.	Throughout construction site.	Periodically during all construction activities.	Visual dust monitoring would identify if dust plumes are an issue and where their source may be.	Reported in monthly environmental monitoring report during construction.	Dust control measures implemented as necessary to prevent/minimize dust generation.

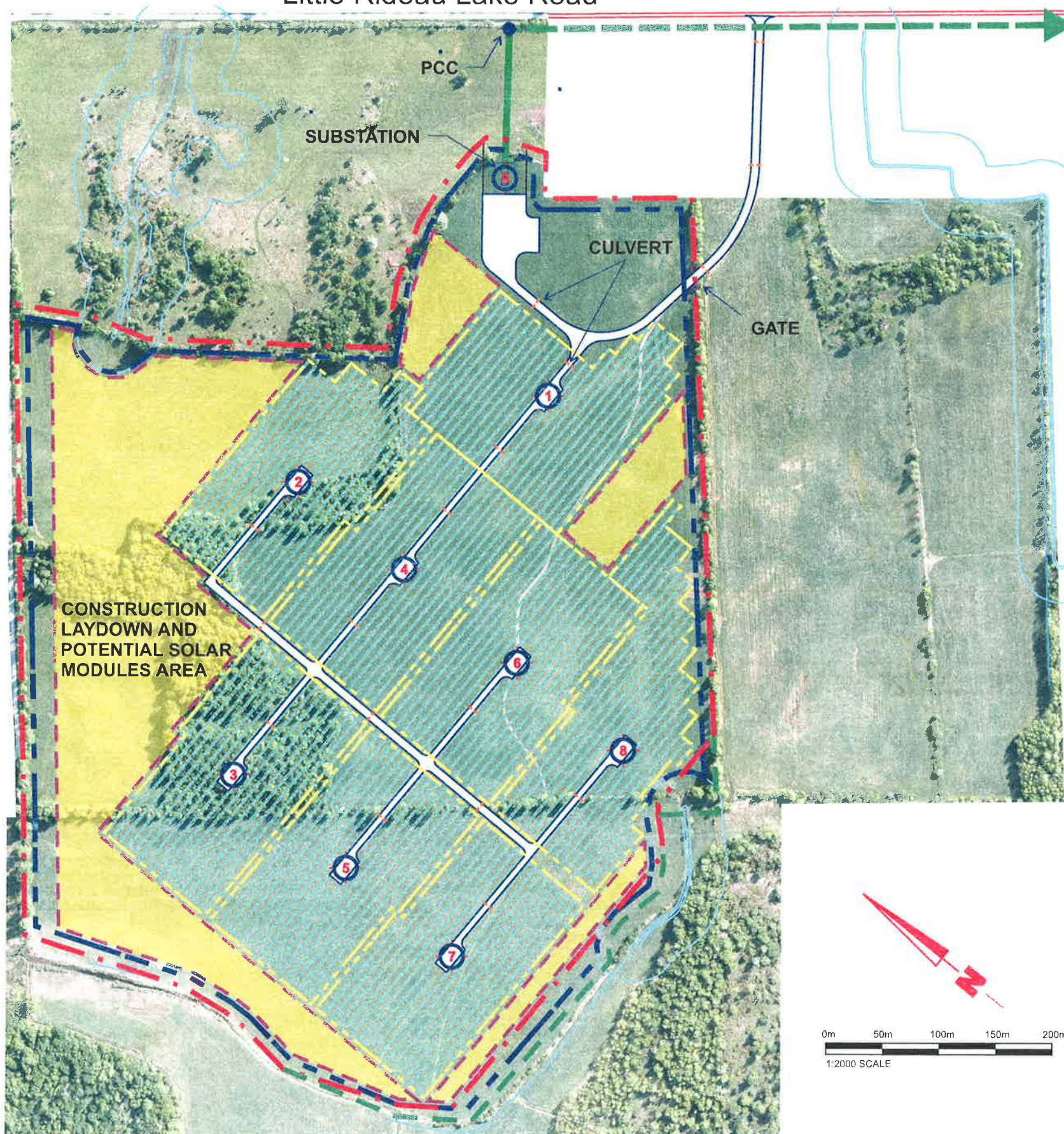
Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan				Contingency Measures	
			Methodology	Monitoring Locations	Frequency	Rationale		Reporting Requirements
<b>Operations Phase</b>								
Disruption of wildlife movement within watercourse	Mowing within 30 m of the watercourse will be timed for late fall.	Minimize impacts to wildlife movement.	Inspection to ensure activity occurs outside of timing restriction.	Within 30 m of watercourse west of the Project location.	Ongoing during maintenance activities.	Inspection will ensure restriction window is followed.	No requirement.	No contingency measure required.
Disruption of bullfrog breeding	No vegetation management will occur within 30 m of bullfrog concentration area.	Minimize impacts to bullfrogs.	Inspection to ensure restriction is observed.	Within 30 m of bullfrog concentration area.	Ongoing during maintenance activities.	Inspection will ensure restriction is followed.	No requirement.	No contingency measure required.
Incidental take of wildlife	Speeds to be limited on Project location and maintenance workforce to be made aware of potential for wildlife on the Project location. Visual monitoring of access roads for wildlife species.	Avoid occurrences of incidental take.	Occasions of incidental take to be reported as they are identified.	Throughout Project location.	Ongoing during maintenance activities.	Incidental take will be reported by maintenance staff to the on-site personnel responsible for environmental protection if incidents occur.	No requirement; unless the incident involves a species of conservation concern in which case reporting will be immediate to the MNR/EC.	If incidental take of species of conservation concern are recorded, work will be ceased until such time as a trained biologist can state that the species is no longer present in the area.
<b>Decommissioning Phase</b>								
Incidental take of wildlife	Daily visual monitoring of work areas and decommissioning equipment prior to start of work.  Speeds to be limited on Project location and construction workforce to be made aware of potential for wildlife on the Project location.	Avoid occurrences of incidental take.	Daily visual monitoring will be conducted by workers on foot of the areas to be worked on the given day.  Any wildlife observed will be either directed off of the Project location or collected by a designated employee and transported to the nearest available location off site and released.	Throughout decommissioning site.	Ongoing during decommissioning on a continued basis.	Incidental take will be reported by decommissioning workforce to the on-site personnel responsible for environmental protection if incidents occur	Reported in monthly environmental monitoring report during decommissioning, unless the species is a species of conservation concern in which case reporting will be immediate to the MNR/EC.	If incidental take of species of conservation concern are recorded, work will be ceased until such time as a trained biologist can state that the species is no longer present in the area.
Disruption of wildlife within watercourse animal movement corridor and bullfrog concentration area	Decommissioning activities within 100 m of these features to occur outside of the amphibian breeding period (generally April through June and September/October).	Minimize impacts to amphibian and reptile movement within watercourse and bullfrog breeding within wetland habitat.	Inspection to ensure decommissioning occurs outside of timing restriction.	Within 100 m of watercourse and wetland west of Project location.	Periodically during all decommissioning activities.	Inspection will ensure restriction window is followed.	Reported in monthly environmental monitoring report during decommissioning.	If avoidance of this period is not possible, a 60 m setback from the features will be in place during decommissioning activities in sensitive time periods, and workers will be instructed of prospect for increased wildlife activity within this portion of the Project location.
Dust generation and off-site transport	Standard site best management practices to prevent fugitive dust.	Minimize fugitive dust from the Project location.	Visual monitoring of visible dust plumes during decommissioning.	Throughout Project location.	Periodically during all decommissioning activities.	Visual dust monitoring would identify if dust plumes are an issue and where their source may be.	Reported in monthly environmental monitoring report during decommissioning.	Dust control measures implemented as necessary to prevent/minimize dust generation.



# Appendix A

## Site Layout

Little Rideau Lake Road



TO POINT OF CONNECTION  
 APROX. 910 m  
 (44.666046, -76.296564)

**LEGEND:**

- GRAVEL ACCESS ROAD
- GATE
- OVERHEAD 44 KV LINE
- OVERHEAD 44 KV LINE BY HYDRO ONE
- PROPERTY BOUNDARY
- CULVERT
- AVAILABLE AREA BOUNDARY / FENCE LINE & PROPERTY SETBACK @ 10 m (CONSTRUCTION SILT FENCE)
- CONSTRUCTION LAYDOWN AND POTENTIAL SOLAR MODULE AREA
- PCC (POINT OF COMMON COUPLING)
- 163 RACKS IN ONE GROUP, 3 STRINGS OF 11 PANELS PER RACK (SET @ 30° TILT WITH 7.6 METERS SPACING) 42,900 PANELS REQUIRED, AND 43,032 PANELS USED FOR LAYOUT. NOMINAL CAPACITY: 12 MW<sub>DC</sub> OR 10 MW<sub>AC</sub>
- 2 x 625 kVA INVERTER  
1 x 1250 kVA TRANSFORMER

REVISIONS			
NO	DATE	SYMBOL	REMARKS
P0	NOV 2010		ISSUED FOR CONSTRUCTION PLAN IN FORM
P1	FEB 2011		RELOCATION OF PVA WITH RED GROUP 1

STAMP	

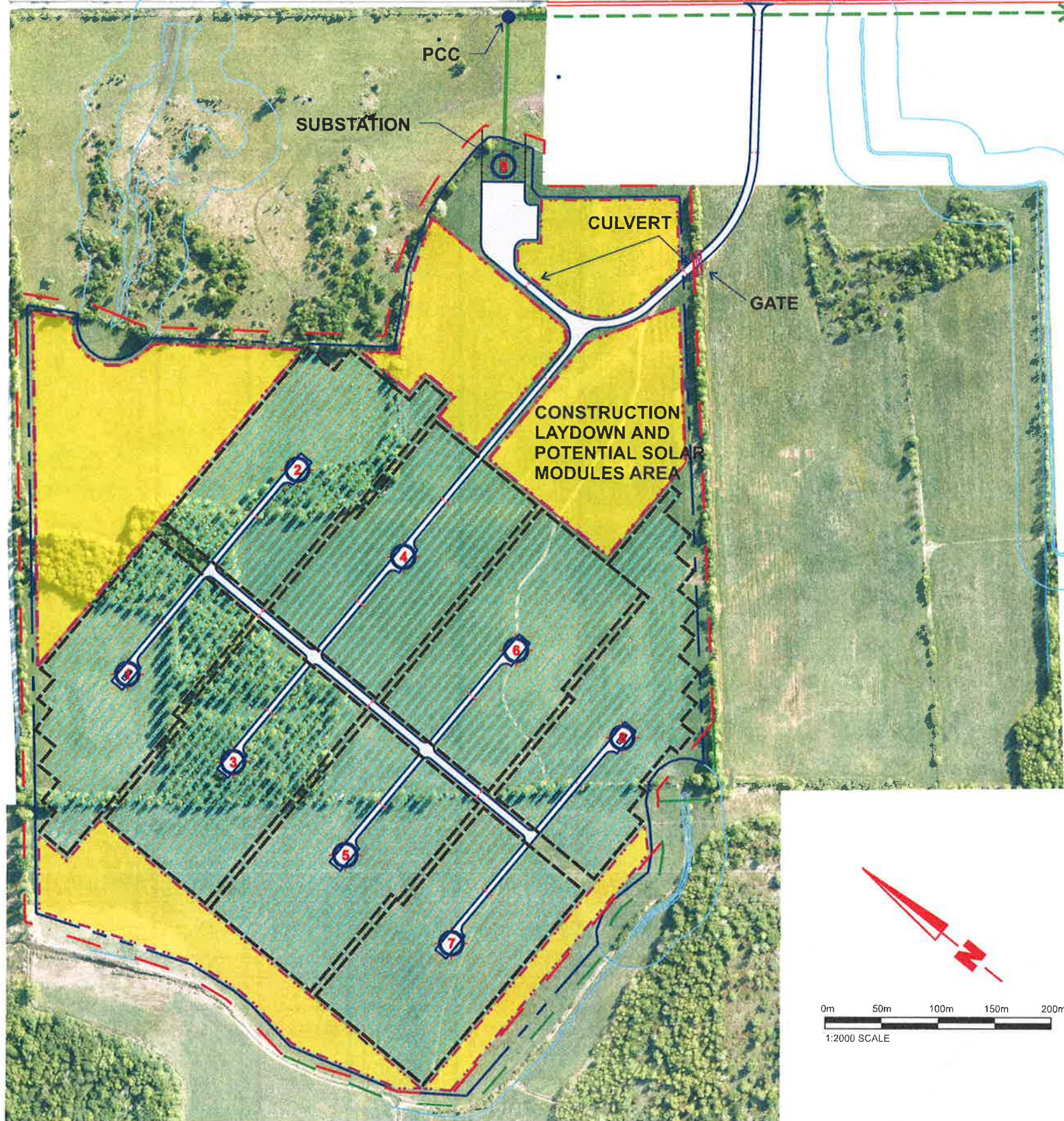
THIS DRAWING IS THE PROPERTY OF COGENERATION Associates Limited AND IS LOANED UPON CONDITION THAT IS NOT TO BE REPRODUCED OR COPIED IN WHOLE OR IN PART, OR USED FOR FURNISHING INFORMATION TO OTHERS, OR FOR ANY OTHER PURPOSES DETRIMENTAL TO THE INTEREST OF COGENERATION Associates Limited, AND WILL BE RETURNED UPON REQUEST.



PROJECT  
**NORTHLAND POWER SOLAR CROSBY**

DRAWN BY	TIEN PHAM	VERIFIED BY	
SCALE	N.T.S.	VERIFIED BY	
DATE	NOV 2010	APPROVED BY	
ISSUED FOR TENDER			
PROJECT No.			
TITLE	SOLAR FARM PROJECT SITE PLAN		
DRAWING No.	SP-02 (CROSBY)	Rev.	P1

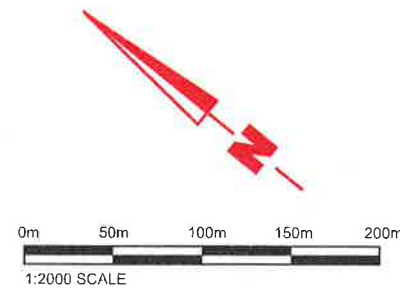
Little Rideau Lake Road



TO POINT OF CONNECTION  
 APROX. 910 m  
 (44.666046, -76.296564)

**LEGEND:**

- GRAVEL ACCESS ROAD
- GATE
- OVERHEAD 44 KV LINE
- OVERHEAD 44 KV LINE BY HYDRO ONE
- PROPERTY BOUNDARY
- CULVERT
- AVAILABLE AREA BOUNDARY / FENCE LINE & PROPERTY SETBACK @ 10 m (CONSTRUCTION SILT FENCE)
- CONSTRUCTION LAYDOWN AND POTENTIAL SOLAR MODULES AREA
- PCC (POINT OF COMMON COUPLING)
- 163 RACKS IN ONE GROUP, 3 STRINGS OF 11 PANELS PER RACK (SET @ 30° TILT WITH 7.6 METERS SPACING) 42,900 PANELS REQUIRED, AND 43,032 PANELS USED FOR LAYOUT. NOMINAL CAPACITY: 12 MW<sub>DC</sub> OR 10 MW<sub>AC</sub>
- 2 x 625 kVA INVERTER  
1 x 1250 kVA TRANSFORMER



REVISIONS			
NO	DATE	SYMBOL	REMARKS
P0	NOV 2010		ISSUE OF FOR CONSTRUCTION PLAN REPORT

STAMP	
-------	--

THIS DRAWING IS THE PROPERTY OF COGENERATION Associates Limited AND IS LOANED UPON CONDITION THAT IS NOT TO BE REPRODUCED OR COPIED IN WHOLE OR IN PART, OR USED FOR FURNISHING INFORMATION TO OTHERS, OR FOR ANY OTHER PURPOSES DETRIMENTAL TO THE INTEREST OF COGENERATION Associates Limited, AND WILL BE RETURNED UPON REQUEST.



PROJECT  
**NORTHLAND POWER SOLAR CROSBY**

DRAWN BY TIEN PHAM	VERIFIED BY
SCALE N.T.S.	VERIFIED BY
DATE NOV 2010	APPROVED BY

ISSUED FOR TENDER	PROJECT No.
TITLE SOLAR FARM PROJECT SITE PLAN	DRAWING No. SP-02 (CROSBY)
	Rev.P0

**PRELIMINARY LAYOUT  
 NOT FOR CONSTRUCTION**

