



McCann Solar Project

Draft Natural Heritage Environmental Impact Study

April 11, 2011



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

DRAFT Natural Heritage
Environmental Impact Study

McCann Solar Project

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Project Report

April 11, 2011

**Northland Power Inc.
McCann Solar Project**

DRAFT Natural Heritage Environmental Impact Study

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1. Introduction

Northland Power Solar McCann L.P. (hereinafter referred to as “Northland”) is proposing to develop a 10-megawatt (MW) solar photovoltaic Project, titled the McCann Solar Project (hereinafter referred to as the “Project”). The Project will be located on approximately 40 hectares (ha) of land, located just south of Big Rideau Lake 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 name plate 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 within 120 m of 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

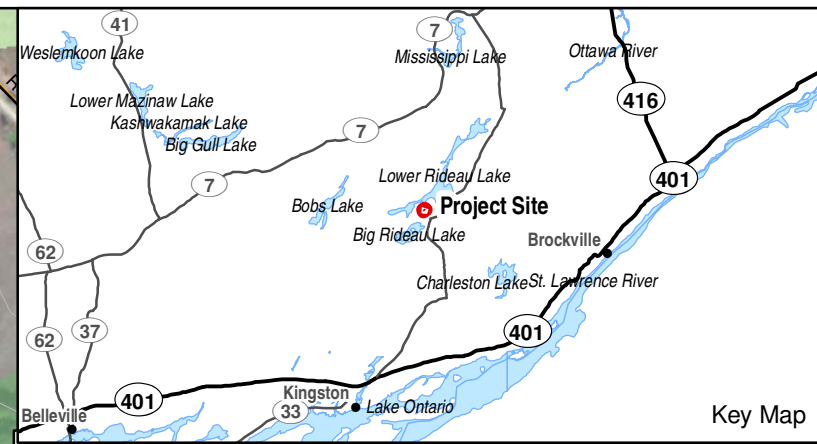
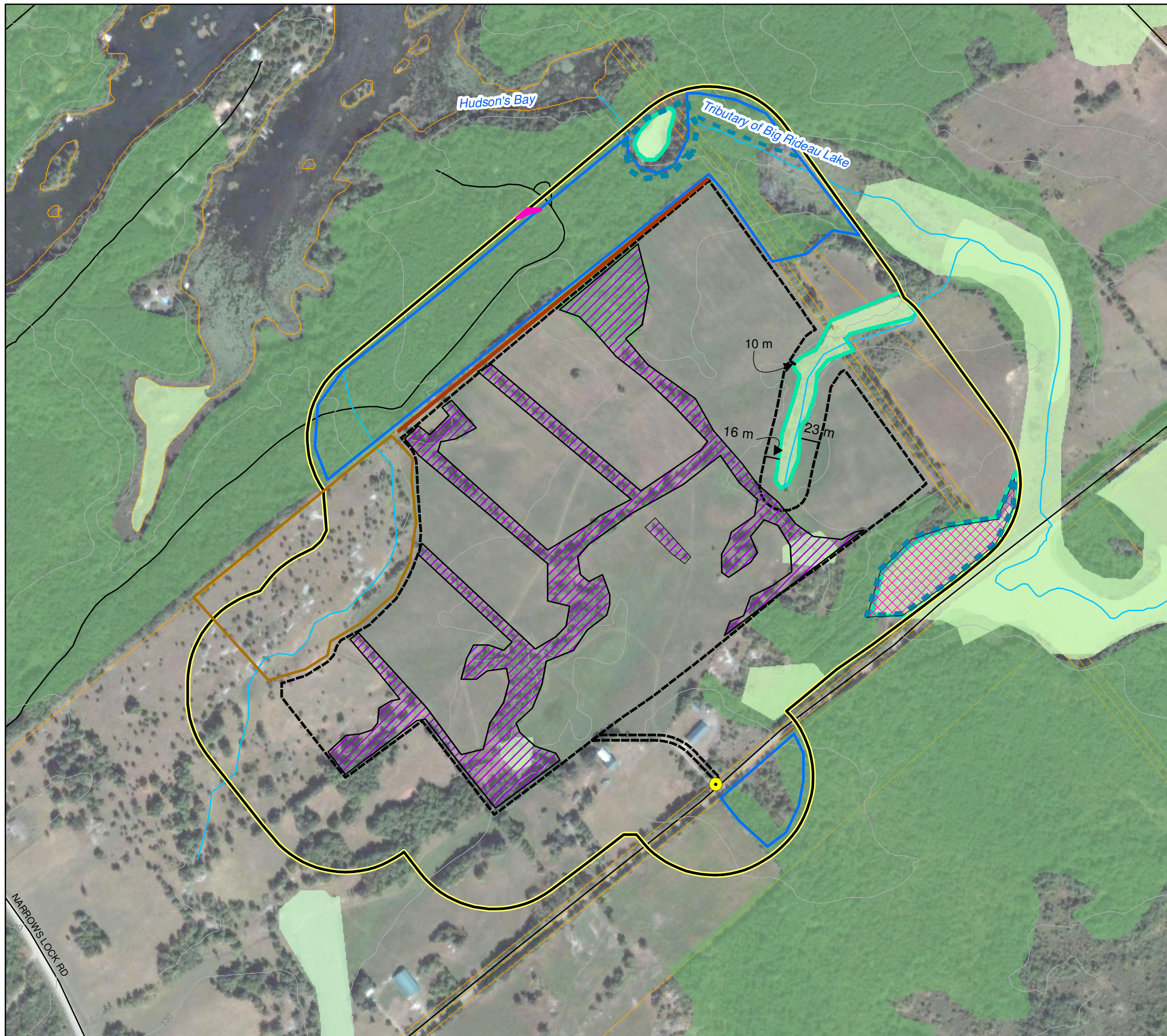
- whether the results of the analysis summarized in the (natural heritage records review) report prepared under subsection 25 (3) are correct or require correction, and identifying any required corrections
- whether any additional natural features exist, other than those that were identified in the (natural 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.



Legend

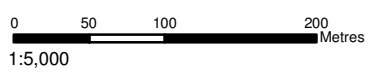
- Road
- +— Railway
- Transmission Line
- Topographic Contour (5 m interval)
- Watercourse
- ▭ Parcel
- ▭ Wetland

Significant Natural Heritage Features

- ▭ Cerulean Warbler Habitat
- ▭ Western Chorus Frog Habitat
- ▭ Provincially Significant Wetland (within 120 m)
- ▭ Eastern Ribbonsnake Habitat / Northern Map Turtle Habitat / Snapping Turtle Habitat / Animal Movement Corridor
- ▭ Significant Woodlands / Animal Movement Corridor / Habitat for Red-Breasted Nuthatch and Black-and-White Warbler/ Forest providing a high diversity of habitats
- ▭ Milksnake Habitat / Raptor Winter Feeding and Roosting

Project Components

- Connection Point With Existing Distribution Line
- ▭ Wildlife Habitat Enhancement Zone
- ▭ Vegetation Removal (Construction)
- ▭ 120 m from Project Location
- ▭ Project Location
- ▭ Woody Debris Placement and Hedgerow Planting



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.
McCann Solar Energy Project
Project Location and Significant Natural Heritage Features

Back of Figure

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.

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 (Hatch Ltd., 2010a) and Natural Heritage Site Investigations Report (Hatch Ltd., 2010b) confirmed that the Project will be constructed within 120 m of several natural features. Of these natural features, some were identified as significant natural heritage features during the evaluation of significance (Hatch Ltd., 2010c).

The natural heritage features that were classified as significant included:

- wetland community within 120 m treated as a provincially significant wetland
- woodlands located within 120 m of the northern and southern boundary of the Project location
- wildlife habitat found on and within 120 m of the Project location in
 - ◆ habitat for species of Conservation Concern (Milksnake, Eastern Ribbonsnake, Northern Map Turtle, Snapping Turtle, Western Chorus Frog, Cerulean Warbler)
 - ◆ woodlands within 120 m north and south of the Project location as significant animal movement corridors, forests providing a high diversity of habitats, and habitat for Black-and-white Warbler and Red-breasted Nuthatch
 - ◆ tributary of Big Rideau Lake as a significant animal movement corridor.

These significant natural heritage features and their locations 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 spring/summer 2011 with commissioning scheduled for January 2012. The activities associated with construction are summarized in Table 3.1.

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

Activity	Description
Access Road Construction	Activities associated with construction of internal access roads will include <ul style="list-style-type: none"> • removal of topsoil and subsoil • placement of granular base (at least 30 cm) • installation of ditches and culverts • installation of sediment and erosion control features as necessary • replacement of topsoil on the temporary access roads if the roads are to be removed.
Site Preparation	Activities associated with the site preparation will include <ul style="list-style-type: none"> • consultation with the land owner 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 • accumulation of uncut or shredded crops on the soil surface where topsoil is not stripped • installation of sediment and erosion control features as necessary.

Activity	Description
Installation of Support Structures	<p>Activities associated with the installation of support structures will include</p> <ul style="list-style-type: none"> • creation of drilled holes for the purposes of stabilizing the support structures of the photovoltaic arrays • construction of foundations and/or support structures beneath transformers, inverters and photovoltaic panels • installation of photovoltaic panels on fixed racking structures • inspection of foundation construction and of support structures prior to the installation of photovoltaic modules, and wiring.
Underground Cable Installation	<p>Activities associated with underground cable installation will include</p> <ul style="list-style-type: none"> • 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). • 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.
Distribution Line Erection	<p>Activities associated with distribution line erection will include</p> <ul style="list-style-type: none"> • construction of an underground distribution line which transports the electricity from the inverters to the transformer • erection of a overhead distribution connection from the transformer to transport the generated power from the Project to the 44-kV connection point • utilization of new or existing wooden poles.
Site Security	<p>Activities associated with site security will include</p> <ul style="list-style-type: none"> • installation of gate and fence on the Project location. The fence will be installed such that following settlement of earth beneath the fence there will be a 2-in. gap to allow for passage of small wildlife • installation of additional security measures (e.g., security cameras, motion sensor flood lighting) if deemed necessary.

3.2 Operation

The expected commercial operation date (COD) is January 12, 2012. 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. All maintenance materials such as hydraulic fluids, will be brought on site as required and no on-site storage will occur. 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.

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 wildlife habitat 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 features 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 features. If the moisture regime of the receiving natural features was altered significantly, the composition of these communities 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 in Section 4.2.

4.1.1 Construction Phase

4.1.1.1 Direct Encroachment on the Natural Heritage Features

Construction of the Project will not require direct encroachment onto the wetland community, animal movement corridors, forest providing a high diversity of habitats, or the habitat for Eastern Ribbonsnake, Northern Map Turtle, Snapping Turtle, Western Chorus Frog, Cerulean Warbler, Red-breasted Nuthatch or Black-and-White Warbler. Further, of these features, the wetland community (including Western Chorus Frog, Northern Map Turtle, Snapping Turtle and Eastern Ribbonsnake habitat), the woodland south of the Project location (including forest providing a high diversity of habitat, Black-and-white Warbler and Red-breasted Nuthatch habitat, and animal movement corridor) are located a minimum of 30 m from the Project location. It is not possible to move Project components away from those features within 30 m of the Project location as a result of space limitations. In order to ensure that there is no encroachment on the feature directly, the extent of the work area in proximity to these features will be demarcated (through the use of caution tape/temporary fencing) and all construction workforce will be advised of the features and that no disturbance is to occur beyond the bounds of the demarcated area.

Construction of the Project will require minor encroachment into the significant woodland on the northern extent of the Project location. The areas where clearing will be required are not old growth forests, but are comprised of a young forest community of white ash, sugar maple, American elm, and black cherry. The amount of vegetation removed (less than 1 ha) will represent less than 1% of the total woodland area, based on the size of the cleared area and the overall woodland size, as identified in Hatch Ltd. (2010c). Further, the portions that are proposed to be cleared are areas on the fringe of the woodland that do not contribute to the provision of forest interior habitat, Cerulean Warbler habitat, forest providing a high diversity of habitat, and are considered marginal habitat for Red-breasted Nuthatch and Black-and-white Warbler given the location on the edge of the woodland. This vegetation removal will not impact the overall designation of significance of the woodland, and is determined to have a negligible effect on the woodland itself.

In order to compensate for the loss of habitat within the woodland, additional wildlife habitat compensation measures are proposed which include the following:

- Woody debris associated with clearing activities will be placed around the perimeter of the existing forest, outside of the fence to provide wildlife feeding habitat, as well as cover for wildlife species, such as snakes.

- Opposite the northwestern corner of the Project location, a wildlife habitat enhancement program will be undertaken within the 4.5 ha of land present in this area. This will include planting of hedgerows of poplar, red oak, and white ash along the edge of the area, with a light scattering of plantings of ash and oak throughout the area. This will enhance the raptor winter feeding and roosting potential of this area, along with overall wildlife functions.
- Similar to the above, a hedgerow of poplar, red oak, and white ash will be planted along the Northern edge of the site to recreate raptor perch habitats in this area.

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

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 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 the year, potential impacts on the significant natural features are expected to be limited.

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 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 within 30 m of the significant woodland/animal movement corridor/Red-breasted Nuthatch and Black-and-white Warbler habitat/Forest providing a high diversity of habitats. Mitigation measures identified with respect to construction activities will prevent accidental encroachment onto significant natural heritage features within 120 m of the Project location.

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. However, following site restoration, habitat present on the Project location will be returned to pre-construction conditions that would be currently present.

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 effect to the natural features.

4.2 **Wildlife Communities**

Project activities may result in direct or indirect effects on wildlife communities.

4.2.1 **Construction Phase**

In order to minimize the potential for incidental take of wildlife, speeds on access roads of the Project location will be restricted. Further, daily visual monitoring of the Project location and construction machinery will be completed to search for reptiles and amphibians to ensure that potential impacts to these species are minimized. 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 allowed to pass freely through the Project location, 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 installation of the fence may trap wildlife within the Project location, such as deer and coyote species that may venture 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 (i.e., in the case of deer) or collected by a designated employee [i.e., in the case of species such as turtles (if present)], 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.

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 significant natural features adjacent to the Project location may retreat from these areas as a result of the disturbance, however sufficient retreat habitat exists that there will be no impact on the provision of wildlife habitat within the woodland north of the Project location.

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 relatively infrequently during the year, this would be consistent with existing disturbances on much of the Project location due to agricultural operations. Further, the infrequent requirement for an on-site presence, and the low levels of noise emitted from Project components, will result in negligible impacts on wildlife communities within 120 m of the Project location as a result of disturbance.

In order to minimize the potential for incidental take of wildlife, speeds on access roads of the Project location will be restricted. In addition, visual monitoring of the access roads will be completed, and 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 allowed to pass freely through the Project location, 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.

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. Annual mowing may be required within the 30-m setback from the watercourse and wetland which is surrounded by the Project location in the southeastern corner (see Figure 1.1 for location). Mowing within this area will be scheduled for late fall (i.e., late October/November) in order to ensure that most wildlife species will have departed this area prior to the potential impact.

There will be limited terrestrial animal movement across the Project location as a result of the fence installed along the perimeter of the Project location. A 2-in. gap will remain present at the base of the fence to permit movement of small wildlife (mammals, snakes, amphibians, etc) across the Project location without barrier. Movement within the remainder of the animal movement corridor is expected to remain as currently existing. Movement may move slightly away from the boundary of the Project location, however the width of the corridors in this area means that there will ultimately no impact on the function of the animal movement corridor.

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 on or 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.

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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
Construction Phase								
Clearing within wooded areas.	Demarcation of work areas. Restrictions on entry into natural areas beyond work areas.	Minimize disturbance to remaining vegetation community.	Visual inspection of work areas.	Throughout construction sites.	Daily during clearing activities within wooded areas.	Visual inspection will confirm that bounds of work areas are respected.	Reported in monthly environmental monitoring report during construction.	Contractor to be advised if they have worked beyond bounds of work areas. These sites to be replanted with trees to encourage reforestation.
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.
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 site 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.
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.
Operations Phase								
Incidental take of wildlife	Speeds to be limited on Project location and maintenance workforce to be made aware of	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	No requirement; unless the incident involves a species of conservation concern in which case	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

Negative Effect	Mitigation Strategy	Performance Objective	Monitoring Plan				Contingency Measures	
			Methodology	Monitoring Locations	Frequency	Rationale		Reporting Requirements
	potential for wildlife on the Project location. Visual monitoring of access roads for wildlife species.					environmental protection if incidents occur.	reporting will be immediate to the MNR/EC.	longer present in the area.
Decommissioning Phase								
Incidental take of wildlife	Daily visual monitoring of work areas and decommissioning equipment prior to start of work. Speeds to be limited on Project site 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 site 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.
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 construction.	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.

6. Construction Plan Report

The REA Regulation requires proponents of Class 3 solar projects to prepare a Construction Plan Report (CPR). Hatch 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 (Hatch Ltd., 2010a), the Natural Heritage Site Investigation (Hatch Ltd., 2010b) and the Evaluation of Significance (Hatch Ltd., 2010c), there is significant wildlife habitat and significant woodlands located on or within 120 m of the Project location, and wetland habitats treated as provincially significant 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 these significant natural features. 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 to an acceptable level. 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., Moncreif, J.F., Vorhees, W.B. 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. McCann Solar Project – Natural Heritage Records Review Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar McCann L.P. August 2010.

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

Hatch Ltd. 2010c. McCann Solar Project – Evaluation of Significance Report. Prepared for Northland Power Inc. on behalf of Northland Power Solar McCann L.P. July 2010.

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

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

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

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

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

Appendix A
Site Layout from the Construction Plan Report
(Hatch Ltd., 2010d)



CONSTRUCTION LAYDOWN AND POTENTIAL SOLAR MODULES AREA

GATE
CULVERT
SUBSTATION
PCC

TO POINT OF CONNECTION
APROX. 360 m
(44.675992, -76.280417)

McCann Road

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_{DC} OR 10 MW_{AC}

2 x 625 kVA INVERTER
1 x 1250 kVA TRANSFORMER



REVISIONS			
NO	DATE	SYMBOL	REMARKS
P0	DEC 2010		ISSUED FOR CONSTRUCTION PLAN REPORT
P1	DEC 2010		LAYOUT CHANGED, INVERTER 4, 6 & 8 RANG SUBSTATION & RELOCATED

STAMP

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PROJECT
NORTHLAND POWER SOLAR McCANN

DRAWN BY TIEN PHAM	VERIFIED BY
SCALE N.T.S.	VERIFIED BY
DATE DEC 2010	APPROVED BY
ISSUED FOR TENDER	

PROJECT No.
TITLE SOLAR FARM PROJECT SITE PLAN
DRAWING No. **SP-02 (McCANN)** Rev.P1

**PRELIMINARY LAYOUT
NOT FOR CONSTRUCTION**

