Agricultural Impact Assessment
Killarney Bay Road, Geographic Township of Fenelon
City of Kawartha Lakes
CCS Project No. 2602

May 2015

Prepared for: Invenergy Canada
Prepared by: Clark Consulting Services

1.0 Introduction

Clark Consulting Services (CCS) was retained by Invenergy Canada to prepare an Agricultural Impact Assessment for land intended for a solar PV generating facility and to determine the agricultural impacts of changing the use of part of the subject lands to permit a solar PV installation. Council’s Resolution #CR2013-511 requests for municipal support for solar projects located on lands with at least 6 inches of top soil on Canada Land Inventory Class 1-4, 5 and 6 soils, the proponent will be required to provide a report from a qualified Agrologist that the proposal will have minimal impact to agricultural production. This study will review surrounding land uses, review the potential for agricultural conflict, and describe if the change in use will impact the local agricultural community.

1.1 Location

The Property is located in Lot 9, Concession 4, in the geographic Township of Fenelon, City of Kawartha Lakes, at Killarney Bay Road north of Cambray Road. Property size is estimated at 74 hectares (183 ac). The location is illustrated in Figure 1 - Location, created from Google Maps.
Figure 1 - Location

Figure 2 - Property and Study Area Limits
1.2 PROPERTY DESCRIPTION

The west half of the site is open and flat with numerous depressed wet areas. There are piles of rock shards throughout the western portion of the site due to an early attempt to cultivate the lands. There is exposed bedrock on the surface of a substantial portion of the property. The site dips along an irregular north south ridge into an extensive wooded wet area.

2.0 AGRICULTURAL IMPACT ASSESSMENT INFORMATION

In preparing the study materials for this assessment, CCS has reviewed:

- The Provincial Policy Statement (P.P.S.) 2014
- The City of Kawartha Lakes Official Plan
- The Soil Survey of Victoria County (CANSIS, Agriculture and Agri-food Canada)
- The Agricultural Information Atlas – Ontario Ministry of Natural Resources and Land Information Ontario
- CCS Agricultural Land Evaluation, May 26, 2015

3.0 AGRICULTURAL CAPABILITY

3.1 AGRICULTURAL CAPABILITY ASSESSMENT AND SOIL STUDY

An Agricultural Land Evaluation was completed by Clark Consulting Services on May 26, 2015. The site visit on April 28, 2015, included a pedestrian review with shovel test pitting and visual observations of the accessible areas of the property. Study methodology met the Ontario Power Authority, the Ontario Ministry of Energy and the Ontario Ministry of Agriculture, Food and Rural Affairs requirements for soil studies. These requirements, including minimum qualifications for Land Evaluators, can be found at: http://www.energy.gov.on.ca/en/fit-and-microfit-program/fit-soilstudy/.

The final study, presented in report form, includes a review of current Canada Land Information (CLI) mapping showing the published CLI classifications of the land and a detailed refinement of soil classification based upon the findings of the pedestrian review and shovel test pitting.

A description and review of the various classes and subclasses of soil under the CLI system can be found at http://sis.agr.gc.ca/cansis/nsdb/cli/classdesc.html and is included in this report as Attachment C.

The report shows that the current published and accepted CLI mapping identifies the soils as Class 6 and Class Organics. Class 6 soils are described as: “soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.” A further description in the Agriculture and Agri-food website says that Class 6 soils "Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible. The soils may provide some sustained grazing for farm animals, but the limitations are so severe that improvement by use of farm machinery is impractical, or the terrain may be unsuitable for use of farm machinery, or the soils may not respond to improvement, or the grazing season may be very short."
Class Organic soils are described as: "Organic Soils (not placed in capability classes)." A further description in the Agriculture and Agri-food website says that Organic soils, when cultivated, present special management problems which are related to seed bed population, cold temperatures, water retention characteristics, and nutrient supply.

At the time of the site visit, the subject property was unmaintained with the exception of a small cottage near the centre of the site just inside the wooden area.

Soils
Agriculture and Agri-Food Canada published a series of soil surveys arranged by county within the Province of Ontario. The subject lands are shown on the Victoria County Soils Survey on the Soil Map North Sheet.

The soils map shows the subject land as comprised of Farmington loam (Fl), Otonabee loam (Ol) and Muck (M). Farmington Loam is loamy till over limestone rock that is variable and moderately stony. The parent materials are very stony loam till. These soils are mainly used for grazing. As grazing lands, these soils produce fair pasture during spring and fall but pasture vegetation burns up badly during the summer months. Evidence of attempted stone removal is prevalent on the west portion of the subject lands. No areas on the subject lands have been successfully stripped of stones in order to cultivate. A steep ridge was found to divide the soil classification near the centre of the property making subject lands to the west Farmington loam and those to the East of the ridge a wooden area classified as Muck.

Muck is found in old glacial spillway channels and other depressional areas. They have eighteen or more inches of organic material overlying the mineral soil. The muck soils have not been utilized for agriculture in the County and are covered by tree vegetation. Visual assessment of this land was a viable means for evaluation due to the lands heavy coverage in tree vegetation and their lack of utilization for agriculture. Please see Figure 3 below for a detailed illustration of our findings with regards to soil classification on this property and Attachment E for a detailed description of each illustrated test pit and visual assessment.

A common improvement to agricultural land is artificial drainage of the land. Such an improvement can make the difference between using the land as pasture and using it for producing crops. In this case the Farmington loam soils on the subject property are too shallow to permit the placement of drainage pipes, and so this type of improvement is impractical.
4.0 **Minimum Distance Separation (MDS)**

Minimum Distance Separation (MDS) is a planning tool developed by the Ontario Ministry of Agriculture, Food and Rural Affairs and is used where a non-farm development application may impact neighbouring livestock facilities or where a proposed livestock facility may impact existing non-farm uses. An MDS review
is guided by the MDS Implementation Guidelines published by OMAFRA and found at http://www.omafra.gov.on.ca/english/landuse/guide_p4.htm#i2. MDS applies to livestock facilities but does not apply to a variety of farm or livestock uses including pastures, feed storages, field shade shelters, machinery sheds, or temporary nutrient storage facilities.

MDS is applied at the time of planning or development review for a proposed new development. MDS splits new development into two categories called Type A and Type B Developments. Type B development is described as a development with a higher density of human occupancy, habitation or activity.

CCS requested an interpretation of the application of MDS from staff at OMAFRA where a non-rooftop solar PV installation is proposed. Our direction from OMAFRA is that renewable energy projects are typically considered infrastructure and as such do not trigger an MDS setback. CCS has completed a review of barns surrounding the subject lands for the purposes of establishing the level of activity within the local agricultural community. In accordance with Ministry directives, an MDS review has not been completed.

5.0 AGRICULTURAL LAND USE STUDY

CCS conducted a ground-level agricultural land use survey of the subject land at a distance of 1,000 metres around the subject lands. The purpose of the survey was to identify active and vacant farm land, active livestock operations, vacant or empty livestock barns, cropland utilization, areas of pastureland, local investment in farming including buildings, fencing, woodlot management and field management.

5.1 AREA OF REVIEW

In preparing the Land Use Review, CCS used a 1,000 metre review area around the subject lands. This area includes approximately 826 hectares or almost 2,041 acres.

The Land Use review was undertaken by CCS on April 28, 2015. The review of the area included locating and observing vacant and active livestock barns and operations, current or seasonal use of farm land, location of non-farm uses including residences and commercial operations, roadways and water bodies or watercourses.

The analysis of the review revealed the following land uses:

Review Area: 1,000 m distance in all directions around the subject lands
Review area including Subject Lands is approximately 826 ha (2,041 ac) in size
Review area includes approximately 74 ha (183 ac) of the Subject Lands.

Active Livestock Operations:
Within the 1,000 metre review area we noted three livestock barns. They are shown on the Land Use map as Barns D, R and H. These barns are active livestock facilities.

Barn D represents two barns, as well as two covered shelters located north-east of the corner of Killarney Bay Road and Chambers Road. One barn is small and old while the other is new and of substantial size. The land surrounding the barns is best suited for pastureland and the farming operation itself could house up to 40 beef cattle.
Barn R is located off of Chambers road north-east of the subject lands. It is a former dairy barn that now houses approximately 12 horses. The land to the north of the barn is a woodland while lands to the south appear to be cropland and rough pasture.

Barn H is located on Robin Road to the south of the subject lands. It is a former dairy barn that is currently being used for horses. On the site there is also a horse arena in very good condition. At the time of the land use survey there looked to be approximately 15 horses on this property.

The presence of active farm operations using dairy barns to support beef cattle and horses show that the area has a history of dairy farming but that few operations still exist dedicated to this purpose.

**Crop or Hay Production**

During the site visit, it was noted that hay production may be carried out on small areas of land. The Victoria County Soils Survey and Canada Land Inventory classification of soils describe the soils in the review area as Farmington loam, Otonabee Loam and Muck that carry classifications of Class 6 and Organic soils. The usable land noted during the survey is located in the Farmington Loam and this soil is described as a shallow wet loam till over limestone. Areas of limestone outcrop were visible in the area and pockets of better or very shallow soil are expected in this area.

The Canada Land Information describes Class 6 soils as "Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible". (Overview Of Classification Methodology for Determining Land Capability For Agriculture, Agriculture and Agri-Food Canada: http://sis.agr.gc.ca/cansis/nsdb/cli/classdesc.html).

From the land use survey it appeared that areas of the soils shown as Class Organic are separated from those shown as Class 6 by a steep ridge and have not been utilized for agriculture. Based on the description of the soils, the land would be covered by tree vegetation and organic material that is partially decomposed remains of sedges and trees.

**Vacant Land**

A large portion of the review area includes land supporting cedar, juniper, scrub, and rough grasses. This is an indication of rocky and wet soils. These vacant lands make up approximately 287.84 ha. There are pockets of land within this area where the land has been cleared for other purposes. There may be areas of managed woodlots within the better areas. However, these lands are generally not active or productively farmed.

**Residential**

The Land Use review indicates that there is a limited active farming community within the review area. This is generally seen as beef production and opportunities for horse stabling. A limited part of the usable farmland may be used to produce hay from a first cut or perhaps a second cut during summers with enough moisture to keep the land from becoming droughty. An area to the west of the property at Barn H appears to have opportunity to grow a reasonable crop of hay, and may, during acceptable growing seasons, be able to grow a limited acreage of crops such as beans or corn.
5.2 **Types of Land Use Observed**

During the site visit, CCS noted a variety of uses for land within the 1,000 metre review area. We have generalized the lands uses into Woodland (includes woodlots and wet/dry scrubland), Residential, Cropland (hay, corn, soy beans), Rough Pasture (shallow wet soils with limestone outcrop) and Scrap Yard. Areas that may be capable of growing crops would not be disturbed by the proposed development.

The distribution and proportion of the lands within 1 kilometre of the site are illustrated in the following table:

<table>
<thead>
<tr>
<th>Types of Land Use</th>
<th>Area in Hectares</th>
<th>Area in Acres</th>
<th>Percentage of Total Land Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Woodland</td>
<td>287.8</td>
<td>711.2</td>
<td>34.8%</td>
</tr>
<tr>
<td>Residential</td>
<td>34.6</td>
<td>14.0</td>
<td>4.2%</td>
</tr>
<tr>
<td>Cropland</td>
<td>202.8</td>
<td>501.2</td>
<td>24.5%</td>
</tr>
<tr>
<td>Rough Pasture</td>
<td>292.4</td>
<td>722.6</td>
<td>35.4%</td>
</tr>
<tr>
<td>Scrap Yard</td>
<td>8.4</td>
<td>20.8</td>
<td>1.0%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>826.1</strong></td>
<td><strong>2041.2</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
6.0 **LOCAL FARMING OPERATIONS**

**Local Constraints to Agriculture**
The lands within the 1,000 metre review area are comprised of rough pasture lands, residential lands, wet wooded areas and some areas suitable for hay, soy beans and corn. According to the CLI mapping and from observations during the site visits, lands to the north and south of the woodland areas that cover approximately half of the subject property and extend across the review area appear to have better soils and be more productive hay or cropland.

Mapping of the use of artificial drainage tiling in the local area is found on the Agricultural Information Atlas. To the south-west of the property there are a number of constructed drains outside the scope of our review area. There are no tile drain areas within the subject lands. Limestone outcrop on these lands inhibits the use of artificial drainage as a solution for the wet soils.

**Type and Intensity of Local Farming Operations**
There are 3 active farms identified within the review area, two of which are used for horses and one for cattle. All three of these barns are situated at the edge of the review site and will not be affected by the proposed development.

**Past Local Farming Practices**
The repurposing of dairy barns for other uses within the area point toward dairy production to be the previously predominant farming activity.

**Local Investment in Farming**
A farming community still exists in the greater area of Kawartha Lakes evidenced by the livestock sales yard at Woodville and the investment in farm buildings and machinery. The investment is more obvious in areas south-west of the subject lands on properties with greater depth of soil above bedrock. Within the review area, investment in buildings, equipment and fencing appear to be considerably less than these other areas.

Apart from a few barns still used to house horses and sheep or raise beef, many older barns in the area appear to be empty, used for storage or are used to house small numbers of horses or small livestock.

7.0 **PROVINCIAL POLICY STATEMENT (PPS) 2014**

The Province presented the Provincial Policy Statement in April 2014 as a document to guide development within the Province including rural development. Agriculture policies contained within the PPS are found in Section 2.3. This document provides for the protection of prime agricultural areas. These are areas predominated by prime agricultural lands and may include specialty crop areas. Prime agricultural areas are designated in the CKL Official Plan. Permitted uses in a prime agricultural area generally include agricultural and agriculture-related uses and on-farm diversified uses. These permitted uses should be compatible with, and not hinder, surrounding agricultural operations. The subject property is designated Rural and Environmental Protection.

8.0 **CONCLUSIONS**
Clark Consulting Services was retained by Invenergy Canada to review a parcel of land in the City of Kawartha Lakes and to prepare an Agricultural Impact Study. The result of a Pre-Consultation was that a further study to determine if there was an impact to agriculture by the development of a solar project on the subject lands. CCS have completed a Site Specific Soil Study and Agricultural Land Review and have reviewed the area's livestock facilities and land use in preparation of this Impact Study.

The land to be used as a solar PV installation is currently not being cultivated. The review undertaken shows that the parcel does not have very productive soils and that the use as pasture for beef cattle may be the best agricultural use of these lands. The soils across the property are shallow and stony and will not consistently produce a crop of hay with multiple cuts throughout the growing season.

The removal of a portion of these lands from agricultural production during the proposed life of the solar installation would not remove good quality productive cropland from the local farming community. The property does not show investment in agriculture. These soils are generally very shallow, wet and stony and could not support a heavy crop of hay.

Sincerely,

Bob Clark,  P.Eng., P.Ag., MCIP, RPP, OLE
Principal Planner

ATTACHMENT “A”
Agricultural Land Evaluation

ATTACHMENT “B”
City of Kawartha Lakes - Council Resolution

ATTACHMENT “C”
Agriculture and Agrifood Canada
Overview Of Classification Methodology for Determining Land Capability For Agriculture

ATTACHMENT “D”
Curriculum Vitae of Robert K. Clark
ATTACHMENT “A”

Agricultural Land Evaluation
City of Kawartha Lakes – Council Resolution CR2013-511:

Council passed a resolution that requests for municipal support for solar projects located on Canada Land Inventory Class 1 through 4, and Class 5 and 6, if there is at least 6 inches of topsoil where it may be productive for agricultural purposes, be rejected. As such, the proponent will be required to provide a report from a qualified Agrologist that the proposal will have minimal impact to agricultural production.
Overview Of Classification Methodology for Determining Land Capability For Agriculture

The CLI agriculture product shows the varying potential of a specific area for agricultural production. It indicates the classes and subclasses according to the Soil Capability Classification of Agriculture, which is based on characteristics of the soil as determined by soil surveys. The mineral soils are grouped into 7 classes and 13 subclasses according to the potential of each soil for the production of field crops. Organic soils are not a part of the classification and are shown as a single separate unit (0).

These agricultural capability maps can be used at the regional level for making decisions on land improvement and farm consolidation, for developing land-use plans, and for preparing equitable land assessments.

Some of the important factors on which agricultural classification is based are: 1) The soils will be well managed and cropped, under a largely mechanized system. 2) Land requiring improvements, including clearing, that can be made economically by the farmer, is classed according to its limitations or hazards in use after the improvements have been made. Land requiring improvements beyond the means of the farmer is classed according to its present condition. 3) The following are not considered: distances to marker, kind of roads, location, size of farms, type of ownership, cultural patterns, skill or resources of individual operations, and hazard of crop damage by storms. 4) The classification does not include capability of soils for trees, tree fruits, small fruits, ornamental plants, recreation, or wildlife. 5) The classes are based on the intensity, rather than kinds, of their limitations for agriculture. Each class includes many kinds of soil, and many of the soils in any class require unique management and treatment. 6) Land given a capability classification of 6 or 7 will never warrant irrigation since the benefits derived from irrigation would be negligible. For this reason, capability Classes 6 and 7 will always appear in the non-irrigated portion (Classes A to C) of a land unit classification.

You can find out more about the CLI mapping project at [geogratis](http://sis.agr.gc.ca/cansis/nsdb/cli/classdesc.html).

Land Capability Class Descriptions for Agriculture

The classes indicate the degree of limitation imposed by the soil in its use for mechanized agriculture. The subclasses indicate the kinds of limitations that individually or in combination with others, are affecting agricultural land use.
**Classes**

Note: To see a further description of each class, select each class in the following table.

<table>
<thead>
<tr>
<th>Classes</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class 1</strong></td>
<td>Soils in this class have no significant limitations in use for crops.</td>
</tr>
<tr>
<td><strong>Class 2</strong></td>
<td>Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices.</td>
</tr>
<tr>
<td><strong>Class 3</strong></td>
<td>Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices.</td>
</tr>
<tr>
<td><strong>Class 4</strong></td>
<td>Soils in this class have severe limitations that restrict the range of crops or require special conservation practices.</td>
</tr>
<tr>
<td><strong>Class 5</strong></td>
<td>Soils in this class gave very severe limitations that restrict their capability in producing perennial forage crops, and improvement practices are feasible.</td>
</tr>
<tr>
<td><strong>Class 6</strong></td>
<td>Soils in this class are capable only of producing perennial forage crops, and improvement practices are not feasible.</td>
</tr>
<tr>
<td><strong>Class 7</strong></td>
<td>Soils in this class have no capacity for arable culture or permanent pasture.</td>
</tr>
<tr>
<td><strong>Class 0</strong></td>
<td>Organic Soils (not placed in capability classes).</td>
</tr>
</tbody>
</table>
**Subclasses**

Note: To see a further description of each subclass, select each class in the following table.

<table>
<thead>
<tr>
<th>Subclasses</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Adverse climate</td>
</tr>
<tr>
<td>D</td>
<td>Undesirable soils structure and/or low permeability</td>
</tr>
<tr>
<td>E</td>
<td>Erosion</td>
</tr>
<tr>
<td>F</td>
<td>Low fertility</td>
</tr>
<tr>
<td>I</td>
<td>Inundation by streams or lakes</td>
</tr>
<tr>
<td>M</td>
<td>Moisture limitations</td>
</tr>
<tr>
<td>N</td>
<td>Salinity</td>
</tr>
<tr>
<td>P</td>
<td>Stoniness</td>
</tr>
<tr>
<td>R</td>
<td>Consolidated Bedrock - this subclass includes soils where the presence of bedrock near the surface restricts their agricultural use. Consolidated bedrock at depths greater than 3 feet from the surface is not considered as a limitation except on irrigated lands where a greater depth of soil is desirable.</td>
</tr>
<tr>
<td>S</td>
<td>Combination of subclasses</td>
</tr>
<tr>
<td>T</td>
<td>Topography</td>
</tr>
<tr>
<td>W</td>
<td>Excess water</td>
</tr>
<tr>
<td>X</td>
<td>This Subclass is comprised of soils having a limitation resulting from the cumulative effect of two or more adverse characteristics</td>
</tr>
</tbody>
</table>
ATTACHMENT “D”

Curriculum Vitae of Robert K. Clark