



Belleville North Solar Project

Draft Stage 1 and 2 Archaeological Assessment Report

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**Stage 1 and 2 Archaeological Assessment
Belleville North Solar Project
(FIT – F195955)
Part Lot 65, Concession 5
Hillier Township
Prince Edward County, Ontario**

Prepared for
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&
The Ontario Ministry of Tourism and Culture

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TABLE OF CONTENTS

1.0	Introduction	1
2.0	Location	1
3.0	Geography	3
4.0	Archaeological Potential	4
5.0	Previous Archaeological Research	5
6.0	Historic Land Use Summary	5
7.0	Field Methods	10
8.0	Results and Recommendations	14
9.0	References Cited	16
List of Figures		
	Figure 1: Location of Study Area in the Province of Ontario	2
	Figure 2: Location of Study Area in Hillier Township	2
	Figure 3: Study Area in Detail	3
	Figure 4: Belden's (1878) Map of Sophiasburgh Township Showing the Study Area	10
List of Plates		
	Plate 1: View of Soil Conditions during Survey, Looking North	11
	Plate 2: Crewmembers Conducting Pedestrian Survey at 5 Metre Intervals in July 2010	12
	Plate 3: Crewmembers Conducting Pedestrian Survey at 5 Metre Intervals in August	12
	Plate 4: View of Crewmember Test Pitting in Woodlot	13
	Plate 5: Typical Test Pit, Excavated to Subsoil	13

Executive Summary:

Under a contract awarded in May of 2010, **Archaeological Research Associates Ltd. (ARA)** carried out a Stage 1 and 2 archaeological assessment of the proposed **Belleville North Solar Project** on part Lot 65, Concession 5, in Hillier Township, Prince Edward County, Ontario. This work was completed under contract to **Hatch Ltd.** in advance of a Renewable Energy Act (REA) application.

The Stage 1 and 2 assessment was conducted in July and August of 2010. Research indicated a high potential for the presence of both pre-Contact and Historic-era archaeological sites in the study area. In advance of field work, legal *Permission to Enter* (PTE) was granted by the property owner. No archaeological material was located in the course of the assessment. Accordingly, it is recommended that the project be allowed to proceed without further heritage concerns.

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1.0 Introduction

Under a contract awarded in May of 2010, **Archaeological Research Associates Ltd. (ARA)** carried out a Stage 1 and 2 archaeological assessment of the proposed **Belleville North Solar Project** in Hillier Township, Prince Edward County, Ontario. This assessment was conducted in July and August of 2010 under licence# P-007, PIF # P007-252-2010. The work was completed under contract to **Hatch Ltd.** as a component of the screening process outlined in **Ontario Regulation 359/09**, which governs **Renewable Energy Approvals** under the provincial **Environmental Protection Act (EPA)**. The archaeological assessment was carried out in order to:

- Identify any known archaeological sites that might be found near or within the study area;
- Empirically determine the presence of any unknown archaeological resources which may be extant within the study area; and
- If identified, suggest appropriate strategies for the protection and management of these sites.

The assessment was carried out in accordance with the provisions of the *Ontario Heritage Act* (A.S.O. 1990), and *Draft Standards and Guidelines for Consultant Archaeologists* (Ministry of Culture 2009). All records pertaining to this assessment are currently housed in a storage facility located at Archaeological Research Associates Ltd.'s office at 97 Gatewood Road in Kitchener, Ontario.

The Ministry of Tourism and Culture is asked to review the results and recommendations presented in this report.

2.0 Location

The study area is a 28 ha parcel of land, located approximately 150 metres north of Burr Road, in Prince Edward County, Ontario (see Figures 1-3). Irregular in shape, it is legally described as being located on Part Lot 65, Concession 5, of Hillier Township, Prince Edward County, Ontario.

The closest water source is a seasonal tributary of Melville Creek. It once ran along the southern edge of the study area. This tributary has been altered and is now a drainage ditch that runs east along half of the southern limits of the study area and then south to Burr Road. North of the tributary, adjacent to the southwest corner of the study area, is a marsh. A second tributary to Melville Creek lies approximately 200 metres west of the property. Muscote Bay is located approximately 2.5 km northeast of the study area.

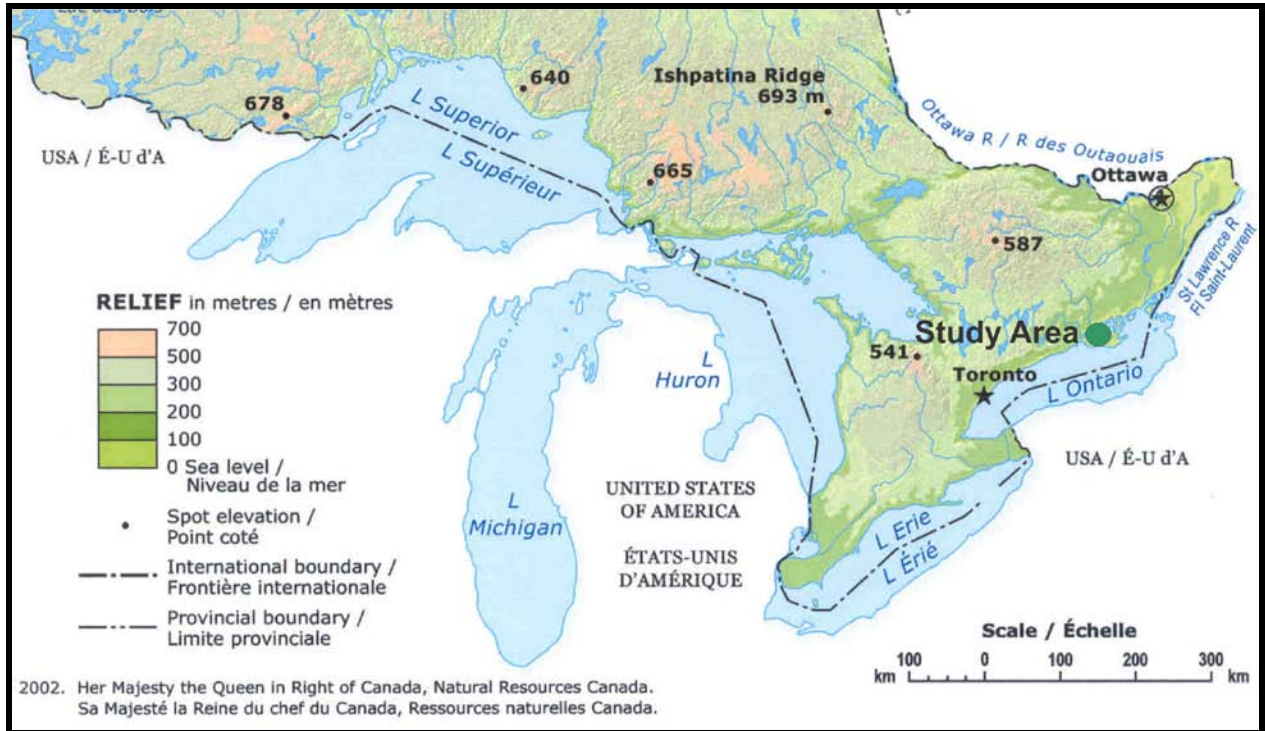


Figure 1: Location of Study Area in the Province of Ontario



Figure 2: Location of Study Area in Hillier Township

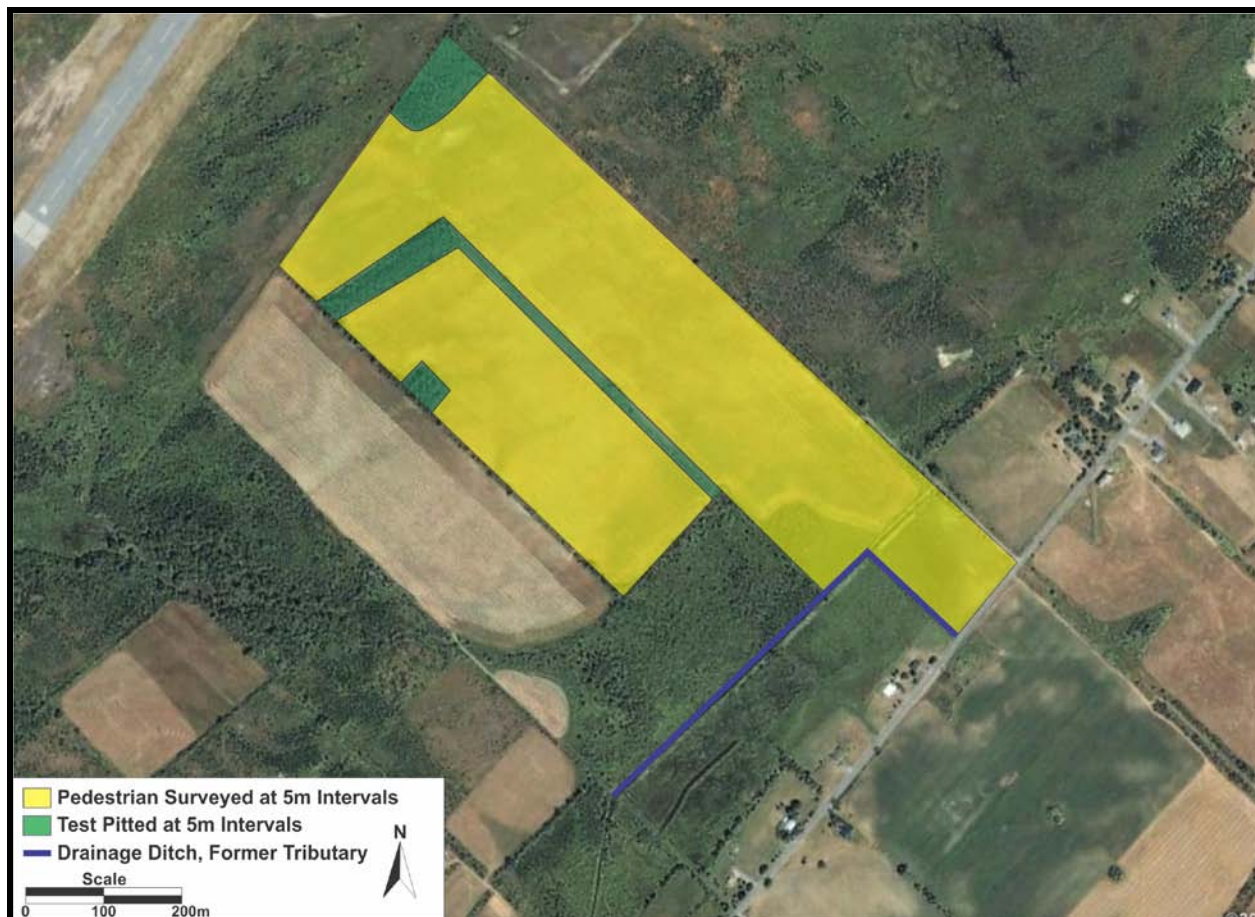


Figure 3: Study Area in Detail

3.0 Geography

It has long been understood that environment plays a key role in determining site location, particularly in small societies with non-complex, subsistence-oriented economies. The local environment of the subject property lies within the Deciduous Forest region. This region has most of the tree and shrub species of the Great Lakes-St Lawrence Forest, but also includes black walnut, butternut, tulip, magnolia, black gum, and many types of oaks and hickories (MNR 2009).

Physiographically, the study area is located in the Prince Edward Peninsula. Approximately 50 to 60 drumlins are located in Prince Edward County. They were created by the Lake Ontario ice lobe (Chapman and Putnam 1984:56). Bedrock in Prince Edward County is part of the Lindsay Formation and consists of a low limestone plateau protruding into Lake Ontario (Chapman and Putnam 1984:188). Over half of the county has shallow soils, consisting largely of a few inches of unconsolidated material over bedrock (Ibid.:188). The soils in the study area include

Ameliasburg clay loam, Farmington loam, and Gerow clay (Richards and Morwick 1948: Map). Prince Edward County has extensive expanses of marsh, especially in areas around East and West Lakes and Muscote Bay (Chapman and Putnam 1984:189).

4.0 Archaeological Potential

The archaeological potential of the study area was assessed using its soils, hydrology and landforms as considerations. Young et al. (1995) note that, "*either the number of streams and/or stream order is always a significant factor in the positive prediction of site presence*" (1995:23). They further note that certain types of landforms, such as moraines, seem to have been favoured by different groups throughout prehistory (Ibid:33). According to several researchers, such as Janusas (1988:1) "*The location of early settlements tended to be dominated by the proximity to reliable and potable water resources.*" Site potential modeling studies (Peters 1986; Pihl 1986) have found that most prehistoric archaeological sites are located within 300 metres of remnant or extant water sources.

While many of these studies do not go into detail as to the basis for this pattern, Young et al. (1995) suggest that the presence of streams is a significant attractor for a host of plant, game, and fish species which in turn encourage human settlement in an area. Conversely, it must be understood that non-habitational sites (eg. burials, lithic quarries, kill sites, etc.) may be located anywhere. Potential modeling appears to break down when it comes to these idiosyncratic sites, many of which have more significance than their habitational counterparts as a result of their relative rarity.

With the development of integrated 'complex' economies in the Historic (or Euro-Canadian) era, settlement tended to become less dependent upon local resource production and more tied to wider economic networks. As such, proximity to transportation routes became the most significant predictor of site location. In the early Historic era (pre-1850), when transport by water was the norm, sites tended to be situated along major rivers and creeks - the 'highways' of their day. With the opening of the interior of the Province to settlement after about 1850, sites tended to be located along historically-surveyed roads.

Bearing these factors in mind, it is clear that the study area would, with the exception of any marshy or permanently wet areas, have a high potential for containing pre-Contact sites; largely due to its proximity to Melville Creek. The property's potential for Historic-era sites is similarly high due to its proximity to Burr Road, a historically-surveyed thoroughfare.

5.0 Previous Archaeological Research

An archival search was conducted using the Ontario Ministry of Tourism and Culture Archaeological Sites Database in order to determine the presence of any registered heritage resources which might be located on or within a 2 kilometre radius of the study area. It was found that there are no registered sites within these limits. The overall lack of sites in the area is most likely the result of a paucity of research in the area, as opposed to representing any meaningful settlement patterns.

6.0 Historic Land Use Summary

The first settlers in the region were the Paleo-Indian people who arrived after the retreat of the Wisconsin glaciers, approximately 9,000 B.C. (Warrick 2004:83). For the next 1,500 years or so, the Paleo-Indians lived as hunter-gatherers in the boreal-like landscapes of southern Ontario. Because of the low biotic productivity of this environment, it is believed that human groups ranged over very wide territories in order to live sustainably (Ellis & Deller 1990:52). Traditionally, Paleo-Indians have been conceptualized as ‘big game hunters’ who lived on caribou and other Pleistocene megafauna. However, given the poor preservation of these sites (which are mostly understood only from stone tool and debris from their manufacture), much about the lifeways of these people remains unknown (Ibid.:38). In general, the impacts that humans left on their environment at these times were small (less than 200 square metres), ephemeral, and fleeting (Ibid.:51).

Beginning around 8,000 B.C., the biotic productivity of the environment began to increase as the climate warmed and the watershed was colonized by deciduous forest. As a result, more opportunities arose for the exploitation of both animal and plant food sources. The resulting broad-based economy was the basis for the archaeological cultures that are referred to as ‘Archaic’. During this period (roughly 8,000 B.C. – 800 B.C.), there was an explosion in the number and variety of raw materials, tool forms, site types, and the number of sites themselves. Because Archaic sites are more recent than Paleo-Indian ones, preservation tends to be better. Artifacts composed of bone, shell, and even wood are not unheard of. During the late Archaic period, heavy wood-working tools appear, suggesting that people were building shelters or other objects, such as transportation aids (Ellis et al. 1990:66-67).

A significant development at the end of the Archaic period was the emergence of burial ceremonialism; primarily the Glacial Kame Burial Complex. There is one example of a burial site of this type near Picton (Archaeology in the County 2010).

It is clear from the toolkits that have been unearthed that Archaic peoples had an encyclopaedic understanding of the environment that they inhabited. The number and density of the sites that have been found suggest that the environment was exploited in a successful and sustainable way

over a considerable period of time. The success of Archaic lifeways is attested to by clear evidence of steady population increases over time. Eventually, these increases set the stage for the final period of Pre-Contact occupation – the Woodland Period (Ellis et al. 1990:66-67).

The Woodland Period began around 800 B.C. and is characterized by the appearance of pottery. It is believed that hunting and gathering remained the primary subsistence strategy throughout the Early Woodland Period (800 B.C. – A.D. 0) and well into the Middle Woodland Period (A.D. 0 – A.D. 500) (Spence et al. 1990:167). The Middle Woodland Period is characterized by the Point Peninsula Complex of burial mounds. One of these mounds is located along the south shore of Prince Edward County (Archaeology of the County 2010). During the Middle to Late Woodland transition (ca. A.D. 400) the first rudimentary evidence of maize (corn) horticulture appears; albeit in southwestern Ontario (Warrick 2000:427).

During the Late Woodland Period (roughly A.D. 1000 to A.D. 1650) maize horticulture allowed for population increases which in turn lead to larger settlement sizes, higher population densities, and increased social complexity among the peoples involved. Beginning around A.D. 1000, early Iroquoians were living in small villages comprised of a number of longhouses, producing pottery with decorated incised rims, and using pipes to smoke tobacco. Essentially, the lifeways that were observed by the first Europeans to venture into the area were in place by this time. By 1450, it is possible to differentiate between the archaeologically-represented groups that would become the Huron and the St Lawrence Iroquois of the early Contact period (Ibid.:446). The presence of St. Lawrence Iroquois ceramics on Huron sites in Prince Edward County and the Trent River system and Huron ceramics on St. Lawrence Iroquois sites suggests the capture of women during raids between the two groups (Archaeology of the County 2010).

It has been suggested that the size of villages, along with the necessary croplands to sustain them, may have had some enduring impacts on the landscapes that surrounded them. In particular, there has been a correlation postulated between Pre-Contact era corn fields and modern stands of white pine (Janusas 1987:75). While the studies involved have been far from comprehensive, the notion that depleted corn fields may have taken some time to recover their fertility, and that the natural succession of plants growing on them would be affected, seems logical.

The Early Contact Period

When Jacques Cartier made his first voyage along the St Lawrence River in the 1530s, he encountered the people we now know as the St. Lawrence Iroquois. They had villages located at the present sites of Montreal and Quebec City. When Europeans returned in the 17th Century, all traces of these villages and their people were gone and the land was occupied by Algonquian-speaking people. The St. Lawrence Iroquois were most likely displaced and settled with the Huron (Archaeology of the County).

The first European to venture into what would become southern Ontario was Etienne Brulé, who was sent by Samuel de Champlain to visit the area and to learn the language and customs of the First Nations there. Champlain himself made two trips to Ontario, first in 1613 and later from 1615 to 1616 (Vaugeois et al.2004:182). The Iroquoian peoples encountered by Champlain included the Huron (or Wendat as they called themselves), the Petun, and “la nation neutre” (the Neutrals). While the former groups were concentrated in the northern part of Simcoe County and the Grey-Bruce region respectively, the Neutrals occupied the territory immediately west of Lake Ontario and across the Niagara Peninsula.

The first half of the 17th Century saw a marked increase in trading contacts between the First Nations and European colonists. It also led to increasing factionalism and tension between the First Nations as different groups vied for control of the lucrative fur trade. In what would become Ontario, the Wendat (Huron), the Petun (Tobacco), and their Anishnabeg trading partners allied themselves with the French. In what would become New York State, the League of the Haudenosaunee, often referred to as the Six Nations (which included the Mohawk, Cayuga, Onondaga, Oneida, Seneca, and Tuscarora Nations) allied themselves with the English. Interposed between the belligerents, the Neutral Nation declined to align itself with either group. Tensions boiled over in 1649. The resulting conflict led to demise of the Neutral Nation as a distinct cultural entity and the dispersal of the Wendat and Petun Nations (Lennox & Fitzgerald 1990:456, Ramsden 1990:384). The remnants of the latter settled in Quebec (the modern-day community of Wendake), near lake St. Claire (where they were known as the Wyandot), and in the area of Michilimackinac. Many were probably adopted into the nations of the Haudenosaunee (Ibid.). By 1651, most of southern Ontario was little more than the underpopulated hunting grounds of the Six Nations Iroquois (Lajeunesse 1960:xxxii).

The land tenure vacuum that was created by the dispersal of the Wendat and Neutral Nations allowed Algonkian-speaking Anishnabeg peoples to migrate to the north shores of Lake Erie and Lake Ontario by about AD 1700. Europeans called these people the “Mississaugas”, mistaking the name of a single clan (the *Ma-se-sau-gee*) for that of the entire group (Smith 2002b: 107). At this time, Haudenosaunee settlements appear to have contracted back into New York state, possibly due to fur trade-related tensions between the League and their Anishnabeg neighbours (Warrick 2005:1).

The Historic Era

Throughout the 1700’s and early 1800’s, Anishnabeg peoples hunted, fished, gardened and camped across southern Ontario, but the footprint left by these people on the landscape they inhabited was exceedingly light. Archaeological sites dating to this time period are both rare and difficult to detect (Warrick 2005:1).

The Mississaugas had been stalwart allies of the French during the 7 Years War. After 1760, they forged a new alliance with the English. This relationship endured the English defeat at the end of the American War of Independence (1775-1783) and set the tone for the refugee movement of the United Empire Loyalists and the Six Nations into Canada (Smith 2002b:109).

The Constitutional Act (sometimes called the Canada Act) of 1791 created the Provinces of Upper Canada and Lower Canada (Craig 1993:17). John Graves Simcoe, the first Lieutenant Governor of the Province, initiated several schemes to populate and protect the newly-created province as the ongoing threat of war with the United States required the borders to be populated quickly. A settlement strategy that relied on the creation of shoreline communities and effective transportation links between the settlements was employed. In 1792, the first legislature of Upper Canada changed the names of the Districts to Eastern, Midland, Home and Western respectively (Walker 1939:90).

Prince Edward County

The first survey of Prince Edward County was completed in 1784 by surveyor Collins. That same year, Lieutenant Archibald MacDonnell arrived with the first group of Loyalist settlers. By the end of the 18th century, approximately 500 Loyalists had moved into the area (Collinson 1999).

At the end of the 1700s, surveys were carried out to determine if the lakes and rivers of the Trent-Severn Waterway could be connected, creating a continuous thoroughfare via water systems and greatly increasing the speed and ease of transportation from Toronto to Lake Simcoe. The government completed thorough surveys in 1833 after pressure from the timber industry. Construction on the system began the same year. After much hard labour and many delays, the Trent-Severn Waterway was finally completed in 1920 (The Panel on the Future of the Trent-Severn Waterway 2007).

During the 19th century, the water system provided the area with a good deal of industrial growth and prosperity, as ships transported goods from Lake Ontario to Lake Huron. The bays of Prince Edward County, including the Bay of Quinte, were seen as safe harbours for commercial sailors. Due to the time it took to construct the Trent-Severn Waterway, by its completion, many goods were transported via rail and road instead. The system, however, became a popular destination for tourism and leisure (Collinson 1999; Prince Edward County 2010).

Farming, and particularly grain production, was important to the area and much of the harvest was sold to the United States. In 1890, the McKinley Tariff ended exports to the United States. This led to an increase in the production of cheese, butter and canned goods as farmers shifted to raising livestock and fruit and vegetable crops in order to survive.

Prince Edward County's historical importance is noteworthy. It boasts a high concentration of Loyalist built heritage, surpassed only by Williamsburg, Virginia. Picton was home to Canada's First Prime Minister, Sir John A. McDonald, from 1833 to 1835. Its location at the intersection of Lake Ontario and the Trent-Severn Waterway greatly influenced the history and development of the County (Collinson 1999; Prince Edward County 2010).

Hillier Township

Hillier Township was created in 1823. Before then, it was a part of Ameliasburgh Township (Campbell 2009:196 and Mika 1984: 153). It was named after Major George Hillier, an administrative secretary and friend of Sir Peregrine Maitland who became Lieutenant-Governor of Upper Canada in 1818. Hillier was born in England and did not make his home in Hillier Township. A member of the British Army, he was promoted to general and sent to India, where he died in 1840 (Campbell 2009:196).

Joseph Forsyth, the earliest settler in what became Hillier Township, arrived in 1795. In the 1830s, much of the township was owned by Joseph Dorland who had built a mill there. Hillier's township hall was built in 1867 and at the time was the only stone building in the small town. The township hall is now a National Historic Site. In 1879, a railway station opened which allowed Hillier's produce to be shipped more easily and offered the community some prosperity (Campbell 2009:196). By 1880 Hillier had 200 inhabitants, its peak population. The following years, however, saw a sharp decline as half the population moved away (Campbell 2009:197). The Bloomfield Packing Company opened in 1907 beside the train station and saved the town from complete decline (Campbell 2009:197).

Lot 65, Concession 5

The lot was patented by the Crown in 1798. In 1834, it was purchased by Benjamin Persall. He was born in New York in 1807 and moved to Prince Edward County, where he lived until his death in 1872. Belden's *Illustrated Historical Atlas of the Counties of Hastings and Prince Edward (1878)* shows that the eastern half of Lot 65, Concession 5 was owned by Robert Pearsall and that the western half was owned by Benjamin Pearsall. Both properties are shown with buildings on them though neither are located within the limits of the study area (see Figure 4).

The land was eventually inherited by Benjamin's son, Royal O. Pearsall who sold it to James Hart in 1890. It remained in the Hart family until the 1930s, when it was given to Margaret McDonald. In 1940, it was granted to Simon Caughey. It remained in the Caughey family for the next half century.

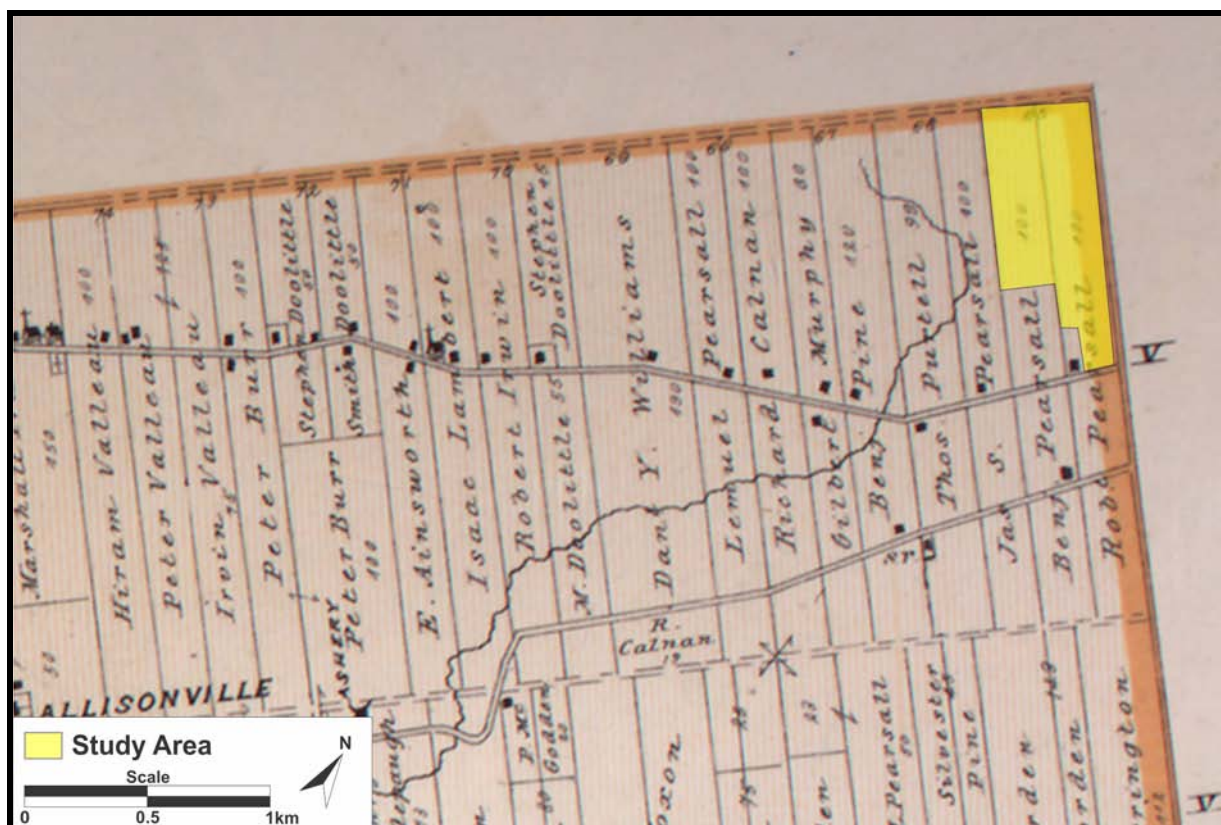


Figure 4: Belden's (1878) Map of the Township of Hillier, Showing the Study Area

7.0 Field Methods

Given that the study area was comprised of both ploughed lands and areas not under cultivation, it was necessary to utilize both the pedestrian survey method and the test pitting method to complete the assessment.

In areas that were under cultivation (see Plate 1), the study area was assessed using the pedestrian survey method. In this strategy, crewmembers traversed the study area along parallel transects established at intervals of either 5 or 10 metres, depending upon the archaeological potential of the property. In this case, the subject property was felt to have a high archaeological potential and, as such, was surveyed at 5 metre intervals (see Plates 2 and 3). If cultural materials were encountered in the course of the survey, the transect interval would be closed to 1 metre and a close inspection of the ground would be conducted for 20 metres in all directions. All identified diagnostic artifacts and a representative sample of non-diagnostic artifacts are collected for analysis. All remaining artifacts are left *in situ* until a proper Stage 3 Controlled Surface Collection (CSC) can be performed.

In areas not under cultivation, Ministry of Tourism and Culture guidelines (Draft 2009) required that the study area be assessed using the test pitting method (sometimes referred to as shovel-testing). In this strategy, small regular ‘test’ pits, 30 cm in diameter, were hand-excavated down to the subsoil level at a prescribed interval of 5 metres (see Plates 4-5). All soil materials from each pit were screened through 6 mm mesh and examined for the presence of archaeological materials. All test pits were backfilled upon completion. If cultural materials were encountered in the course of the survey, the transect interval was closed to 1 metre for a distance of 5 metres in all directions. All artifacts recovered from test pits are collected for analysis.

Artifacts that may indicate the presence of significant cultural deposits include bone, charcoal, lithics (stone tools and refuse generated by their production and use), ceramics, glass, and metal. Archaeological features such as pits, foundations, and other non-portable remains may also be detected during a Stage 2 survey. Any archaeological materials encountered are flagged, mapped, photographed and collected for further analysis. Artifact locations are recorded on topographic maps, in field notes and at +/- 5 metres accuracy on a Garmin eTrex Legend, WAAS-enabled, GPS (using the **WGS-84** coordinate system). As part of the Stage 2 assessment, all field data was removed, with permission from the land owner, to ARA’s Kitchener office for processing, cataloguing, and analysis. Artifacts, photographs, mapping materials, and field notes are stored at 97 Gatewood Road, Kitchener, Ontario.



Plate 1: View of Soil Conditions at Time of Survey, Looking North



Plate 2: Crewmembers Conducting Pedestrian Survey at 5 Metre Intervals in July 2010



Plate 3: Crewmembers Conducting Pedestrian Survey at Metre Intervals in August 2010



Plate 4: View of Crewmember Test Pitting in Woodlot



Plate 5: Typical Test Pit, Excavated to Subsoil

8.0 Results and Recommendations

The Stage 2 archaeological assessment of the proposed Belleville North Solar Project was conducted on July 29th and August 25th of 2010. Legal *Permission to Enter* (PTE) and recover artifacts on project lands was granted by the landowner. Key personnel involved during the assessment were P.J. Racher, Project Director, H.T. Brown, Field Director and 5 additional crewmembers. Field conditions at the time were excellent, with sunny skies and dry soil for screening (see Plate 5).

Over 95% of the study area had been ploughed and was under cultivation (see Figure 3). As such, it was subject to a pedestrian survey at 5 metre intervals (see Plates 1-3). The remaining 5% included 3 small woodlots, located towards the northern extent of the property, and the hedgerow. The hedgerow was approximately 10 metres wide and ran north-south through the centre of the study area (see Figure 3). The areas not under cultivation were test pitted at 5 metre intervals.

In the course of the assessment, no cultural materials were recovered. Accordingly, **Archaeological Research Associates Ltd.** feels that no further archaeological assessment of the study area would be productive. It is recommended that the project be released from further heritage conditions. The Ministry of Tourism and Culture is asked to review the results and recommendations presented in this report. A **Letter of Concurrence** with these recommendations is requested.

This report is filed with the Minister of Tourism and Culture as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c 0.18. The report will be reviewed to ensure that the licenced consultant archaeologist has met the terms and conditions of their archaeological licence, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario.

Should previously undocumented archaeological resources be discovered, they may be a new archaeological site and therefore subject to Section 48 (1) of the *Ontario Heritage Act*. The proponent or person discovering the archaeological resources must cease alteration of the site immediately and engage a licenced consultant archaeologist to carry out archaeological fieldwork, in compliance with Section 48 (1) of the *Ontario Heritage Act*. This condition provides for the potential for deeply buried or enigmatic local site areas not typically identified in evaluations of potential.

The Cemeteries Act requires that any person discovering human remains must immediately notify the police or coroner and the Registrar of Cemeteries, Ministry of Small Business and Consumer Services. All work in the vicinity of the discovery will be suspended immediately. Other government staff may be contacted as appropriate; however, media contact should not be made in regard to the discovery.

Archaeological sites recommended for further archaeological fieldwork or protection remain subject to Section 48(1) of the *Ontario Heritage Act*, and may not be altered, or have artifacts removed, except by a person holding an archaeological licence.

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