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Stage 2 Archaeological Assessment
Zephyr Farms Ltd.
Brooke-Alvinston Wind Farm
RESOP # 11836
Brooke-Alvinston Township
Lambton County, Ontario

Prepared for
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&
The Ontario Ministry of Tourism and Culture

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PIF #P007-283-2010

November 2010

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Under a contract awarded in October of 2010, **Archaeological Research Associates Ltd. (ARA)** carried out a Stage 2 archaeological assessment of lands to be impacted by the proposed **Zephyr Farms Ltd. – Brooke-Alvinston Wind Farm** located in Brooke-Alvinston Township, Lambton County, Ontario.

The Stage 1 assessment was conducted in July of 2010 under licence #P007, PIF #P007-256-2010, and considered an area roughly 400 ha in size. Stage 1 research indicated a high potential for the presence of both Pre-Contact and Euro-Canadian archaeological sites in the study area.

The Stage 2 assessment was conducted on lands to be directly impacted by project design. It was restricted to proposed areas of impact for turbine locations and underground collector lines/access roads. It was carried out under optimal conditions in November of 2010 under licence #P007, PIF #P007-283-2010, after legal *Permission to Enter* (PTE) had been granted by the property owner.

No archaeological materials were discovered during the assessment. Accordingly, **ARA** recommends that the project be allowed to proceed without further heritage concerns.

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Acknowledgements:

Special thanks for his generous and timely research assistance are extended to Mr. Robert Von Bitter, Archaeological Data Coordinator, Archaeology Unit, Heritage Branch, Ontario Ministry of Tourism and Culture, Toronto.

1.0 Introduction

Under contracts awarded in October of 2010, **Archaeological Research Associates Ltd. (ARA)** carried out a Stage 2 archaeological assessment of the proposed **Zephyr Farms Ltd. – Brooke-Alvinston Wind Farm** located in Brooke-Alvinston Township, Lambton County, Ontario. The Stage 2 assessment was conducted under licence #P007, PIF #P007-283-2010. The work was completed under contract to **Stantec Consulting Ltd.** as a component of the screening process outlined in **Ontario Regulation 359/09**, which governs **Renewable Energy Approvals (REA)** under the provincial **Environmental Protection Act (EPA)**. The archaeological assessment was carried out in order to:

- Empirically determine the presence of any 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* (R.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 Stage 2 archaeological assessment was focused on access roads and infrastructure corridors (20 m in width) and turbine locations (35 x 35 m square). The study area lies within Lots 13-15, Concession 14, Brooke-Alvinston Township, Lambton County, Ontario. It is irregular in shape and is bounded by Old Walnut Road to the east, Ebeneezer Road to the west, a Hydro corridor to the north, and agricultural lands to south (see Figures 1-3).

The study area lies within 150 metres of 4 sources of potable water including a tributary of Bear Creek in the north, two tributaries of Little Bear Creek in the southwest and a tributary of Brown Creek in the southeast.

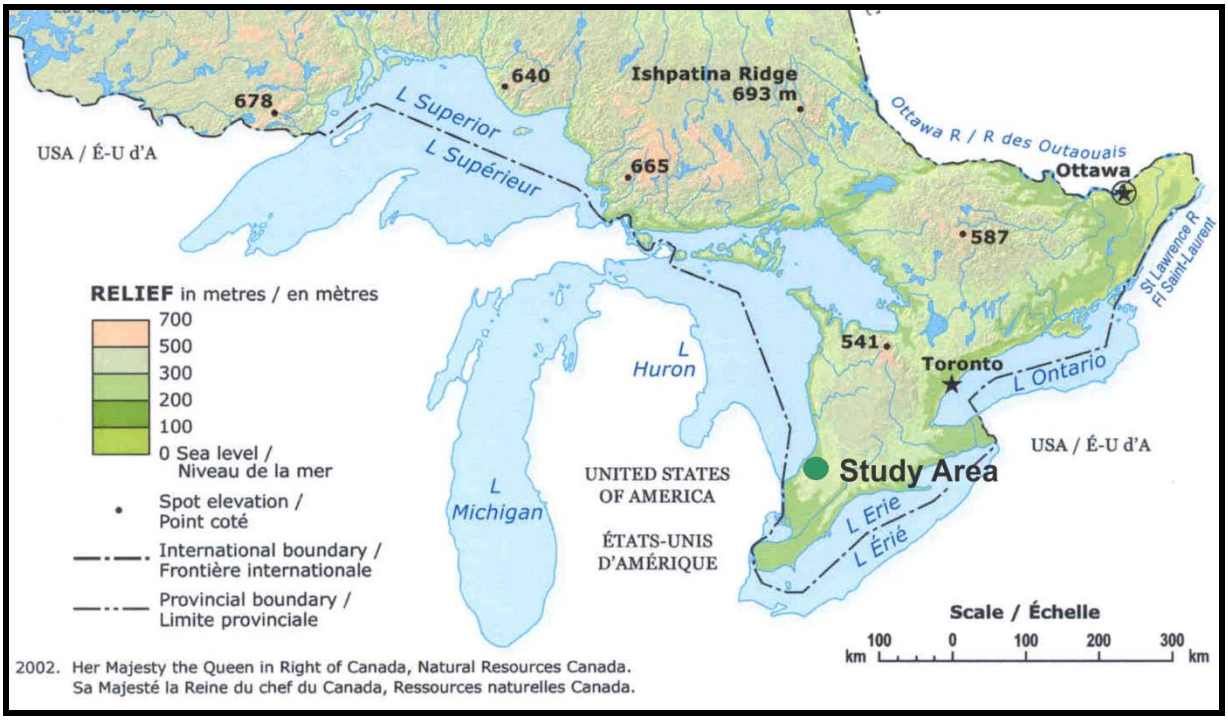

Figure 1: Location of Study Area in the Province of Ontario

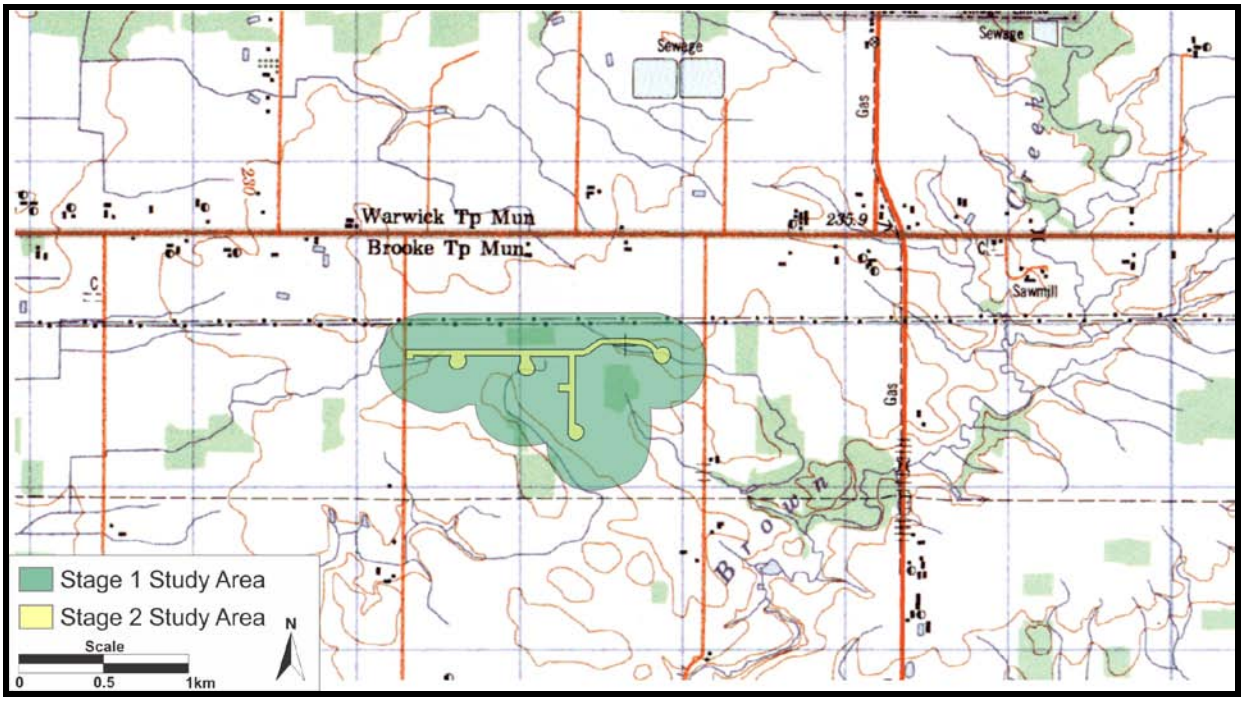

Figure 2: Location of Study Area in Brooke-Alvinston Township

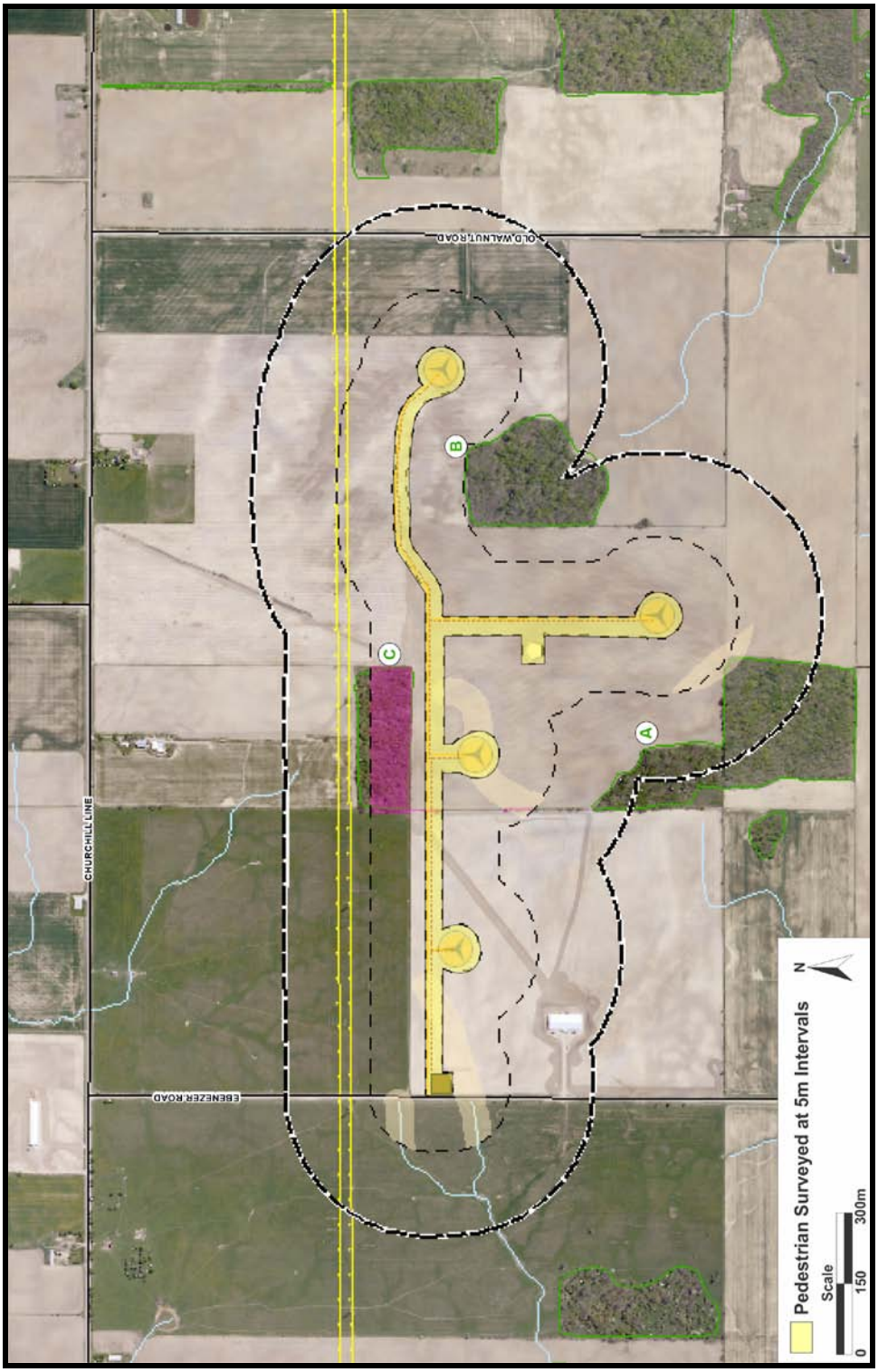

Figure 3: Stage 2 Study Area in Detail

3.0 Geography

It has long been understood that environment plays an important shaping role in the land-use process. It sets the initial conditions from which later cultural landscapes form and develop. This is particularly true in small societies with non-complex, subsistence-oriented economies but it applies across the historical and cultural spectrum of Ontario.

The local environment of the subject property lies within the Deciduous Forest region, an ecological zone which is described as having the most diverse forest life within Ontario. This region has most of the tree and shrub species of the Great Lakes-St Lawrence Forest, which include pine, red pine, eastern hemlock, white cedar, yellow birch, sugar and red maple, basswood and red oak. The Deciduous Forest region also includes black walnut, butternut, tulip, magnolia, black gum, and many types of oaks and hickories (Ministry of Natural Resources 2009).

In the Great Lakes region it is believed that the First Nations used some 500 plant species as food, food flavourings, drinks, medicines, building materials, fibres, dyes, and basketry (Mason 1981:59). As such, it is clear that vegetation played an important role in the site selection processes employed by Pre-Contact Aboriginal groups. Furthermore, this vegetation served as home and food for a wide range of game animals such as white tailed deer, turkey, passenger pigeon, cottontail rabbit, elk, muskrat, and beaver (Mason 1981:60).

Physiographically, the study area is situated within the St. Clair Clay Plains. Lands in this region are relatively flat, lying between 175-215 m above sea level. The underlying bedrock is shale with limestone flour (Chapman and Putnam 1984:147). The study area is made up of an undrumlinized till plain (Ibid:Map) covered in Renfrew Clay Loam soil (Hoffman, Matthews and Wicklund 1964:Map).

4.0 Previous Archaeological Research

An archival search was conducted using the Ontario Ministry of 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.

5.0 Historic Land Use Summary

5.1 The Pre-Contact Era

The first settlers within the study area were the Paleo-Indian people who arrived after the retreat of the Wisconsonian glaciers, approximately 9,000 B.C. For the next 1500 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 and Deller 1990:52). The Parkhill site, which is located north of the study area, is considered one of the most important Paleo-Indian sites in Ontario (Ibid:45-46). 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 tools 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 this time were small (less than 200 sq. m) and ephemeral (Ellis and Deller 1990:51).

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).

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. Along the south shore of Lake Huron, a number of Early Woodland (800 B.C. – 0 A.D.) sites belonging to the so-called Meadowood Complex have been identified. It is believed that hunting, fishing and gathering remained the primary subsistence strategy and that further population growth took place as subsistence strategies grew more refined, and more successful. At the Terminal Archaic/Early Woodland transition, the first cemeteries appear, suggesting a communal regard for the dead and burial ceremonialism (Spence et al. 1990).

The Middle Woodland period (roughly 0 A.D. - 500 A.D.) saw the emergence of the Saugeen Complex, known mostly from a series of sites along the shores of Lake Huron (Ibid:148). The Wyoming Rapids site is the only known Saugeen Complex site located near the study area. It has been interpreted as a spring-early summer macroband settlement that focused on the harvest of spawning fish (Ibid:151). The archaeological data from Saugeen Complex sites suggests a hunting and gathering lifestyle in which Aboriginal bands gathered at river rapids to exploit spawning fish in the spring, broke up into microbands living along Lake Huron for the summer, and moved inland during the winter (Ibid:153-154).

At the Middle to Late Woodland transition (ca. 400 A.D.), the first rudimentary evidence of maize (corn) horticulture appears in Ontario. The Grand Banks site, near Cayuga, Ontario, has yielded the earliest evidence of maize horticulture in northeastern North America (Warrick 2000:427). This site represents the first known example of the archaeological culture known as Princess Point. The distinctive artifacts of this group, and their reliance on corn as a staple, suggests that they are directly ancestral to the later Iroquoian-speaking peoples who lived in southern Ontario (Ibid.).

The archaeological situation in southwestern corner of southern Ontario is more complex, and less well understood. It appears that the study area lies within the frontier between the Iroquoian-speaking peoples to the east and Algonkian-speaking peoples of the so-called Western Basin Tradition to the west. This frontier appears to have changed location over time, extending as far into Ontario as London at one point, and then contracting later to the Detroit and St. Clair Rivers (Murphy and Ferris 1990:218). Site locations tended to be focused on sand plains, moraines, sandy points, lakeshores and prairie borders. The Simons site, located north of the study area, has been identified as belonging to the Riviere au Vase Phase of the Western Basin Tradition. It should be noted that the site is far removed from any other Western Basin sites and that many of them are located further to the southwest (Ibid:190). The St. Clair Clay Plain was a generally inhospitable location, with wet ground conditions and a dense canopy of black ash and white elm; conditions which made resource exploitation and horticulture very difficult.

During the Late Woodland Period (roughly 1000 A.D. to 1650 A.D.) maize horticulture in Ontario allowed for population increases which in turn led to larger settlement sizes, higher population density, and increased social complexity among the peoples involved. Beginning around 1000 A.D., early Iroquoians to the east of the study area 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 Neutral of the early Contact period (Warrick 2000:446). Amongst the Neutral, village sizes swelled to as much as 5 ha, with longhouses sometimes reaching over 100 m in length. It is believed that some villages may have held as many as 2,500 inhabitants (Ibid.:447).

Between 1550 and 1600 A.D., Western Basin sites disappear from southwestern Ontario (Murphy and Ferris 1990:189). At the same time, the Neutral appear to have abandoned southwestern Ontario for the area to the east of Lake Ontario and the Niagara Peninsula. This may have been an attempt on the part of the Neutrals to place a buffer between themselves and their Western Basin neighbours (Lennox and Fitzgerald 1990:437-438).

5.2 The Early Contact Period

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 (Gervais 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 throughout the Niagara Peninsula. During his journey of 1615, Champlain was told of a people called *les gens de Feu* (the *Fire Nation* in English or the *Asistaguerouons* in Huron) (see Figure 4), with whom the Neutrals and their Odawa allies were engaged in war (Butterfield 1881:52).

Figure 4: Detail from Samuel de Champlain's *Carte de la Nouvelle France* (1632)
(Source: John Carter Brown Library, Brown University)

It has been suggested that the Western Basin people belonged to this Fire Nation, who were pushed out of the province following their defeat by the Neutrals, while others have identified the Fire Nation with the Mascouten (Butterfield 1881). Champlain's map of the province is so inaccurate that absolute certainty in the matter is impossible to achieve.

The location of the Neutral Nation between the mutually belligerent Wendat and the League of the Haudenosaunee from New York State (often referred to as the Six Nations Iroquois) placed the Neutrals in a politically precarious position which, by 1650 led to their demise as a distinct cultural entity (Lennox and Fitzgerald 1990:456). The remnants of the group may have been absorbed by the Haudenosaunee (which included the Mohawk, Cayuga, Onondaga, Oneida, Seneca, and Tuscarora Nations).

At the same time, the Wendat (Huron) were forcibly dispersed from their homeland by the League of the Haudenosaunee. Survivors settled in Quebec (the modern day community of Wendake), and in the area of Michilimackinac. Many were probably adopted into the nations of the Haudenosaunee (Ramsden 1990:384). By 1651, most of southwestern Ontario was little more than the unpopulated hunting grounds of the Iroquois (Lajeunesse 1960:xxxii).

The land tenure vacuum that was created by the dispersal of the Wendat and Neutral Nations allowed Algonkian-speaking Anishinabeg peoples to migrate to the north shores of Lake Erie and Lake Ontario by ca. 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 2002:107). At this time, Haudenosaunee settlements appear to have contracted back into New York state (see Figure 5), possibly due to fur trade-related tensions between the League and their Anishinabeg neighbours (Warrick 2005:1).

Figure 5: Detail from Baron de Lahontan's *Carte Generale du Canada en petit Point* (1703)
(Source: www.mapsofpa.com)

5.3 The Euro-Canadian Era

Throughout the 1700's and early 1800's, the Mississaugas hunted, fished, gardened and camped across southwestern 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). Nevertheless, as far as the Colonial powers were concerned, most of Ontario belonged to these Algonkian-speaking people (see Figure 6).

The French maintained trading posts at Detroit, Niagara and Frontenac and offered many enticements to attract fur traders from the First Nations. Their attempts failed and the English (based in New York State) remained more prosperous. In 1754, hostilities over trade and territorial ambitions led to the ***Seven Years War*** (often called the ***French and Indian War*** in North America). The French surrendered in 1760 and were forced to withdraw from Canada (Smith 2002:109).

Figure 6: Detail from Robert Laurie and James Whittle's *New and General Map* (1794)
(from the David Rumsey Collection)

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 2002:109).

Following the American War of Independence, the British needed land for Loyalists who had been displaced by the conflict. Southwestern Ontario, a fertile and sparsely settled landscape, was the inevitable choice for the British government. On July 24, 1788, the Governor General of Quebec, Sir Guy Carleton, divided Upper Canada into four administrative districts; Lunenburg, Mecklenburg, Nassau and Hesse. The government then set about creating land boards to facilitate settlement in each district. The land board for the District of Hesse, extending from Long Point to Detroit, met for the first time on June 19, 1789.

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).

In 1796, an act of Parliament allowed Simcoe to divide Upper Canada into as many counties as he might think fit. Accordingly, the counties of Essex and Suffolk, were created at this time. The county of Kent (which included what became Lambton County) comprised all of the territory in the Western District that was not included in the other counties. Essentially this meant that, at the time, Kent County was the largest county ever created, stretching from Lake Erie to Hudson's Bay (see Figure 7). However, the counties had little true power, beyond serving as electoral ridings. Administration of the province was accomplished through the District system.

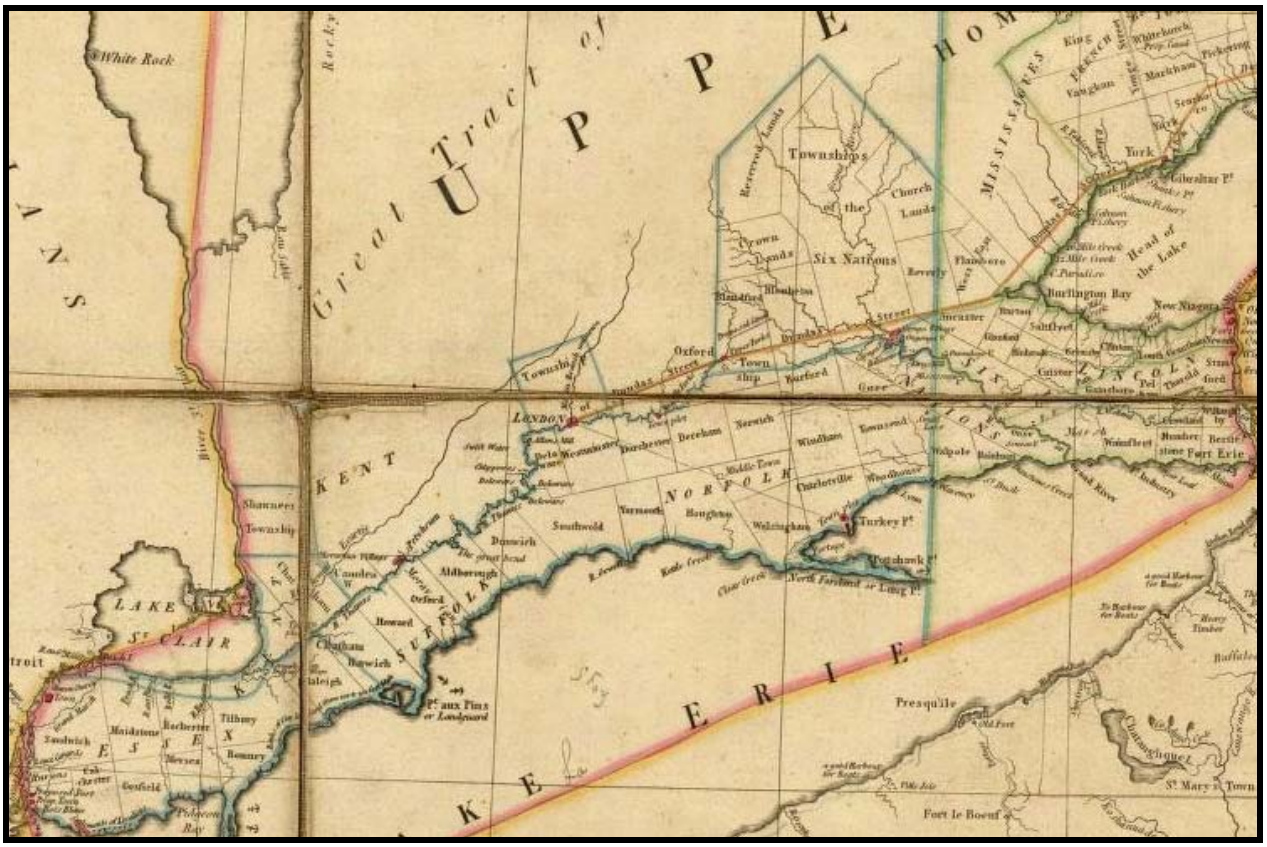

Figure 7: Detail from William David Smyth's *Map of the Province of Upper Canada* (1800)
(from the David Rumsey Collection)

5.3.1 Lambton County

Lambton County remained a part of Kent County from 1796 to 1849. In 1834, the population was 1,728. Two years later, it had approximately doubled. By 1851, Lambton's population had grown to 10,815 and ten years later, it had increased to 24,885. Many of the settlers arrived from Great Britain, Ireland, and the eastern provinces, having been attracted to the area by cheap land, fertile soils and abundant natural resources (Lambton County 2010).

The most important of these resources was petroleum. In the 1850s, a method to effectively refine petroleum was discovered (Bott 2004:13). At the same time, significant discoveries of oil were made at Oil Springs and Petrolia. In 1854, the International Mining and Manufacturing Company, the world's first oil company, was founded in Lambton County (Oil Museum of Canada 2010).

The oil boom helped fuel a population spike in Lambton County during the 1850s (Lambton County 2010). The oil industry created growth in the agricultural, service, railway and shipping industries as goods were transported to support the emerging 'black gold' rush (Lambton County 2010). Oil from Lambton was exported to as far away as Great Britain (Oil Museum of Canada 2010). Since the mid-nineteenth century, Lambton has continued to grow. It is now home to approximately 128,000 inhabitants (Statistics Canada 2006).

5.3.2 Brooke Township

The study area falls within the limits of the former township of Brooke (now Brooke-Alvinston) which was surveyed by Samuel Smith between 1832 and 1833 (Campbell 1936:7). Archibald Gardner arrived in the township in 1835. He played an important role in the early development of the community. At the time, there was no flour mill in the area, so he dammed the Sydenham River and built a mill on its east bank known as Brooke's Mill. This was the first mill within 80 km, but to get to it, one had to travel by foot because horses were scarce and oxen could not travel through the swamps and uncleared bush. After this, Gardner built a sawmill which provided settlers in the area with cut lumber to build their houses.

In 1846, Gardner, his family, and many others left the area and joined Mormon leader Brigham Young, in Nauvoo, Illinois. As they left, they cleared a road, which is now known as Nauvoo Road (Highway 79). As a tribute to Gardner's role in the early history of the township, a mill stone was erected along Nauvoo Road. Gardner's flour mill was sold to the Branan family who expanded and improved it. At this time the population was 169. The mill continued to be used until 1874 (Campbell 1936:11,21; Township of Brooke-Alvinston 2008). In 1854, the local post office was named Alvinston; in honour of the village of Alverstone on the Isle of Wight.

The settlement of Brooke Township was slow at first, but quickly increased with the construction of the railroad and the shipping possibilities that it provided (especially for grain). The Sarnia

Branch of the Great Western Railway and the St. Clair Branch of the Canada Southern Railway served the northern and southern halves of the township respectively (Belden 1880:14).

5.3.3 The Village of Watford

The village of Watford is located just northeast of the study area and is the closest settlement to the project lands. Watford owes its existence to the construction of the Great Western Railway, which served as the driving force for settlement in the area. The first settler, George Brown, arrived in the Watford area in 1850. The railway was completed shortly after this and a flag station was added. The population of the village grew rapidly and by 1875 Watford was large enough to be incorporated. Watford was one of the most busy and prosperous of the railway towns. This is evident in its large manufacturing industry which included steam foundries, machine shops, steam cabinet factories, blacksmiths, a pump factory and a brick yard. It also had a large general business section which included general stores, tin and stove stores, book stores, drug stores, tailors, millineries, bakers, butchers, and barbers (Belden 1880:13).

5.3.4 The Study Area – Stage 1 Research

Historically, the study area was located on part Lots 13-15, Concession 14 of the Township of Brooke. It was bounded by Old Walnut Road to the east, Ebenezer Road to the west, and Churchill Line approximately 400 m to the north (see Figure 8). All of these roads were historically surveyed.

Lot 13, Concession 14

Surveyor notes for Lot 13 indicate the presence of maple, a brook flowing northwards, and two forks of the brook in the southeast and southwest (Smith 1832:16). Robert King is listed in Belden's **Illustrated Atlas of the Dominion of Canada** (1880) as one owner of Lot 13, Concession 14, and an associated structure/household is clearly situated within the Stage 1 study area. Robert, a farmer originally from England, owned 100 acres of the lot. According to census data from 1881 (at which time he was 67 years old), he lived with his wife Sarah King (35) and their children Elizabeth King (14), Robert W. King (12), Thomas King (10), John W. King (7), Mary S. King (7) and George King (2) (Library and Archive Canada 2009a). Robert W. King became head of the household by the time of the 1891 census, living with his mother and siblings (Library and Archive Canada 2009b). The land transactions for the property from the Crown patent in 1836 and 1839 to 2002 are summarized in Table 4.

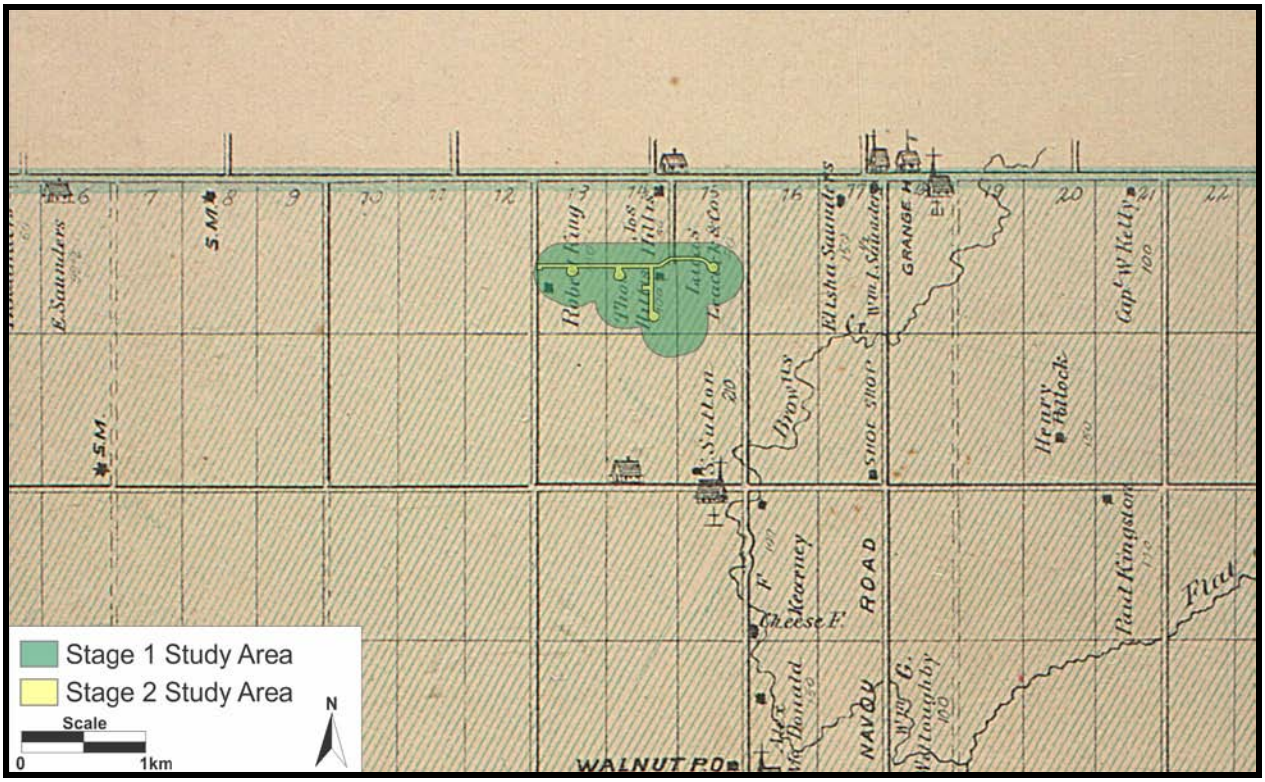

Figure 8: Detail of Belden's 1880 Map of Brooke Township Showing the Stage 1 and 2 Study Areas

Table 1: Land Summary Transactions for Lot 13 in the 14th Concession

Date	Transaction	Grantor	Grantee	Acreage
10/11/1836	Grant	Crown	Abraham Woodcock	200 (S pt)
10/03/1839	Grant	Crown	Andrew Deusler	200 (N pt)
02/05/1839	B&S	Abraham Woodcock	Patrick Madegaw	S pt
10/09/1839	B&S	Andrew Deusler	James Larrett	200 (N pt)
12/24/1842	B&S	Patrick Madegaw	Walter H. Dickson	S pt
01/10/1844	B&S	Walter H. Dickson	Thomas C. Street	S pt
09/15/1845	B&S	Thomas C. Street	Abraham Lee	50 (S pt)
09/11/1847	B&S	Richard Woodcock	Richard Sazier	100 (S pt)
09/10/1849	B&S	James Larrett	Elizabeth King	S ½ of N pt
07/25/1856	B&S	Richard Sazier	James Acshew	S pt
11/04/1856	B&S	James Acshew	Abraham See	50 (S pt)
06/19/1856	B&S	James Sarrett	Thomas Hayes	1 (NW corner)
01/01/1858	B&S	Elizabeth King	Robert King	100 (S pt)
08/16/1865	B&S	Thomas Hayes	Jane Saunders	1 (NW corner)
03/30/1867	B&S	James Larrett	George Wright	N pt
09/29/1868	B&S	George Wright & wife	James McClure	100 (N ½)
12/05/1871	Sale	Jane Saunders	James McClure	1 (NW corner)
11/28/1883	B&S	James McClure	William McClure	All

12/10/1883	Grant	William McClure	Robert King	100 (S ½)
11/27/1886	B&S	William McClure	James McClure	100 (N ½)
11/19/1896	B&S	Maria Lee	Alexander Kennedy	40 (S pt)
1/28/1897	Grant	Alexander Kennedy	Thomas Kennedy	40 (S pt)
4/02/1898	B&S	Edward King	Nancy King	50 (S ¼)
3/06/1906	B&S	Lachlan McNeil	John Wooley	100 (N pt)
3/16/1907	B&S	Will of Robert King	Walter Annett	100 (S pt)
10/27/1910	Grant	John Wooley	William Temple	100 (N pt)
2/12/1912	Grant	William Temple	Frederick Perry	100 (N ½)
3/17/1913	Grant	Frederick Perry	Archibald Brown	100 (N ½)
4/19/1913	Grant	Archibald Brown	Hugh Scott	100 (N pt)
4/19/1913	Grant	Hugh Scott	Wilfred Sumner	100 (N pt)
5/01/1920	Grant	Wilfred Sumner	Elmer Moffatt	100 (N pt)
1/22/1925	Grant	Alexander Kennedy	Ernest Lucas	40 (S pt)
2/01/1930	Will	Walter Annett	Calvin Annett	S ½
10/04/1937	Grant	Calvin Annett	Leonard Annett	S ½
5/15/1959	Grant	Leonard Annett	Cecil Lane	100 (S pt)
5/21/1959	Grant	Calvin Annett	Leonard Annett	100 (S pt)
12/18/1959	Grant	Olive Moffatt	James Moffatt	N ½
11/19/1971	Grant	Ernest Lucas	Norman Wilson	S pt
7/21/1977	Deed	Cecil Lane	Martin Minten	All
12/30/2002	Transfer	Martin Minten	Minten Family Farms	All

Lot 14, Concession 14

Samuel Smith noted the presence of maple and ash during his initial survey of Lot 14, but otherwise provided little information (1832:16). Thomas and Joseph Hillis are listed as the owners of this property in Belden's **Illustrated Atlas of the Dominion of Canada** (1880). Two structures appear on the 1880 map, one in the southern part of the lot within the Stage 1 study area (belonging to Thomas Hillis) and the other outside of the study area to the north (belonging to Joseph Hillis). Thomas, an Irish-born farmer (b. 1837), settled in the township ca. 1848 and owned 100 acres of Lot 14, Concession 14. According to the 1881 census Thomas (aged 45) was married to Jane Hillis (35); together they had six children named John (7), Robert (6), William (5), Martha J. (3), Ruth (2) and James (4 months) (Library and Archive Canada 2009a). By 1891 his family grew with the additions of Ann (9), Mary (7), Sarah A. (4) and Alexander (3) (Library and Archive Canada 2009b). The land transactions for the property from the Crown patent in 1836 to 1991 are summarized in Table 5.

Table 2: Land Summary Transactions for Lot 14 in the 14th Concession

Date	Transaction	Grantor	Grantee	Acreage
12/13/1836	Grant	Crown	Helen Eliza Berrie	200 (N pt)
10/13/1837	Deed	Robert and Helen Berrie	Edward and Mary Haycock	200 (N pt)
05/05/1840	B&S	Edward Haycock & wife	James Ingersoll	200 (N pt)
02/20/1843	B&S	James Ingersoll	Peter McGill	N pt

-	Default	Peter McGill	James McCutchon	N pt
10/31/1853	B&S	James McCutchon	James Stilles	100 (N ½ of N pt)
05/01/1855	B&S	James McCutchon	John Williams	100 (S ½)
05/07/1863	Grant	Crown	William Acton	S pt
04/16/1874	B&S	John Higgins	Thomas Higgins	100 (S ½)
05/06/1895	B&S	William Acton	James Acton	S ½
11/07/1908	B&S	Thomas Higgins	Robert Higgins	100 (S ½)
09/16/1923	Will	James Acton	Bertha Acton	S pt
12/13/1930	Grant	Thomas Higgins	Thomas Higgins	W ½
10/09/1936	Grant	Thomas Higgins	Gilbert Lucas	W ½
03/07/1945	Grant	Gilbert Lucas	Sybil Misselbrook	W ½
04/14/1951	Grant	Sybil Misselbrook	Merwin Patterson	W ½
02/07/1991	Transfer	Dale Thorne	D & M Thorne Farms	E ½

Lot 15, Concession 14

Lot 15 appears to have contained primarily maple, elm, ash and hickory at the time of the initial survey, according to the surveyor`s notes (Smith 1832:16). Lucas Leacock & Co. is listed as owning 50 acres of Lot 15, Concession 14 in Belden's **Illustrated Atlas of the Dominion of Canada** (1880). No structures are depicted on the property, however. At the time of the 1881 census, the Irish farmer John Leacock (68) and his wife Mariah (66) had a household in the vicinity, living with their children George (30), Edwin (25), Robert (23), David (20) as well as Ida Stockton (14) and Frederick Houst (10 months) (Library and Archive Canada 2009a). The land transactions for the property from the Crown patent in 1835 to 2006 are summarized in Table 6.

Table 3: Land Summary Transactions for Lot 15 in the 14th Concession

Date	Transaction	Grantor	Grantee	Acreage
08/14/1835	Grant	Crown	Jeremiah Mallory	200 (N pt)
05/07/1863	Deed	Crown	William Acton	S pt
11/04/1855	B&S	Allan McNab	Thomas M. Jones	200 (N pt)
01/10/1838	B&S	Thomas M. Jones	Thomas Graham	-
10/22/1835	B&S	Jeremiah Mallory	Henry Howard	200 (N pt)
10/27/1835	Clause	Henry Howard	Allan Mackal	200 (N pt)
08/01/1870	Deed	Richard Clapham	John Leacock	200 (N pt)
08/25/1874	B&S	John Leacock	Harvey J. Leacock	50 (NE pt)
03/07/1881	B&S	Harvey J. Leacock & wife	Alpin McGregor	50 (NE pt)
05/27/1887	B&S	John Leacock	David A. Leacock	50 (??)
05/06/1895	B&S	William Acton	James Acton	S pt
08/29/1898	Will	John Leacock	David Leacock & Maria Leacock	W 2/3 N 150 a & 50 (S pt)
04/08/1899	B&S	Maria Leacock	David Leacock	200 (N pt)
05/23/1899	B&S	Alpine McGregor	James Acton	50 (NE pt)
09/16/1923	Will	James Acton	Bertha Acton	
11/19/1930	Convey'ce	Indust'l Mort & Trust Co.	Lillian M. Wilson	S pt. 14 & 15 & N1/2

				E1/2
03/09/1940	Grant	David Leacock	Norman R. Wilson	S (50 a) N (200 a)
05/23/1941	Grant	David Leacock	Norman R. Wilson	W 2/3 N 150 a
04/10/1945	Grant	Ind'l Mort. & Trust Co.	James Kelly	N ½ & E ½ of 200 (N pt)
05/07/1946	Grant	Norman Wilson	Director, Veteran's Land Act	W 2/3 of 150 (N pt)
12/14/1946	Grant	Norman Wilson	Ross Hume	50 (S pt) 200 (N pt)
01/28/1957	Grant	Nora Kelly & Nina Kelly	Robert & Thomas Lucas	N ½ & E ½ of 200 (N pt)
07/09/1962	Grant	Director, Veteran's Land Act	Robert Wood	W 2/3 of 150 (N pt)
06/15/1962	Grant	Robert Wood	Cornelius Klaver	W 2/3 of 150 (N pt)
10/19/1966	Grant	Cornelius Klaver	Ross & Norma Rilett	W 2/3 of 150 (N pt)
04/06/1970	Grant	Anna MacDonald	Roy & Marjorie Lloyd	S pt
05/05/1973	Grant	Thomas & Robert Lucas	Leonardus & Maria Migchels	E 1/3 of N ¾
10/21/1976	Deed	Ross & Norma Rilett	Albert & Diana Boulter	W 2/3 of 150 (N pt)
07/31/1978	Deed	Albert & Diana Boulter	Ronald & Karen Toy	W 2/3 of 150 (N pt)
08/23/1979	Deed	Ronald & Karen Toy	Joseph & Elizabeth Thuss	W 2/3 of 150 (N pt)
10/30/1981	Grant	Ross Hume	Ross & Laura Hume	50 (N pt)
04/02/1984	Grant	Joseph & Elizabeth Thuss	Murray & Maxine Watson	W 2/3 of 150 (N pt)
06/14/1988	Grant	Leonardus & Maria Migchels	Carl & Catherine Migchels	E 1/3 of N ¾
01/31/1989	Transfer	Elton & Elsie Saunders	Jeff & Gale Edwards	Part 1
02/07/1991	Transfer	Dale Thorne	D & M Thorne Farms Ltd.	Part 1
03/31/2006	Transfer	D & M Thorne Farms Ltd.	Minten Family Farms Ltd.	Part 1
12/01/2006	Transfer	Jeff & Gale Edwards	Daniel & Sandra Wilcox	Part 1

Although outside of the study area, it is worth noting that the farm on Lot 9, Concession 14 was owned by Thomas Saunders. His family founded the Saunders Cemetery, Brooke Township's oldest cemetery (Campbell 1936:14).

6.0 Archaeological Potential

In addition to the relevant historical sources and the results of past excavations and surveys, the archaeological potential of a property can be assessed using its soils, hydrology and landforms as considerations. Young et al. 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 (Young et al. 1995:33). 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 m of either extant water sources or former bodies of water, such as post-glacial lakes. The Ministry of Tourism and Culture (Ministry of Culture 2005:12-13) accordingly identifies high potential First Nation sites

within 300 m of a primary water source and 200 m of a secondary water source.

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. Additionally, lands in close proximity to streams and other water courses were valued as they offered access to transportation and communication routes. Other factors attracting prehistoric settlement include the presence of well-drained soils (for habitation and agriculture), elevated knolls and ridges, unique landforms (waterfalls, rocky outcrops, caverns) and valued natural resources (raw materials, concentrations of specific flora/fauna). Conversely, it must be understood that non-habitational sites (e.g. 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 procurement/production and more tied to wider economic networks. As such, proximity to transportation routes (roads, canals, etc) became the most significant predictor of site location, especially for Euro-Canadian populations. 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 of Ontario to settlement after about 1850, sites tended to be more commonly located along historically-surveyed roads. Positive potential for Historic archaeological materials can also be inferred by proximity to documented historic structures (churches, cemeteries, houses) and locations associated with historic events.

Based on its location, drainage, topography and land-use, it seems clear that the study area would, in its pristine state, have a high potential for the presence of both Pre-Contact and Euro-Canadian era sites. The potential for Pre-Contact sites is high due to the presence of numerous tributary waterways (see Section 2.0). The potential for Historic sites is similarly high due to location’s proximity to Ebenezer Road and Old Walnut Road, both of which are historically-surveyed thoroughfares and therefore significant settlement attractors. The lack of development in the study area for infrastructural, residential or commercial purposes has preserved this high archaeological potential. In sum, the study area has the potential to yield sites which span Ontario’s entire archaeological history.

7.0 Field Methods

Given that the study area was comprised of recently ploughed agricultural lands with well-weathered soils (see Plates 1-2), the Stage 2 assessment was carried out using the pedestrian survey method as set out by the Ministry of Tourism and Culture (Ministry of Culture 2009:12-13). In this strategy, crewmembers traversed the study area along parallel transects established at

5 m intervals, resulting in 20 survey transects per hectare (see Plates 3-4). If cultural materials were encountered in the course of the survey, the transect interval would be closed to 1 m and a close inspection of the ground would be conducted for 20 m in all directions. All diagnostic artifacts and a representative sample of non-diagnostic artifacts would then be collected for analysis. All remaining artifacts would be left *in situ* until a proper Stage 3 Controlled Surface Collection (CSC) could be carried out.

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 m 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. Any artifacts recovered are sent to the ARA office at 97 Gatewood Road in Kitchener, Ontario for processing, cataloguing, analysis and curation. All project photographs, mapping materials, and field notes are stored at the same facility.

Plate 1: View of Ploughed Agricultural Lands

Plate 2: View of Soil Conditions at Time of Survey

Plate 3: Crewmembers Conducting Pedestrian Survey at 5 m Intervals

Plate 4: Crewmembers Conducting Pedestrian Survey at 5 m Intervals

8.0 Results and Recommendations

The Stage 2 archaeological assessment of the proposed **Zephyr Farms Ltd. – Brooke-Alvinston Wind Farm** was conducted on November 18th 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; A.J. Wong, Field Director; M. Fowler, Assistant Field Director; and 12 additional crewmembers. Field conditions were excellent, with partly sunny skies, well-weathered soils and dry soil for screening.

Over the course of the Stage 2 archaeological assessment, no materials with significant cultural heritage value or interest were recovered. Accordingly, **Archaeological Research Associates Ltd.** feels that no further archaeological study of the specified corridor would be productive. As such, it is recommended that these particular lands be released from further heritage concerns. Should any project impacts be contemplated outside of the areas assessed, it is recommended that they first be subject to Stage 2 assessment. Any exemptions from further assessment must be consistent with the archaeological fieldwork standards and guidelines as outlined by the Ministry of Tourism and Culture (Ministry of Culture 2009).

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.

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Appendix A: Project Mapping Provided by Stantec Consulting Ltd.