B

Appendix B: Stage 1 Archaeological Assessment

Stage 1 Archaeological Assessment Bradford Street (Lots 24-26, Concession 5, Former Township of Vespra, and Lot 8, Concession 14, Former Township of Innisfil) City of Barrie, Regional Municipality of Simcoe

Original Report

Prepared for:

CIMA+

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Executive Summary

Archaeological Services Inc. was contracted by CIMA+ to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Bradford Street Corridor Study. This project involves identifying multi-modal transportation and streetscape improvements to support planned growth in the City of Barrie.

The Stage 1 background study determined that The Allandale site (BcGw-69) is located within the current Study Area, which should be avoided by project designs. Stage 4 excavations at the Allandale Station site are currently in progress by AECOM (P123-0395-2018) and upon completion will inform the remaining work and detailed recommendations for the site. Should project impacts be proposed surrounding the Allandale site in the aforementioned areas, these areas should be subject to a program of archaeological monitoring, specifically tailored to project impacts and may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits. The property inspection determined that parts of the Study Area exhibit archaeological potential and require Stage 2 survey, prior to any construction activities.

The following is a summary of our recommendations:

1 Parts of the Study Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey at five metre intervals, prior to any proposed construction activities on these lands;

2 The Allandale Station site (BcGw-69) is located within the Study Area and has been identified as an ancestral Huron-Wendat village and ossuary with established cultural heritage value and interest. If avoidance is not possible, a construction monitoring program specifically tailored to project impacts should be employed which may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits. This should include a monitoring program specifically tailored to project impacts and may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits. As evidence

of human remains in disturbed contexts on the historic Allandale Station site has been previously documented, archaeological monitoring of any proposed construction activities is required within the site area between Essa Road and Milburn Street. Stage 4 excavations at the Allandale Station site are currently in progress by AECOM (P123-0395-2018) and upon completion will inform the remaining work and detailed recommendations for the site. In lieu of these results, AECOM's most recent recommendations (P123-0349-2017, P123-0350-2017) for the site – which were developed in consultation with Huron-Wendat First Nation, the Williams Treaty First Nations, and the City of Barrie – still apply;

3 The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or being previously assessed. These lands do not require further archaeological assessment; and,

4 Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

Project Personnel

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1.0 Project Context

Archaeological Services Inc. was contracted by CIMA+ to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the Bradford Street Corridor Study (Figure 1). This project involves identifying multi-modal transportation and streetscape improvements to support planned growth in the City of Barrie. The Stage 1 scope involves Bradford Street from Dunlop Street to Tiffin Street, High Street from Dunlop Street to Bradford Street, Simcoe Street from Toronto Street to Bradford Street and Tiffin Street from Bradford Street to Lakeshore Drive, east of the Allandale Train Station.

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (Ontario Heritage Act, R.S.O. c. O.18, 1990, as amended in 2019) and the 2011 *Standards and Guidelines for Consultant Archaeologists* (S & G), administered by the Ministry of Heritage, Sport, Tourism and Culture Industries (M.H.S.T.C.I. 2011).

1.1 Development Context

All work has been undertaken as required by the *Environmental Assessment Act, RSO* (Environmental Assessment Act, R.S.O., 1990 as amended 2020) and regulations made under the Act, and are therefore subject to all associated legislation. This project is being completed as part of a Schedule 'C' Municipal Class Environmental Assessment and conducted in accordance with the Municipal Engineers' Association document *Municipal Class Environmental Assessment* (Municipal Class Environmental Assessment, 2000, as amended 2015).

The *County of Simcoe Archaeological Management Plan* (A.S.I., 2019a) was also consulted.

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment and property inspection was granted by CIMA+ on May 12, 2021.

1.1.1 Treaties and Traditional Territories

The Study Area is in Treaty 18, or the Lake Simcoe-Nottawasaga Treaty, signed in 1818 by Ojibway chiefs who granted land along the shores of Lake Huron and southern Georgian Bay to the Crown (AANDC 2016).

1.2 Historical Context

The purpose of this section, according to the S & G, Section 7.5.7, Standard 1, is to describe the past and present land use and the settlement history and any other relevant historical information pertaining to the Study Area. A summary is first presented of the current understanding of the Indigenous land use of the Study Area. This is then followed by a review of the historical Euro-Canadian settlement history.

1.2.1 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years before present (B.P.) (Ferris, 2013). Populations at this time would have been highly mobile, inhabiting a boreal-parkland similar to the modern sub-arctic. By approximately 10,000 B.P., the environment had progressively warmed (Edwards & Fritz, 1988) and populations now occupied less extensive territories (Ellis & Deller, 1990).

Between approximately 10,000-5,500 B.P., the Great Lakes basins experienced low-water levels, and many sites which would have been located on those former shorelines are now submerged. This period produces the earliest evidence of heavy wood working tools, an indication of greater investment of labour in felling trees for fuel, to build shelter, and watercraft production. These activities suggest prolonged seasonal residency at occupation sites. Polished stone and native copper implements were being produced by approximately 8,000 B.P.; the latter was acquired from the north shore of Lake Superior, evidence of extensive exchange networks throughout the Great Lakes region. The earliest evidence for cemeteries dates to approximately 4,500-3,000 B.P. and is indicative of increased social organization, investment of labour into social infrastructure, and the

establishment of socially prescribed territories (Brown, 1995, p. 13; Ellis et al., 1990, 2009).

Between 3,000-2,500 B.P., populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 B.P. and exchange and interaction networks broaden at this time (Spence et al., 1990, pp. 136, 138) and by approximately 2,000 B.P., evidence exists for small community camps, focusing on the seasonal harvesting of resources (Spence et al., 1990, pp. 155, 164). By 1,500 B.P. there is macro botanical evidence for maize in southern Ontario, and it is thought that maize only supplemented people's diet. There is earlier phytolithic evidence for maize in central New York State by 2,300 B.P. - it is likely that once similar analyses are conducted on Ontario ceramic vessels of the same period, the same evidence will be found (Birch & Williamson, 2013, pp. 13–15). As is evident in detailed Anishinaabek ethnographies, winter was a period during which some families would depart from the larger group as it was eA.S.I.er to sustain smaller populations (Rogers, 1962). It is generally understood that these populations were Algonquian-speakers during these millennia of settlement and land use.

From the beginning of the Late Woodland period at approximately 1,000 B.P., lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (C.E.), the communal site is replaced by the village focused on horticulture. Seasonal disintegration of the community for the exploitation of a wider territory and more varied resource base was still practised (Williamson, 1990, p. 317). By 1300-1450 C.E., this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al., 1990, p. 343). From 1450-1649 C.E. this process continued with the coalescence of these small villages into larger communities (Birch & Williamson, 2013). Through this process, the socio-political organization of the First Nations, as described historically by the French and English explorers who first visited southern Ontario, was developed.

The ethnohistoric record of historic Wendake (northern Simcoe County) suggests that initial Huron-Wendat alliance building and confederacy formation occurred during the mid-fifteenth century, some 200 years before the arrival of Europeans

(Thwaites 1896:16:227). Attignawantan (Bear) and Attigneenongnahac (Cord) were the original co-founders of the Wendat confederacy, since both had been resident in Wendake for at least 200 years (Thwaites 1896:16:227-229). Settled by the mid-fourteenth century, Attignwantan villages were located in western Wendake and across the Penetang Peninsula, while Attigneenongnahac villages were clustered to the southeast. Later additions to the confederacy were Arendahronon (Rock), who moved into Wendake *circa* A.D. 1590, and Tahontaenrat (Deer), who joined *circa* A.D. 1610.

By 1600 C.E., the communities within Simcoe County had formed the Confederation of Nations encountered by the first European explorers and missionaries. In the 1640s, the traditional enmity between the Haudenosaunee and the Huron-Wendat (and their Algonquian allies such as the Nippissing and Odawa) led to the dispersal of the Huron-Wendat. Shortly afterwards, the Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. By the 1690s however, the Anishinaabeg were the only communities with a permanent presence in southern Ontario. From the beginning of the eighteenth century to the assertion of British sovereignty in 1763, there was no interruption to Anishinaabeg control and use of southern Ontario.

1.2.2 Post-Contact Settlement

Historically, the Study Area is located in the Former Vespra Township, Lots 24-26, Concession 5 and Former Innisfil Township, Lot 8, Concession 14, County of Simcoe.

The S & G stipulates that areas of early Euro-Canadian settlement (pioneer homesteads, isolated cabins, farmstead complexes), early wharf or dock complexes, pioneer churches, and early cemeteries are considered to have archaeological potential. Early historical transportation routes (trails, passes, roads, railways, portage routes), properties listed on a municipal register or designated under the *Ontario Heritage Act* or a federal, provincial, or municipal historic landmark or site are also considered to have archaeological potential.

For the Euro-Canadian period, the majority of early nineteenth century farmsteads (i.e., those that are arguably the most potentially significant resources and whose locations are rarely recorded on nineteenth century maps) are likely to be located in proximity to water. The development of the network of concession roads and railroads through the course of the nineteenth century frequently influenced the siting of farmsteads and businesses. Accordingly, undisturbed lands within 100 metres of an early settlement road are also considered to have potential for the presence of Euro-Canadian archaeological sites.

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes followed existing Indigenous trails, both along the lakeshore and adjacent to various creeks and rivers (A.S.I. 2006).

Townships of Innisfil and Vespra

The Township of Innisfil was surveyed in 1820 and the first settlement began that year. The township was named after the poetical name for Ireland, Innisfail, by its early settlers. Growth was slow during the first ten years of the township and the first sawmill was not erected until the 1830s and in 1835 a grist mill was constructed. Early settlement focused around Kempenfeldt Bay, and the southwestern area of the township was not settled until after 1840. By 1843, the first school was constructed and the following year the Innisfil Methodist Congregation built the first church. The first census of the township recorded a population of only 762 inhabitants, by 1850, the township had a population of 1,807.

Following the connection of the Northern Railway in 1853, the township became an important shipping hub for the lumber industry of central Ontario (Mika and Mika 1981:347-349). With the arrival of the railway a number of communities developed and prospered, Allandale, Lefroy, and Craigvale all boasted stations. On the western border of the township, Thorton was a stop for the Hamilton and Northwestern Railway. The community of St. Paul's was established at the corner

of Penetanguishene Road (Yonge Street) and Mapleview Drive, and was centered around St. Paul's Anglican Church (established 1851) and a schoolhouse as depicted on the 1879 Illustrated Historical Atlas (Belden 1881). The small community consisted of a cluster of houses and would have been along the main path of anyone travelling between Toronto and Georgian Bay along Penetanguishene Road. Other early post office communities included Bramley, Cherry Creek, Fennell, Holly, Innisfil, Killyleagh, Beaumont, Painswick, and Stroud. Today, Innisfil attracts large numbers of tourists and cottagers in the summertime who travel from Toronto via Highway 400 and Yonge Street along an extension which travels the length of the township built in the late seventeenth century by Colonel John Graves Simcoe from York (Toronto) to Lake Simcoe (Mika and Mika 1981:347-349).

City of Barrie

The City of Barrie is located at the head of Kempenfelt Bay on Lake Simcoe and at the junction of a number of major transportation routes, including the Barrie Rail Corridor. Kempenfelt, east of the bay and now part of the City of Barrie, was an important site during the War of 1812 as it was the starting point of Nine Mile Portage. First established by First Nations prior to the arrival of Europeans, the portage became a strategic military transportation route between Lake Simcoe and Lake Huron. A storehouse was built at this location which also served as a stopping site for traders and settlers. The town of Barrie was named after Commodore Barrie, commander of British warships at Kingston in the early nineteenth century. The town site was surveyed into town lots in the early 1830s and the first settler to permanently locate in Barrie was a Scottish farmer named Alexander Walker. Other early settlers include David Edgar, Captain Oliver, and John McWatt. The 1830s also saw the establishment of taverns, a general store, a post office, a schoolhouse, and a number of churches.

The Toronto, Simcoe and Lake Huron Union Rail Road Company was incorporated in 1844 and in 1850 was renamed the Ontario, Simcoe and Huron Union Rail Road Company. Under this new name, a railway was built connecting Toronto to Newmarket. Opened in 1853, the new line was known as the Ontario, Simcoe and Huron Railway (Andreae, 1997). In the 1850s, the Ontario, Simcoe and Huron

Railway was constructed through Allandale, which was united with Barrie in 1897. Barrie was incorporated as a town in the early 1850s and as a city more than a century later in 1959 (Mika and Mika 1983:136-139).

The Ontario, Simcoe and Huron Railway (Northern Railway)

The Toronto, Simcoe, and Lake Huron Union Railroad Company was incorporated in 1844 and in 1850 was renamed the Ontario, Simcoe, and Huron Union Rail Road Company. The rail line opened on May 16,1853, and connected Toronto to Aurora (formerly Matchell's Corners) via a 48 kilometre track (Andreae, 1997). The line was expanded with service to Bradford beginning June 13, 1853, and further expanded to Barrie on October 11, 1853 (forming the path for the present Barrie rail corridor). The inaugural trip on May 16, 1853 from Toronto to Aurora is commemorated by a plaque at Toronto's Union Station, as it was the first steam locomotive operated in Ontario (Mika & Mika, 1977).

In 1858, the company underwent a third name change becoming the Northern Railway Company of Canada. Subsequently, the Ontario, Simcoe & Huron Railway became known simply as the Northern Railway, until 1888 when the ownership amalgamated with the Grand Trunk Railway Company of Canada, at which point the Northern Railway became part of the Grand Trunk Railway. Rail tracks were quickly laid across Ontario, as well as other parts of the country linking settlements and provinces. The population of Canada doubled between 1851 and 1901 but the miles of rail laid increased exponentially from 159 to 18,294 miles (Andreae, 1997). The Northern Railway was a major draw factor for businesses in the Counties of York and Simcoe and caused many communities with a station to thrive and those without to dissipate (Town of Newmarket, 2018). In 1923, the railway company was again amalgamated, this time with the government-owned Canadian National Railway (C.N.).

Commuter service began on the line in 1972, operated by C.N. as part of the C.N. Newmarket Subdivision. This commuter service was taken over by VIA Rail in 1978, and then by GO Transit in 1982. GO Transit continues to operate this commuter service to this day.

Allandale Train Station

Allandale Train Station was built between 1895 and 1905 and was acknowledged as the "flagship of the Grand Trunk Line" when the restaurant and passenger depot were opened in 1905 (City of Barrie, 2009). We now know that the station was built on top of an ancestral Huron-Wendat settlement and ossuary. The red brick office building was constructed c. 1895 and was last used as a passenger waiting room for VIA Rail and GO Rail into the 1990s. The three connected frame buildings making up the restaurant and passenger depot were designed by the Detroit firm of Spier and Rohns to be of Italianate residential scale and inspiration (Canada's Historic Places, 2019). Allandale was a "vital transportation link in the north-south corridor of south central Ontario, and in the Grand Trunk Railway's northern Ontario and western Canadian operations" (City of Barrie, 2009, p. 3).

Following an expansion west in an attempt to compete with the Canadian Pacific and Canadian Northern Railways, the company went bankrupt in 1919 and in 1920, control of the Grand Trunk Railway was assumed by the Canadian Government. Three years later, in 1923, the Grand Trunk Railway was amalgamated with Canadian Northern Railway (Andreae, 1997; Library and Archives Canada, 2005).

1.2.3 Map Review

The 1871 *Map of the County of Simcoe* (Hogg, 1871), and the 1881 *Illustrated Historical Atlas of the County of Simcoe* (Belden, 1881), the 1928 *Topographic Map of Barrie* (Department of National Defence 1928), the 1968 *Topographic Map of Barrie* (Department of National Defence, 1968), and the 1986 *NTS Map of Barrie* (Department of Energy, Mines and Resources 1986) were examined to determine the presence of historical features within the Study Area during the nineteenth and twentieth centuries (Figures 2-6). Historically, the Study Area is located on part of Lots 7-8, Concession 14 and Lots 24-26, Concession 5 in the Townships of Vespra and Innisfil, County of Simcoe.

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases. For instance, they were often financed by subscription limiting the level of detail provided on the maps.

Moreover, not every feature of interest would have been within the scope of the atlases. The use of historical map sources to reconstruct or predict the location of former features within the modern landscape generally begins by using common reference points between the various sources. The historical maps are geo-referenced to provide the most accurate determination of the location of any property on a modern map. The results of this exercise can often be imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including differences of scale and resolution, and distortions introduced by reproduction of the sources.

The Study Area on mapping from 1871 is shown to be in an area of settlement with a dense roadway network extending north and westward from the tip of the "Kempenfeldt Bay". The eastern edge of the Study Area marks the transition to agricultural land use, with J. Jacobs identified as a landowner in a portion of the Study Area. Essa Road is indicated as a major roadway and generally follows its current alignment. At the roadway's terminus at the bay is a label for "Allandale". A post office is located in this area and a rail line is indicated connecting to Allandale. Present-day Tiffin, Mary, and Toronto Streets are also located on the mapping, generally following their current alignment. Bradford Street is extant on the mapping, however, its alignment in the north and south portions of the Study Area have been subsequently altered.

Several watercourses extend from Kempenfelt Bay into the north half of the Study Area. In the following decade, the area shows continued growth and settlement based on 1881 mapping. Areas of density are indicated throughout most of the Study Area, including the eastern-most portion of the Study Area that was agricultural the decade prior. Allandale continues to be depicted on the mapping, with an additional rail line connecting at the location. The shoreline of Kempenfelt Bay has expanded on its southwest side, squaring out the tip of the bay. Watercourses from the bay continue to run through the Study Area.

Topographic mapping from 1928 shows more detail of the density observed on the late-nineteenth-century mapping. Structures are illustrated lining both sides of Bradford Street throughout the Study Area. A bridge is shown carrying Bradford Street over Bunkers Creek. The rail corridor extends along the shoreline

and two tanneries are shown between the rail corridor and the Study Area. A track labelled fair grounds is pictured on the west side of Bradford Street in the north portion of the Study Area. A pier or boat launch extends from present-day Tiffin Street into Kempenfelt Bay. Development continues through the early twentieth century and the Study Area and much of the land in the surrounding area is developed by the 1950s. The pier or boat launch noted on the 1928 map is still present in 1968, however the shoreline of Kempenfelt Bay has been artificially altered and is shown extending into the bay. The Prince of Wales school, at 50 Bradford Street, is labelled 'school' on the west side of Bradford Street on the 1968 mapping.

The 1986 mapping labels a tannery, waste, water, and sewage facilities in the south portion of the Study Area. In addition, further modifications have been made to the Kempenfelt Bay shoreline. The shoreline has been extended further into the bay and a marina has been constructed northeast of the Study Area.

1.2.4 Aerial and Orthoimagery Review

Aerial photography of the Barrie area from 1954 (Hunting Survey Corporation Limited, 1954) and available Google satellite imagery were examined to determine the extent and nature of development and land uses with the Study Area (Figure 7; Images 35-50).

The 1954 aerial photograph shows the expansion of the road network as well as residential and commercial development. It also shows the shoreline of Kempenfelt Bay to be largely unmodified; the pier or boat launch extends from Tiffin Street as shown in the 1928 and 1968 mapping. Late-twentieth-century mapping shows the Study Area in much the same developed context with little change.

Table 1: Google Earth Orthoimagery Review

Location	Description	Image
Checkley Street,	In August 2006, the northeast arm of the Study Area was under construction with paved parking lots	35, 36

Location	Description	Image
Simcoe Street and Toronto Street	constructed around commercial developments. The original alignment of Simcoe Street continued west intersecting with Toronto Street before terminating at Checkley Street. By June 2013 the construction of the Checkley Street, Simcoe Street and Toronto Street right-of-ways was completed.	
125 Dunlop Street West	In July 2017, the Fisher Auditorium, Barrie Central Collegiate High School and associated parking lots were present. In 2016 the school was closed and demolished in July 2019. The Fisher Auditorium is currently also slated for demolition.	37, 38
44 Bradford Street	In July 2017, a house and driveway are shown with parking lot at the rear of the house. A shed or outbuilding can be seen at the rear of the property. By 2013, the house, driveway, parking lot, and outbuilding have been demolished and surface disturbance is visible.	39, 40
50 Bradford Street	In July 2017, the Prince of Wales Public School and its two attached additions were surrounded by a paved parking lot and several trees. The original structure associated with the Prince of Wales Public School was Listed on the City of Barrie's Municipal Heritage Register in 2009, and the school was eventually closed in June of 2011. By July 2019, the school additions and parking lot had been removed, leaving only the buildings original framework standing.	39, 40
100 Bradford Street	In August 2006, a large rectangular structure surrounded by a gravel and asphalt parking lot was present. By June 2013, the structure and associated parking lot had been removed.	41, 42

Location	Description	Image
145 Bradford Street	In August 2006, one structure was located at John Street and Bradford Street, with several asphalt parking lots. Demolition of the structure and its surrounding parking began in 2013. Earth moving activities across the property continued between 2013 and 2015.	43, 44
220 Bradford Street	In August 2006 two structures surrounded by an asphalt or gravel parking lot are shown. By June 2013, the two structures had been demolished and much of the parking lot had been removed.	45, 46
240 Bradford Street	In August 2006 a large structure and smaller outbuilding is shown surrounded by a gravel parking lot. Much of the rear of the property contained grassy and wooded lands, with a small creek to the west within the adjacent residential neighbourhood. In June 2013, the structures and gravel lot had been removed and the creek was channelized under Bradford Street to the east.	47, 48
Allandale Train Station	In August 2006, the Allandale Train Station was surrounded by fallow lands demonstrating variable surface disturbance with adjacent parking lots, roads, and the rail line. By June 2013, the lands surrounding the Allandale Train Station indicate surface disturbances. A new GO Rail station with parking along Gowan Street had been constructed, serviced by a new access road immediately west of the Allandale Train Station. During this process, Lakeshore Drive was re-aligned slightly to the northeast. Surface disturbance surrounding the Allandale Train Station is visible. It is unclear where the excess soils produced by the construction were redistributed, and whether they	49, 50

Location	Description	Image
	contained previously disturbed human remains associated with the Allandale Train Station ossuary.	

1.3 Archaeological Context

This section provides background research pertaining to previous archaeological fieldwork conducted within and in the vicinity of the Study Area, its environmental characteristics (including drainage, soils or surficial geology and topography, etc.), and current land use and field conditions. Three sources of information were consulted to provide information about previous archaeological research: the site record forms for registered sites available online from the M.H.S.T.C.I. through *Ontario's Past Portal*; published and unpublished documentary sources; and the files of A.S.I.

1.3.1 Current Land Use and Field Conditions

The Study Area encompasses Bradford Street from Dunlop Street to Tiffin Street, High Street from Dunlop Street to Bradford Street, Simcoe Street from Toronto Street to Bradford Street, and Tiffin Street from Bradford Street to Lakeshore Drive. Bradford Street is in a north-south alignment carrying two lanes of traffic in each direction. A paved pedestrian sidewalk is located on both sides of the roadway, separated by a concrete boulevard. A hydro line runs along the east side of the roadway throughout most of the Study Area.

Bradford Street can be characterized as a mixed-use roadway with commercial properties (primarily auto based) located within the north half with a consistent presence of historically residential properties located along the roadway throughout the Study Area. Many of these residential building types have been converted to commercial use. The Barrie Sewage Treatment Plant occupies a large portion of the east side of Bradford Street within the south half of the Study Area. There is a curve in the roadway in the area of the plant, with late nineteenth- and early twentieth-century residential built forms lining the west side of the street.

The north end of Bradford Street terminates at Dunlop Street, a commercial east-west aligned roadway that carries one lane of traffic in each direction with primarily street-wall commercial buildings lining the roadway towards the direction of the downtown core (located east).

High Street is a short roadway that provides a connection between Dunlop Street and Bradford Street, with a landscaped triangular boulevard located between the roadway and Bradford Street on its east. High Street is currently under active construction, which extends south on a portion Bradford Street and east and west on portions of Dunlop Street. This network of roads in the Study Area is located on a slight hill that slopes south along Bradford Street.

1.3.2 Geography

In addition to the known archaeological sites, the state of the natural environment is a helpful indicator of archaeological potential. Accordingly, a description of the physiography and soils are briefly discussed for the Study Area.

The S & G stipulates that primary water sources (lakes, rivers, streams, creeks, etc.), secondary water sources (intermittent streams and creeks, springs, marshes, swamps, etc.), ancient water sources (glacial lake shorelines indicated by the presence of raised sand or gravel beach ridges, relic river or stream channels indicated by clear dip or swale in the topography, shorelines of drained lakes or marshes, cobble beaches, etc.), as well as accessible or inaccessible shorelines (high bluffs, swamp or marsh fields by the edge of a lake, sandbars stretching into marsh, etc.) are characteristics that indicate archaeological potential.

Water has been identified as the major determinant of site selection and the presence of potable water is the single most important resource necessary for any extended human occupation or settlement. Since water sources have remained relatively stable in Ontario since 5,000 B.P. (Karrow & Warner, 1990, p. Figure 2.16), proximity to water can be regarded as a useful index for the evaluation of archaeological site potential. Indeed, distance from water has been one of the most commonly used variables for predictive modeling of site location.

Other geographic characteristics that can indicate archaeological potential include elevated topography (eskers, drumlins, large knolls, and plateaux), pockets of well-drained sandy soil, especially near areas of heavy soil or rocky ground, distinctive land formations that might have been special or spiritual places, such as waterfalls, rock outcrops, caverns, mounds, and promontories and their bases. There may be physical indicators of their use, such as burials, structures, offerings, rock paintings or carvings. Resource areas, including; food or medicinal plants (migratory routes, spawning areas) are also considered characteristics that indicate archaeological potential (S & G, Section 1.3.1).

The Study Area is located within the Sand Plains of the Simcoe Lowlands physiographic region of southern Ontario. The Simcoe Lowlands physiographic region consists of low-lying belts of sand plain, which cover an area of 280,000 hectares, bordering Georgian Bay and Lake Simcoe. The area was once inundated by the waters of glacial Lake Algonquin, inland of the present day shorelines. Remnant shoreline features (beaches, shorecliffs, bars, etc.) mark the former water level of Lake Algonquin. Topography is generally flat and subsoil consists of variable sand, gravel, silt and clay deposits as formed on the lake bottom (Chapman and Putnam 1984:177-182). Sand plains and beach ridges are glaciolacustrine features and are products of the Late Wisconsian glacial stage (ca. 25,000-10,000 BP). Sand plains are formed in shallow waters and beach ridges mark the former shorelines (Karrow and Warner 1990:5).

The sand plain upon which the Study Area is situated likely corresponds to shallow water deposits from Lake Algonquin. Boulder pavement has been caused by wave action during preceding high-water phases (Chapman & Putnam, 1984).

The Study Area is underlain by coarse-textured glaciolacustrine deposits of sand, gravel, minor silt and clay and is overlapping with a beach ridge (Figure 8). Soil within the Study Area consists of Tioga loamy sand a stone-free to moderately stony podzol with good drainage, and Muck with very poor drainage (Figure 9).

The Study Area is within the Barrie Creeks subwatershed and is adjacent to Lake Simcoe. The Barrie Creeks subwatershed is located in the west-central portion of the Lake Simcoe drainage basin. This subwatershed drains an area of approximately 38 square kilometres which outlets into Kempenfelt Bay (Lake

Simcoe Region Conservation Authority, 2012). Lake Simcoe was known to the Huron-Wendat as Ouentironk, or "beautiful water (Lake Simcoe Region Conservation Authority, 2014). Late seventeenth and early eighteenth-century French sources refer to Lake Simcoe as Lac Taronto. Though the etymology of 'Taronto' is debated, it is thought to be derived from the Mohawk word tkaronto which means "where there are trees standing in the water" and may refer to the fish weir at the Narrows between Lake Simcoe and Lake Couchiching (Natural Resources Canada, 2007). Lake Simcoe was one of the terminals of the Toronto Carrying Place route along the Humber River which was a vital route in fur trade (Williamson, 2008, pp. 50–52). This passage connected to Lake Ontario at the mouth of the Humber River. Lake Simcoe drains an area of approximately 3,400 square kilometres, ultimately draining into Lake Huron to the west. Lake Simcoe supports a diverse aquatic ecosystem, home to over 50 different species of fish (Lake Simcoe Region Conservation Authority, 2014).

1.3.3 Previously Registered Archaeological Sites

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database maintained by the M.H.S.T.C.I. This database contains archaeological sites registered within the Borden system. Under the Borden system, Canada has been divided into grid blocks based on latitude and longitude. A Borden block is approximately 13 kilometres east to west, and approximately 18.5 kilometres north to south. Each Borden block is referenced by a four-letter designator, and sites within a block are numbered sequentially as they are found. The Study Area under review is located in Borden block *BcGw.*

According to the Ontario Archaeological Sites Database, one previously registered archaeological site is located within one kilometre of the Study Area (see Table 2). It is located within 50 metres of and has further cultural heritage value or interest (M.H.S.T.C.I., 2021).

Table 2: Registered Sites within One Kilometre of the Study Area

Borden Number	Site Name	Temporal/ Cultural Affiliation	Site Type	Researcher
BcGw-69	Allandale Station	Euro-Canadian, Late Woodland	Railway, camp/ campsite	AFBY 2002, 2001; New Directions 2004, AMICK 2010, 2011 2013, 2017; AECOM 2018

The Allandale site (BcGw-69) is located within the Historic Allandale Station complex. The site has been identified as an ancestral Huron-Wendat settlement and ossuary (AECOM, 2018a, 2018c; AFBY Archaeological and Heritage Consultants, 2000, 2001a, p. 201, 2001b; AMICK Consultants Ltd., 2010, 2011, 2013, 2017) and cultural heritage value or interest has been established. Human remains have been documented on the Allandale site, particularly within the footprint of the historic station building. Both historical and modern construction activities surrounding the Allandale site have disturbed the ossuary and has resulted in the distribution of human remains across the site. The extent of the distribution of human remains has not been fully defined. As such, previous consultants have recommended Stage 2 construction monitoring surrounding the Allandale site (AECOM, 2018a, 2019c; A.S.I., 2017a). Due to the highly significant archaeological status and sensitivity of the site, it is preferable that impacts to the site are mitigated through development of a Stage 4 Protection and Avoidance strategy.

1.3.4 Previous Archaeological Assessments

According to the background research, 18 previous reports detail fieldwork within 50 metres of the Study Area:

(AECOM, 2018a) Stage 1 Archaeological Assessment Allandale Train Station Lands Part of Lots 8 and 9, Concession XIV Historic Township of Innisfil, Former town of Allandale, City of Barrie, Simcoe County, Ontario [P123-0342-2017]

AECOM was retained by the City of Barrie to conduct a Stage 1 Archaeological Assessment for the Allandale Train Station Lands located at 24 Essa Road. The project area is bound to the north by Lakeshore Drive, to the west by Tiffin Street and Essa Road and to the south by the Allandale Waterfront GO Station and Gowan Street. Overlapping with the current Study Area, the Stage 1 background research and property inspection determined that Stage 2 test pitting at five metres intervals was recommended entirety of the subject property.

(AECOM, 2018b) Stage 1-2 Archaeological Assessment of the Fisher Auditorium Property Lot 24, Concession 5, Geographic Township of Vespra, Simcoe County, 125 Dunlop Street West, Ontario [P123-0399-2018]

AECOM was retained by the City of Barrie to conduct a Stage 1-2 Archaeological Assessment for the Fisher Auditorium Property at 125 Dunlop Street West, Barrie, Ontario. The project area was approximately 1.78 hectares in size and location at the southwest corner of Dunlop Street West and Bradford Street, overlapping with the current Study Area. The background research determined that the area had moderate to high potential for containing archaeological resources. The assessment determined that the area contained deep and extensive ground disturbance and areas of excessive slope. The remining portions of the project area that were not visibly disturbed were subject to test pitting at five metre intervals following the excavation of mechanical trenching. No archaeological resources were recovered and was cleared of further archaeological work.

(AECOM, 2018c) Stage 2-3 Archaeological Assessment The Allandale Station Lands Part of Lot 8 and 9, Concession XIV, Historic Township of Innisfil, Former Town of Allandale, city of Barrie, County of Simcoe, Ontario [P123-0349-2017 & P123-0350-2017]

AECOM was retained by the City of Barrie to conduct a Stage 2 and 3 Archaeological assessment for the Allandale Train Station Lands, following recommendations made in the Stage 1 assessment (AECOM, 2018a). The purpose of the Stage 2-3 assessment was to confirm the presence of any human remains present within the property limits; identify area of intact topsoil layers that may contain archaeological resources; and to confirm areas of deep and extensive disturbance to clean part of all of the property for future development. Although the entire property was subject to test pitting at five metre intervals and a number of historic artifacts and faunal fragments were recovered, the Stage 2 test pitting failed to identify any area of intact topsoil deposits. Instead, the test pits confirmed the presence of extensive soil disturbance and artificial fill up to 60-68 centimetres deep. Due to the deep soil stratigraphy, a total of 30 Stage 3 test units were then excavated at five to ten metres intervals to gain a better understanding of the soil layering and to determine if human remains were present within these layers. Two of the test units produced evidence of intact archaeological features and two of the test units contained human remains. In additional to the Stage 3 test units, two trenches were mechanically excavated to establish the nature and the depth of these deposits.

The results of the Stage 2 and 3 assessments confirm that despite the deep and extensive ground disturbance there is still intact archaeological deposits and human remains present. As AECOM was not able to reach subsoil in all Stage 2 test pits, and because the Stage 3 test units may still contain secondary deposits of human remains, the MHSTCI advised AECOM that they complete their Stage 4 assessment within the area containing human remains (P123-0395-2018 in progress) prior to making detailed recommendations for the lands surrounding the Allandale Station buildings. The assessment also recommended additional Stage 3 and Stage 4 Archaeological Assessments be conducted around the cultural features identified. It should be noted that the Ontario Heritage Trust protects the Allandale Train Station Buildings with a heritage conservation easement

agreement and must be consulted prior to undertaking any assessment within the easement property.

(AECOM, 2019a) Stage 1 Archaeological Assessment 167, 161, 157, 155 and 151 Bradford Street and 35 and 31 John Street, City of Barrie, Ontario, Part of Lot 25, Concession V, Township of Vespra, County of Simcoe [P123-0369-2017]

AECOM was retained by the City of Barrie to conduct a Stage 1 Archaeological Assessment at 167, 161, 157, 155 and 151 Bradford Street and 35 and 31 John Street, City of Barrie. The project area which is located within the current Study Area, comprised approximately 100 metres east-west and 100 metres north-south, between Bradford, John and Ellen Streets. Background research and property inspection was conducted and determined that some lands within the subject area had been previously disturbed. Portions of the area were noted to still contain archaeological potential and was recommended for a Stage 2 archaeological assessment.

(AECOM, 2019b) Stage 1-2 Archaeological Assessment Clifton Property Parcels 257, 259, 261,263, and 267 Bradford Street Lot 26 Concession 5, Historic Township of Innisfil, Former Township of Allandale, City of Barrie, County of Simcoe, Ontario [P1006-0004-2019]

AECOM was retained by the City of Barrie to conduct a Stage 1-2 Archaeological Assessment of the Clifton Property located on parcels 257, 259, 261, 263 and 267 at Bradford Street. Located within the southern portion of the current Study Area, the Stage 1 background research determined that a large portion of the project area does not contain any archaeological potential due to deep and extensively disturbance. Stage 2 assessment was conducted by test pit survey at five to ten metre intervals on the remaining areas. No archaeological resources were found, and the area was cleared of further archaeological concern.

(AECOM, 2019c) Stage 3 Archaeological Assessment Barrie Lawn Bowling Club Property Part of Lot 8 Concession XIV, Historic Township of Innisfil, Former Town of Allandale, City of Barrie, County of Simcoe, Ontario [P123-0387-2018]

AECOM was retained by the City of Barrie to conduct a Stage 3 Archaeological Assessment for the former Barrie Lawn Bowling Club property located at 24 Essa Road. The property was assessed by test unit excavation and determined that part of the area did not require further archaeological work as there were no archaeological resources recovered. Stage 2 archaeological construction monitoring was recommended for portions of the subject area that have been identified as partially/ visibly disturbed.

(AECOM, 2021) Stage 2 Archaeological Assessment 167, 161, 157, 155 and 151 Bradford Street and 35 and 31 John Street, Lot 25, Concession V, Geographic Township of Vespra, Simcoe County, Now City of Barrie, Ontario [P123-0458-2020]

AECOM was retained by the City of Barrie to conduct a Stage 2 Archaeological Assessment following the recommendations made in the previous Stage 1 assessment (AECOM, 2019a). Test pit survey and test trenching was conducted that determined the project area contains area of visibly deep and extensive ground disturbance with pockets of superficial ground disturbance. The remaining portions of the project area that were not visibly disturbed or sloped were subject to test pitting at 5 metre intervals followed by the test pit survey within eight mechanical test trenches. No intact soils were identified, and no archaeological resources were recovered. No further archaeological assessment was required.

(AMICK Consultants Ltd., 2009) Report on the 2009 Stage 1 Archaeological Background Research of the Blue Sails Developments, within Lakeshore Drive, Bradford Street, Bunker Creek, & High Street, Part of Lots 24 & 25, Concession 5, Township of Springwater (formerly within Vespra Township) City of Barrie, County of Simcoe [P058-461-2009]

AMICK was retained by AECOM to conduct a Stage 1 Archaeological Background study for the Blue Sail Developments in the City of Barrie. Located within Lakeshore Drive, Bradford Street, Bunkers Creek and High Street, the project area overlaps with the current Study Area. The background research and field reconnaissance determined that the area was entirely comprised of disturbed fill over natural peat and silty sand layers. Due to the deep modern disturbance and evidence of low-lying wet soils, the area was determined to have no archaeological potential. No further archaeological work was required.

(AMICK Consultants Ltd., 2014) Revised Stage 1 Archaeological Background Research Allandale Train Station, Part of Lot 8 & 9, Concession 14 (Geographic Township of Innisfil) City of Barrie [P058-580-2009]

AMICK conducted a Stage 1 Archaeological Background Research study of lands potentially affected by any future proposed undertaking of the Allandale Train Station. The background research, reconnaissance, and photographic documentation determined that the subject property has potential for archaeological deposits of both First Nations and Euro-Canadian origins. A large portion of the project area had been previously assessed by *AFBY Archaeological and Heritage Consultant* that resulted in the excavation and clearance of archaeological concern by the Ministry of Culture of the Allandale Site (BcGw-69). Stage 2 test pit survey was recommended for the previously unassessed portions of the property where concentrations of gravel and crushed stone are note present at the surface.

(AMICK Consultants Ltd., 2017) Revised 2011 Stage 3 Human Remains Investigation at the Allandale Train Station, Barrie Ontario [P058-767-2011]

AMICK conducted a Stage 3 Archaeological Assessment, under the authority of the Registrar of Cemeteries for the Province of Ontario, as a result of the discovery of human remains in a crawl space beneath the "Office Building" of the Allandale Train Station complex. The area of investigation included the chance encounter of human remains within the disturbed context of the crawl space beneath an existing structure. AMICK monitored the excavation of electrical and communication trenches surrounded the Allandale Station buildings given the probability of encountering human remains.

(A.S.I., 1992) Archaeological Assessment of the Barrie Water Pollution Control Centre, City of Barrie, Simcoe County [#92-010]

A.S.I. was retained by Gore & Storrie Limited to conduct an Archaeological Assessment for the Barrie Water Pollution Control Centre. The project area encompassed approximately 5.67 hectares located between Bradford Street and Lakeshore Drive in Barrie. The area was subject to archaeological fieldwork to inventory, identify and describe any archaeological resources prior to further development. The assessment determined that a large portion of the property had been previously disturbed. Random test pitting was conducted on the remaining lands but unfortunately found that the topsoil was also disturbed. No further archaeological assessment was required.

(A.S.I., 2017a) Stage 1 Archaeological Assessment Barrie Rail Corridor Expansion Transit Project Assessment Process, Newmarket Subdivision Mile 3.00 to Mile 63.00, City of Toronto, Regional Municipality of York and County of Simcoe (Former Townships of East Gwillimbury, King, Vaughan, Whitchurch and York, County of York and Former Township of Innisfil and West Gwillimbury, County of Simcoe) [P057-0837-2016]

A.S.I. was retained by Metrolinx to conduct the Stage 1 Archaeological Assessment for the BRCE Project. The project covered 97 kilometers of the Barrie

Rail Corridor on the Newmarket Subdivision and included all land within the existing Barrie rail corridor right-of-way, all private property and publicly owned lands adjacent to the rail corridor. Background research and property inspections were conducted, as well the examination of previously identified archaeological features. The assessment determined that parts of the project area had archaeological potential including the area that overlaps with the current Study Area. The project area located along the rail corridor east of Essa Road was recommended for Stage 2 Archaeological Assessment.

(A.S.I., 2017b) Stage 2 Archaeological Assessment (Property Assessment) Barrie Layover Facility - West Berm Lot 9 Concession 14, Former Township of Innisfil, City of Barrie, County of Simcoe [P128-0129-2016]

A.S.I. was contracted by Metrolinx to conduct a Stage 2 assessment for due diligence purposes for construction works at the West Berm as part of the Barrie Layover Facility which includes portions of the current Study Area. Given the proximity of the project area to the Historic Allandale Station, a Stage 2 workplan was devised and approved by the Ministry of Tourism, Culture and Sport. The West Berm stockpile was first subject to test pit survey, test unit excavation, and mechanical trenching. No archaeological resources were identified. The West Berm stockpile was then mechanically removed, and the underlying soils were subject to mechanical trenching. No intact topsoil or archaeological resources were encountered, and no further work was recommended for the project area.

(A.S.I., 2018) Stage 1 Archaeological Assessment Barrie-Collingwood Feeder Route Easement Area Go Rail Network Electrification Project Lots 5-8, Concession 14 (Former Township of Innisfil) City of Barrie, County of Simcoe, Ontario [P450-0029-2018]

A.S.I. was retained by Morrison Hershfield, under contract to Gannet Fleming and Metrolinx to conduct a Stage 1 Archaeological Assessment for a section of land along the Barrie-Collingwood Feeder Route in the City of Barrie. Located along the rail corridor between Patterson Road and Essa Road, background research and property inspection were conducted to determine archaeological potential. The

assessment determined that most parts of the project area that overlap with the current Study Area have been previously disturbed and do not require further archaeological assessment. Furthermore, a small portion of the project area that overlaps with the current Study Area was recommended for further archaeological assessment, but has since been subjected to Stage 2 assessment (A.S.I., 2019c).

(A.S.I., 2019c) Stage 2 Archaeological Assessment Barrie-Collingwood Feeder Route Easement Area GO Rail Network Electrification Project Lots 5-8, Concession 14 (Former Township of Innisfil) City of Barrie, County of Simcoe, Ontario [P094-0311-2019]

A.S.I. was retained by Morrison Hershfield under contract to Gannet Fleming and Metrolinx to conduct a Stage 2 Archaeological Assessment, following the recommendations made in A.S.I.'s 2018 Stage 1 (A.S.I., 2018). During the test pit survey, deep disturbance associated with the rail bed construction was encountered and test pits were placed at 10 metre intervals to confirm previous disturbance. The assessment determined that the project area did not require further archaeological assessment.

(A.S.I., 2021a) Stage 1 Archaeological Assessment Metrolinx New Tracks & Facilities TPAP Impact Assessment Report, Regional Municipality of Halton, Regional Municipality of Peel, Regional Municipality of York, Regional Municipality of Durham, City of Toronto, City of Barrie, Ontario [P383-0170-2019]

A.S.I. was retained by Gannet Fleming on behalf of Metrolinx to conduct a Stage 1 Archaeological Assessment during the Impact Assessment Phase of the New Tracks & Facilities project. The project involved new track infrastructure, switched, layover facilities, GO Station Platform and electrification. A background study and property inspections were conducted on six rail corridors including the Barrie Corridor. The project area overlaps with the southern portion of the current Study Area. The area in the vicinity of Allandale station was recommended for further assessment.

(A.S.I., 2021b) Stage 1 Archaeological Assessment Metrolinx OnCorr Non-Priority Work Barrie Corridor, Various Lots and Concessions (Former Townships of York, Vaughan, King and Whitchurch, County of York, Former Townships of West Gwillimbury, East Gwillimbury and Innisfil, County of Simcoe) City of Toronto, City of Vaughan, Town of Richmond Hill, Town of Aurora, Town of Newmarket, Town of East Gwillimbury, Town of Bradford West Gwillimbury, Town of Innisfil, City of Barrie, Ontario [P383-0183-2019]

A.S.I. was retained by Gannett Fleming on behalf of Metrolinx, to conduct a Stage 1 Archaeological Assessment as part of the Metrolinx OnCorr Due Diligence Project. This project included sections of each of the Metrolinx rail corridors that are to be included on the OnCorr Private-Public Partnership package for construction and maintenance of the OnCorr Project. The Stage 1 project area included the existing Barrie Rail Corridor footprint, plus a 25-metre buffer on either side of the centerline of the rail corridor, from north of Dundas Street West to east of Essa Road. The Stage 1 determined that portions of the Barrie Corridor project area exhibited archaeological potential and would require Stage 2 assessment. As Stage 4 excavations at the Allandale site (BcGw-69) are currently in progress (AECOM P123-0395-2018) and will inform the detailed recommendations for the site, the most recent recommendations (AECOM 2018c) still apply. Archaeological monitoring of any construction activities within the established ossuary monitoring buffer associated with the Allandale site (BcGw-69) and engagement with interested Indigenous communities was recommended, including the area between Essa Road and Milburn Street. A monitoring program specifically tailored to project impacts and may include systematic testing of fill soils and mechanical trenching was recommended to determine if there are any extant topsoil deposits. Ossuary construction monitoring and consultation with the Bereavement Authority of Ontario was also recommended for lands in proximity to Huron-Wendat village sites AlGu-7, AlGv-199, BbGv-43, and BcGv-43. The cultural heritage value of site AlGv-398, the Gilford Station site (BbGv-57), and the Heritage Glen site (BcGv-20) were noted given their close proximity to the project area and recommended that their most recent site recommendations be reviewed prior to impacts. Lastly, no further work was recommended for Maple Cemetery, Mount Sinai Memorial Park, St. Paul's Cemetery and Hope Primitive

Methodist Cemetery as they did not exhibit potential for unmarked burials outside of the current property limits, and it was recommended that these lands be avoided by the project design. If avoidance is not possible, it was recommended that operators obtain legal boundary mapping to determine if Stage 2 or 3 assessments would be required, and also consultation with the Bereavement Authority of Ontario prior to any proposed impacts.

(Scarlett Janusas Archaeology Inc., 2020) Stage 1 Archaeological Assessment SW Corner of Bradford and Simcoe Street Former Part Lot 24, Concession 5 GT Vespra, City of Barrie, Simcoe County Original Report [P027-0411-2020]

Scarlett Janusas Archaeological Inc. conducted a Stage 1 Archaeological Assessment for the Yonge Men's Christian Association of Simcoe/Muskoka. The project area was located on the southwest corner of Bradford and Simcoe Street, overlapping with the current Study Area. Background research determined that the project area exhibited archaeological potential based on the proximity to primary and secondary water sources, sandy soils and a strong Pre-Contact Indigenous and Euro-Canadian presence in the area. The property inspection confirmed that there are none of the area retain archaeological potential due to deep and extensive development disturbance.

2.0 Field Methods

A Stage 1 property inspection must adhere to the S & G, Section 1.2, Standards 1-6, which are discussed below. The entire property and its periphery must be inspected. The inspection may be either systematic or random. Coverage must be sufficient to identify the presence or absence of any features of archaeological potential. The inspection must be conducted when weather conditions permit good visibility of land features. Natural landforms and watercourses are to be confirmed if previously identified. Additional features such as elevated topography, relic water channels, glacial shorelines, well-drained soils within heavy soils and slightly elevated areas within low and wet areas should be identified and documented, if present. Features affecting assessment strategies should be identified and documented such as woodlots, bogs or other

permanently wet areas, areas of steeper grade than indicated on topographic mapping, areas of overgrown vegetation, areas of heavy soil, and recent land disturbance such as grading, fill deposits and vegetation clearing. The inspection should also identify and document structures and built features that will affect assessment strategies, such as heritage structures or landscapes, cairns, monuments or plaques, and cemeteries.

The Stage 1 archaeological assessment property inspection was conducted under the field direction of Eliza Brandy (R1109) of A.S.I., on July 22, 2021, in order to gain first-hand knowledge of the geography, topography, and current conditions and to evaluate and map archaeological potential of the Study Area. It was a systematic visual inspection from publicly accessible lands/public right-of-ways only and did not include excavation or collection of archaeological resources. Fieldwork was conducted when weather conditions were deemed clear with good visibility (partly cloudy with seasonal temperatures), per S & G Section 1.2, Standard 2. Field observations are compiled onto the existing conditions of the Study Area in Section 8.0 (Figures 10-15) and associated photographic plates are presented in Section 7.0 (Images 1-34).

3.0 Analysis and Conclusions

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the Study Area. Results of the analysis of the Study Area property inspection and background research are presented in Section 3.1.

3.1 Analysis of Archaeological Potential

The S & G, Section 1.3.1, lists criteria that are indicative of archaeological potential. The Study Area meets the following criteria indicative of archaeological potential:

- Previously identified archaeological sites (Allandale Site);
- Water sources: primary, secondary, or past water source (Lake Simcoe);
- Early historic transportation routes (Bradford Street, Northern Railways, Tiffin Street, Brock Street, John Street, Victoria Street, Vespra Street, Simcoe Street, High Street, Dunlop Street);

- Proximity to early settlements (Barrie, Allandale Train Station); and
- Well-drained soils (Tioga loamy sand)

The *County of Simcoe Archaeological Management Plan* (A.S.I., 2019a) was reviewed for background information and to help inform any indicators of archaeological potential not captured in other research. Generally speaking, archaeological management plans are high-level analyses of archaeological potential for non-specialists but cannot not be considered a replacement for Stage 1 archaeological assessments. ASI's review of the above archaeological management plan indicates that the balance of the Study Area exhibits potential.

According to the S & G, Section 1.4 Standard 1.e, no areas within a property containing locations listed or designated by a municipality can be recommended for exemption from further assessment unless the area can be documented as disturbed. The Municipal Heritage Register was consulted and four properties within the Study Area are Listed or Designated under the *Ontario Heritage Act*:

- 50 Bradford Street, Educational, circa 1876
- 285 Bradford Street, Train Station, circa 1890
- 50 Tiffin Street, Residential, circa 1928
- 168-170 Bradford Street, Residential, circa 1928

The property inspection determined that parts of the Study Area exhibit archaeological potential, including lawns of the four heritage properties noted above, and will require Stage 2 archaeological assessment, prior to any construction activities. According to the S & G Section 2.1.2, test pit survey is required on terrain where ploughing is not viable, such as wooded areas, properties where existing landscaping or infrastructure would be damaged, overgrown farmland with heavy brush or rocky pasture, and narrow linear corridors up to 10 metres wide (Images 1-11; Figures 10-15: areas highlighted in green).

The Study Area includes the Allandale site (BcGw-69) located within the Historic Allandale Station complex. The site has been identified as an ancestral Huron-Wendat settlement and ossuary (AECOM, 2018a, 2018c; AFBY Archaeological and Heritage Consultants, 2000, 2001a, p. 201, 2001b; AMICK Consultants Ltd., 2010,

2011, 2013, 2017) and cultural heritage value or interest has been established. Human remains have been documented on the Allandale site, particularly within the footprint of the historic station building. Both historical and modern construction activities surrounding the Allandale site have disturbed the ossuary and has resulted in the distribution of human remains across the site. The extent of the distribution of human remains has not been fully defined. As such, previous consultants have recommended Stage 2 construction monitoring surrounding the Allandale site (AECOM, 2018a, 2019c; A.S.I., 2017a). A continuation of these recommendations is reflected by this report. Stage 4 excavations at the Allandale Station site are currently in progress by AECOM (P123-0395-2018) and upon completion will inform the remaining work and detailed recommendations for these areas. Due to the highly significant archaeological status and sensitivity of the site, it is preferable that impacts to the site are mitigated through development of a Stage 4 Protection and Avoidance strategy.

Portions of the Study Area exhibit deeply buried archaeological potential for redistributed human remains associated with the Allandale site which have been subject to surface disturbance, including the Lakeshore Drive, Tiffin Street, Essa Road and Gowan Street right-of-ways, as well as the buildings at 268 Bradford Street, 21 Tiffin Street, and 8 Essa Road (Figures 12-15: areas highlighted in purple). The yards of these properties also require Stage 2 survey in advance of any construction monitoring. Parts of the Study Area has been previously assessed and exhibit potential for deeply buried archaeological remains associated with the Allandale site and require further archaeological assessment (Images 1, 12, 17; Figures 12-15: areas highlighted in orange). Should project impacts be proposed surrounding the Allandale site in the aforementioned areas, these areas should be subject to a program of archaeological monitoring, specifically tailored to project impacts and may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits (Figures 12-15: black hatched areas).

Part of the Study Area has been previously assessed and does not require further archaeological assessment (Figures 10-15: areas highlighted in red).

The remainder of the Study Area has been subjected to deep soil disturbance resulting in the removal of any archaeological potential. According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Images 12-34; Figures 10-15: areas highlighted in yellow) and do not require further survey. These areas include the:

- Artificial shoreline of Kempenfelt Bay (Lake Simcoe), east of Lakeshore Drive;
- Lakeshore Drive right-of-way, north and east of Tiffin Street;
- Tiffin Street right-of-way, west of Essa Road;
- Bradford Street right-of-way; north of Tiffin Street;
- Brock Street right-of-way;
- John Street right-of-way;
- Victoria Street right-of-way;
- Vespra Street right-of-way;
- Dunlop Street right-of-way;
- High Street right-of-way;
- Private residential structures and driveways; and
- Commercial structures and parking lots.

Recent topsoil stripping, structure demolition, and earth moving activities are illustrated in the historical imagery review (see Table 3; Section 1.3.1 and Section 7.0). According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Images 35-50; Figures 10-13): areas highlighted in yellow) and do not require further survey.

Table 3: Summary of Recent Soil Disturbance within the Study Area

Description	Figures	Field Photography Image	Historical Imagery
Checkley Street, Simcoe Street, and Toronto Street right-of-way construction	Figure 11	32-34	35-36

Description	Figures	Field Photography Image	Historical Imagery
125 Dunlop Street; demolition of Barrie Central Collegiate High School and parking lot	Figure 11	N/A	37-38
44 Bradford Street; structure demolition and parking lot removal	Figure 11	N/A	39-40
50 Bradford Street (former Prince of Wales Public School); structure demolition and parking lot removal	Figure 11	9	39-40
100 Bradford Street; structure demolition and parking lot removal	Figure 11	27	41-42
145 Bradford Street; structure demolition and parking lot removal	Figure 12	23	43-44
220 Bradford Street; structure demolition and parking lot removal	Figures 12-13	19	45-46
240 Bradford Street; structure demolition, parking lot removal, creek channelization	Figure 13	21	47-48

3.1 Conclusions

The Stage 1 background study determined that The Allandale site (BcGw-69) is located within the current Study Area, which should be avoided by project designs. Stage 4 excavations at the Allandale Station site are currently in progress by AECOM (P123-0395-2018) and upon completion will inform the remaining work and detailed recommendations for the site. Should project impacts be

proposed surrounding the Allandale site, these areas should be subject to a program of archaeological monitoring, specifically tailored to project impacts and may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits. The property inspection determined that parts of the Study Area exhibit archaeological potential and require Stage 2 survey, prior to any construction activities.

4.0 Recommendations

In light of these results, the following recommendations are made:

1 Parts of the Study Area exhibit archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey at five metre intervals, prior to any proposed construction activities on these lands (Figures 10-15: areas highlighted in green);

2 The Allandale Station site (BcGw-69) is located within the Study Area and has been identified as an ancestral Huron-Wendat village and ossuary with established cultural heritage value and interest. If avoidance is not possible, a construction monitoring program specifically tailored to project impacts should be employed which may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits. This should include a monitoring program specifically tailored to project impacts and may include systematic testing of fill soils and mechanical trenching to determine if there are any extant topsoil deposits. As evidence of human remains in disturbed contexts on the historic Allandale Station site has been previously documented, archaeological monitoring of any proposed construction activities is required within the site area between Essa Road and Milburn Street (Figures 12-15: areas highlighted in purple, and orange hatched in black). Stage 4 excavations at the Allandale Station site are currently in progress by AECOM (P123-0395-2018) and upon completion will inform the remaining work and detailed recommendations for the site. In lieu of these results, AECOM's most recent recommendations (P123-0349-2017, P123-0350-2017) for the site – which were developed in consultation with Huron-Wendat First Nation, the Williams Treaty First Nations, and the City of Barrie – still apply, as presented below:

a. Areas identified as containing human remains will be subject to a Stage 4 Archaeological Assessment by a licensed consultant archaeologist as per Section 4.2.2 of the S & G. The Stage 4 assessment should consist of block excavations by hand and must include the screening of all soil layers through six-millimetre mesh in order to ensure as many human remains as possible are recovered. Although Section 4.2.2 requires block excavation to be done in one-metre-square units, it is recommended here that the block excavation be done in two-metre-square units in areas of considerable depth (greater than one metre) (as per Section 4.2.8, Guideline 1) to allow for more room for the excavators to work safely and to enable the shoring up of any walls as needed. At minimum, each two-metre-square unit should be excavated and recorded in one-meter-square sub-units in order to ensure the maximum possibilities for interpretation. The location of all cultural features that are present will be recorded in relation to the site grid and they will be excavated as per Section 4.2.2, Standard 7 of the S & G. Due to the difficulty of distinguishing between natural subsoil and deeply buried artificial sand infill deposits encountered during the Stage 2-3 assessment, the Stage 4 excavations should continue vertically into the first 20 centimetres of suspected subsoil to confirm the bottom of the cultural deposits has been reached. Stage 4 excavations should continue horizontally outward until sterile soils (soils that no longer contain human remains) are reached. As per consultation with MHSTCI and the Registrar of Burials at the Ministry of Government and Consumer Services, once sterile soil has been reached horizontally, block excavations should continue an additional five metres to create a sterile buffer and ensure that all human remains have been recovered.

b. All faunal remains recovered from the Stage 4 assessment must be retained and their location within the block excavations must be documented accordingly. Given the presence of human remains at the site, 100 percent of faunal remains found will be collected for analysis in the laboratory by the human osteologist. All potential human remains encountered will be analyzed by a human osteologist and the handling and care of the remains must be done in a respectful way (with input from the engaged Indigenous communities), and should adhere to the *Funeral, Burial and Cremation*

Services Act and Sections 174-184 of Ontario Regulation 30/11. It is recommended that the human osteologist assigned to this project have a minimum of a master's degree in Bioarchaeology with a focus on human osteology and/or human skeletal biology. Experience should include at least two years of experience in the direct handling and analysis of human remains and, specifically, the analysis of highly fragmentary human remains. Knowledge of the ethics and protocols regarding handling remains is a must as well as experience in implementing culturally specific excavation and handling protocols for mitigating First Nation ancestral burials. Experience in the process of human remains excavation is preferred. Expertise should also include a working knowledge of the S & G as it pertains to overall site excavation and Ontario archaeological practices. A human osteologist must be present in the field during the Stage 4 excavation process at least 25 percent of the time during the course of the excavation.

c. Due to the presence of a possible pre-contact Late Woodland feature in AECOM (2018c) Unit 510N 220E and the identification of natural subsoil in areas to the east of this unit (510N 230E and 510N 240E), it is recommended that additional Stage 3 test units should be excavated at five metre intervals across this area to determine whether or not any intact archaeological resources are present. If any archaeological resources are found, infill test units should be excavated to determine the nature of the deposits.

d. That the two deeply buried intact features identified during AECOM's (2018c) Stage 3 assessment (in Units 505N 170E and 510N 220E) be subject to a Stage 4 assessment by a licensed consultant archaeologist. Although no human remains were found in the layers above these features, they are located in close proximity to the areas that do contain human remains. Therefore, the overlying soils should be excavated by hand until both features have been completely exposed. The features should then be recorded in relation to the site grid and excavated as per Section 4.2.2, Standard 7 and 7c of the S & G.

e. Due to the presence of a historic foundation recovered from AECOM (2018c) Unit 495N 160E and Trench 2 and the known presence of the 1863 foundation identified by AFBY (2001b) and AMICK (2013), it is recommended that any historic structural remains that are identified during the Stage 4 assessment should be photographed, mapped and documented in order to better understand their relationship to the early railway use of the property.

f. It will be important to fully document all soil levels in order to identify site formation processes and potentially isolate specific layers that contain human remains. Artifacts from each stratified layer may help determine where and when certain soils were introduced to the site. Therefore, AECOM (2018c) recommend keeping all artifacts recovered during the Stage 4 excavations, with the exception of architectural materials such as brick, plaster, coal, slag and clinker. These items will be sampled in the field, with descriptions and counts of both those retained and those left in the field as per Table 6.2 in the S & G. All artifacts recovered from intact soil horizons will be subject to standard processing and analysis procedures. All pre-contact and diagnostic historic artifacts recovered during the Stage 4 assessment must be retained, analyzed and catalogued regardless of their provenience. All historic artifacts (diagnostic and nondiagnostic) found in deposits containing human remains must be analyzed and catalogued. Modern material will be retained if it is found in layers containing human remains as well, with a sample being analyzed and catalogued.

g. All current and future archaeological work must be done with the engagement of First Nation groups that have an interest in the area thereby conforming to 'best practices' and the MHSTCI 2011 bulletin *Engaging in Aboriginal Communities in Archaeology* and continuing the process started by the City of Barrie.

h. It is understood that the Ontario Heritage Trust protects the Allandale Train Station buildings with a heritage conservation easement agreement. As such, the Ontario Heritage Trust must be consulted prior to undertaking any archaeological assessments within the easement property.

i. Areas where the deeply buried natural subsoil was not reached in AECOM's (2018c) Stage 2 test pits and Stage 3 test units may still contain secondary deposits of human remains. As discussed between AECOM and Malcolm Horne of the MHSTCI in a telephone conversation on April 30, 2018, detailed recommendations regarding additional Stage 3 or 4 work on the lands surrounding the Allandale Station buildings cannot be made until the Stage 4 excavation of the areas containing human remains is complete. Following the completion of the Stage 4 excavation of the concentration of human remains, AECOM will provide specific recommendations for additional Stage 3 or 4 work if deemed necessary. Areas with different recommended strategies will be illustrated on mapping in the Stage 4 report.

j. If any intact burials are discovered during the course of the Stage 4 mitigation the Registrar of Burials must be notified immediately. This area will no longer be considered solely a disturbed burial site and, therefore, alternative mitigation strategies must be developed in consultation with First Nations communities and the Registrar.

k. To better inform our understanding of the nature of the burial deposit, as well as determine the potential number of individuals represented at the Allandale Station site (BcGw-69), all of the human remains recovered from the site to date must be brought together into a single collection. AECOM recommended that, following the Stage 4 excavations, an effort be made to respectfully bring together all of the human remains recovered by previous archaeological assessments. This will allow for both determination of the nature of the burial site and respectful reinterment.

3 The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or being previously assessed (Figures 11-15: areas highlighted in green and dark orange). These lands do not require further archaeological assessment; and,

4 Should the proposed work extend beyond the current Study Area, further archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, A.S.I. notes that no archaeological assessment, no matter how thorough or carefully completed, can necessarily predict, account for, or identify every form of isolated or deeply buried archaeological deposit. In the event that archaeological remains are found during subsequent construction activities, the consultant archaeologist, approval authority, and the Archaeology Programs Unit of the Ministry of Heritage, Sport, Tourism and Culture Industries should be immediately notified.

The above recommendations are subject to Ministry approval, and it is an offence to alter any archaeological site without Ministry of Heritage, Sport, Tourism and Culture Industries concurrence. No grading or other activities that may result in the destruction or disturbance of any archaeological sites are permitted until notice of M.H.S.T.C.I. approval has been received.

5.0 Legislation Compliance Advice

A.S.I. advises compliance with the following legislation:

- This report is submitted to the Ministry of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, RSO 2005, c 0.18. The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological field work and report recommendations ensure the conservation, preservation, and protection of the cultural heritage of Ontario. When all matters relating to archaeological sites within the project area of a development proposal have been addressed to the satisfaction of the Ministry of Heritage, Sport, Tourism and Culture Industries, a letter will be issued by the Ministry stating that there are no further concerns with regards to alterations to archaeological sites by the proposed development.

- It is an offence under Sections 48 and 69 of the *Ontario Heritage Act* for any party other than a licensed archaeologist to make any alteration to a known archaeological site or to remove any artifact or other physical evidence of past human use or activity from the site, until such time as a licensed archaeologist has completed archaeological field work on the site, submitted a report to the Minister stating that the site has no further cultural heritage value or interest, and the report has been filed in the Ontario Public Register of Archaeology Reports referred to in Section 65.1 of the *Ontario Heritage Act*.

- 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 licensed consultant archaeologist to carry out archaeological fieldwork, in compliance with sec. 48 (1) of the *Ontario Heritage Act*.

- The *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33, requires that any person discovering or having knowledge of a burial site shall immediately notify the police or coroner. It is recommended that the

Registrar of Cemeteries at the Ministry of Consumer Services is also immediately notified.

- Archaeological sites recommended for further archaeological field work or protection remain subject to Section 48(1) of the *Ontario Heritage Act* and may not be altered, nor may artifacts be removed from them, except by a person holding an archaeological license.

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7.0 Images

Field Photography

Image 1: Residential lawn exhibits archaeological potential beyond subsurface utilities

Image 3: Rear portion of 240 Bradford Street exhibits archaeological potential

Image 2: Residential lawns along Tiffin Street exhibit archeological potential

Image 4: Residential lawns along Bradford Street exhibit archaeological potential

Image 5: Residential lawns along Bradford Street exhibit archaeological potential

Image 7: Residential lawns along Bradford Street exhibit archaeological potential

Image 6: Residential lawns along Bradford Street exhibit archaeological potential

Image 8: Area around Bunker's Creek exhibits archaeological potential

Image 9: Undisturbed lawns fronting 50 Bradford Street exhibit archaeological potential

Image 11: Lands of 28 Toronto Street exhibit archaeological potential

Image 10: View towards Stephan's Park which exhibits archaeological potential

Image 12: Artificial shoreline east of Lakeshore Drive; no potential

Image 13: Artificial shoreline east of Lakeshore Drive; no potential

Image 14: Artificial shoreline east of Lakeshore Drive; no potential

Image 15: Disturbed Lakeshore Drive right-of-way; no potential

Image 16: Utilities present in island median; no potential

Image 17: Gowan Street right-of-way has the potential for deeply buried deposits

Image 18: Development disturbance of 11 Essa Street; no potential

Image 19: Demolition disturbance of 220 Bradford Street; no potential

Image 20: Disturbed Bradford Street right-of-way; no potential

Image 21: Disturbance from creek channelization at 240 Bradford Street; no potential

Image 22: Development disturbance of 150 Bradford Street; no potential

Image 23: Development disturbance of 145 Bradford Street; no potential

Image 24: Disturbed Bradford Street right-of-way; no potential

Image 25: Disturbed Bradford Street right-of-way and 111 Bradford Street; no potential

Image 26: Disturbed Bradford Street right-of-way and 101 Bradford Street; no potential

Image 27: Development disturbance of 100 Bradford Street; no potential

Image 28: Disturbed Bradford Street right-of-way; no potential

Image 29: Disturbed Bradford Street right-of-way and 45 Bradford Street; no potential

Image 31: Disturbed Bradford Street right-of-way and 19 Bradford Street; no potential

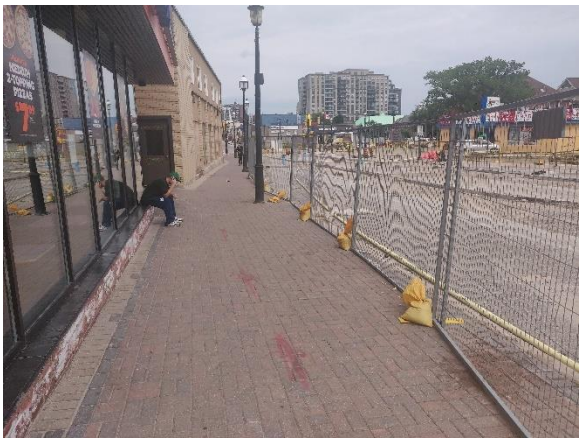

Image 30: Disturbed Dunlop Street West right-of-way; no potential

Image 32: Disturbed Simcoe Street right-of-way and 19 Bradford Street; no potential

Image 33: Disturbed Simcoe Street right-of-way; no potential

Image 34: Intersection of Simcoe Street and Toronto Street; no potential

Historical Imagery

Image 35: Previous construction disturbance within the Checkley, Simcoe, and Toronto Street right-of-ways during August 2006; no potential

Image 36: Completed construction within the Checkley, Simcoe and Toronto Street right-of-ways during June 2013; no potential

Image 37: Conditions of 125 Dunlop Street during July 2017

Image 38: Conditions of 125 Dunlop Street during July 2019 showing demolition disturbance; no potential

Image 39: Conditions of 44 and 50 Bradford Street during August 2006

Image 40: Conditions of 44 and 50 Bradford Street during July 2019 showing demolition disturbance; no potential

Image 41: Conditions of 100 Bradford Street during August 2006

Image 42: Conditions of 100 Bradford Street during June 2013 showing demolition disturbance; no potential

Image 43: Conditions of 145 Bradford Street during August 2006

Image 44: Conditions of 145 Bradford Street during June 2015 showing demolition disturbance; no potential

Image 45: Conditions of 220 Bradford Street during August 2006

Image 46: Conditions of 220 Bradford Street during June 2013 showing demolition disturbance; no potential

Image 47: Conditions of 240 Bradford Street during August 2006

Image 48: Conditions of 240 Bradford Street during June 2013 showing demolition and channelization disturbance; no potential

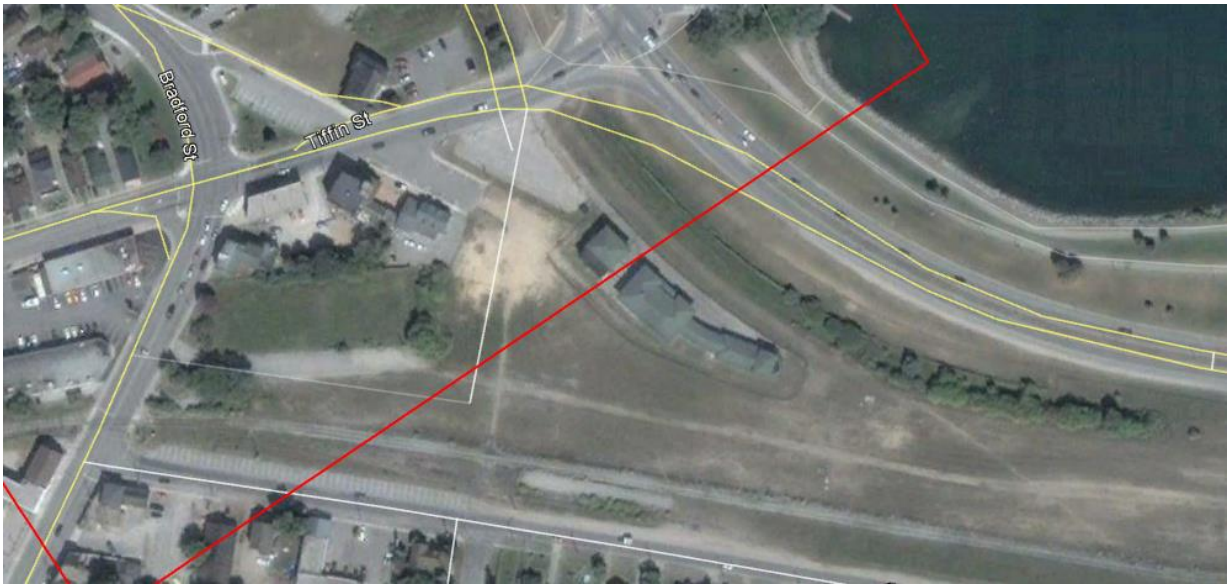

Image 49: Conditions surrounding the Allandale Train Station during August 2006

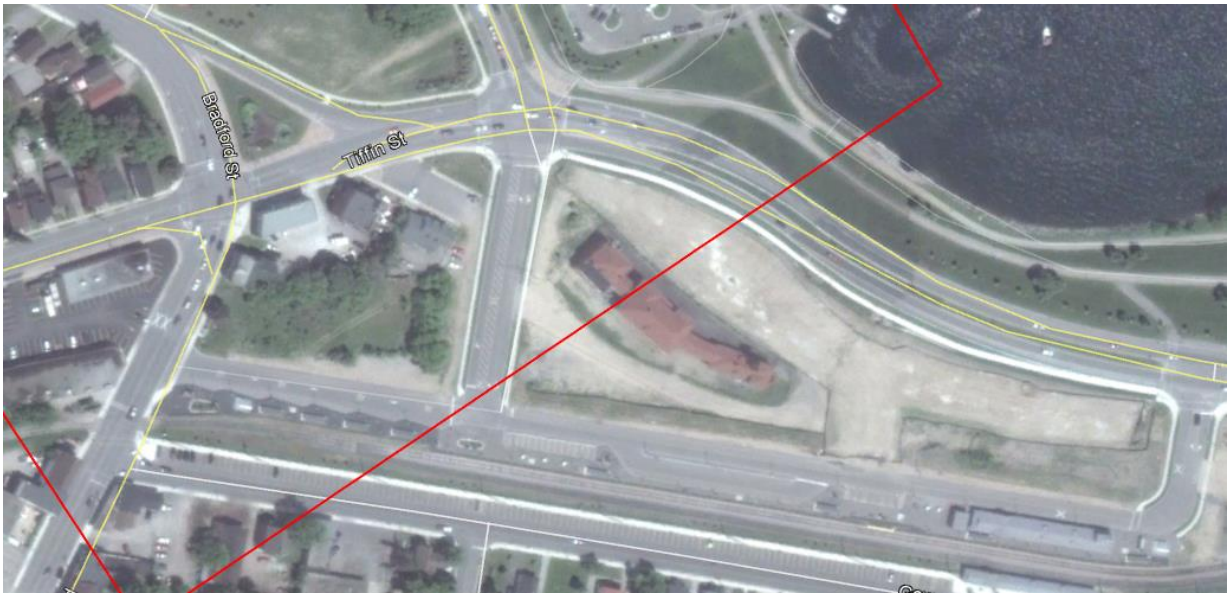

Image 50: Soil disturbing activities surrounding the Allandale Train Station during June 2013

8.0 Maps

Figure 1: Location of Study Area

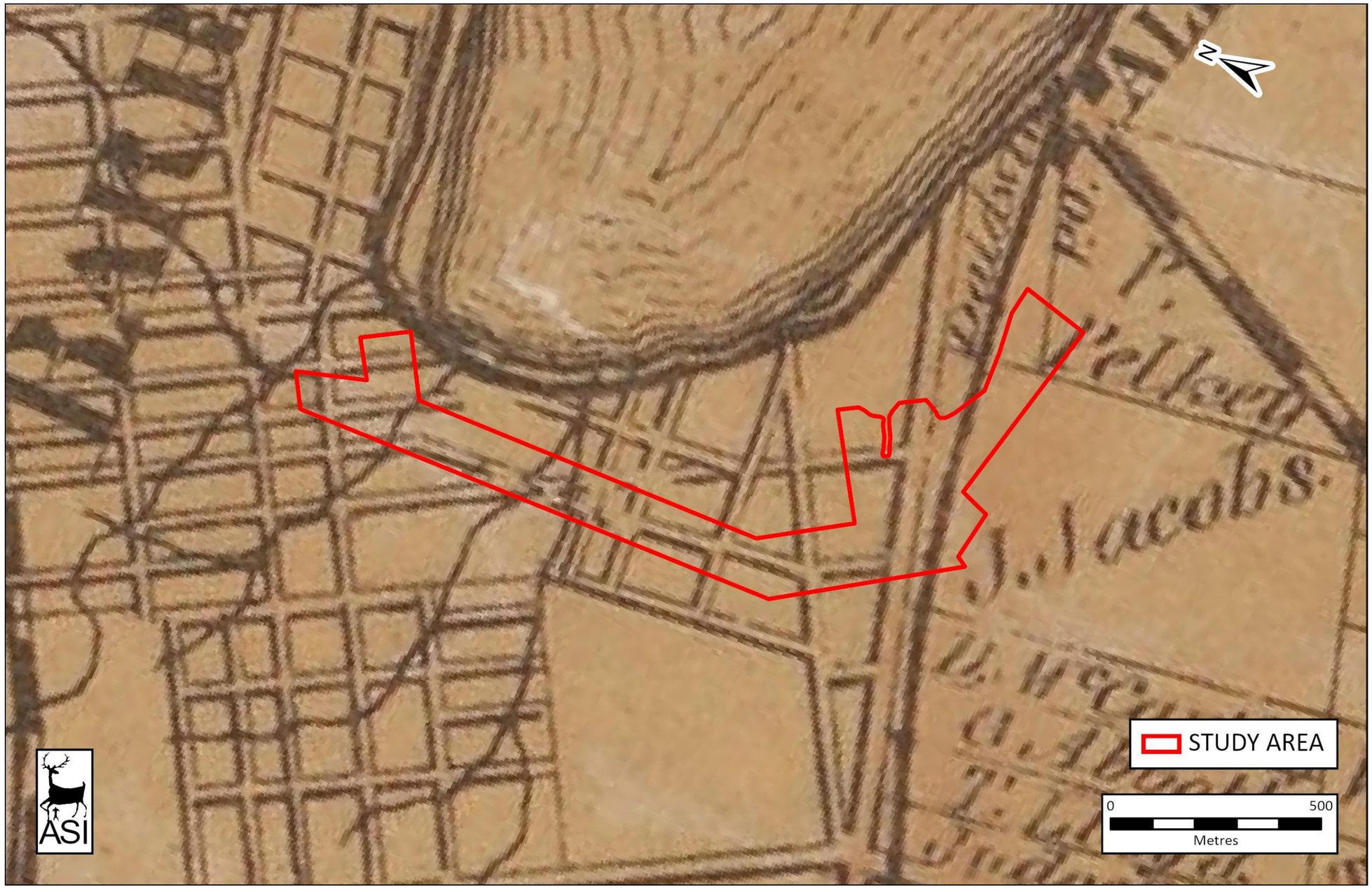

Figure 2: The Study Area overlaid on the 1871 Hogg's Map of the County of Simcoe

Base Map: (Hogg, 1871)

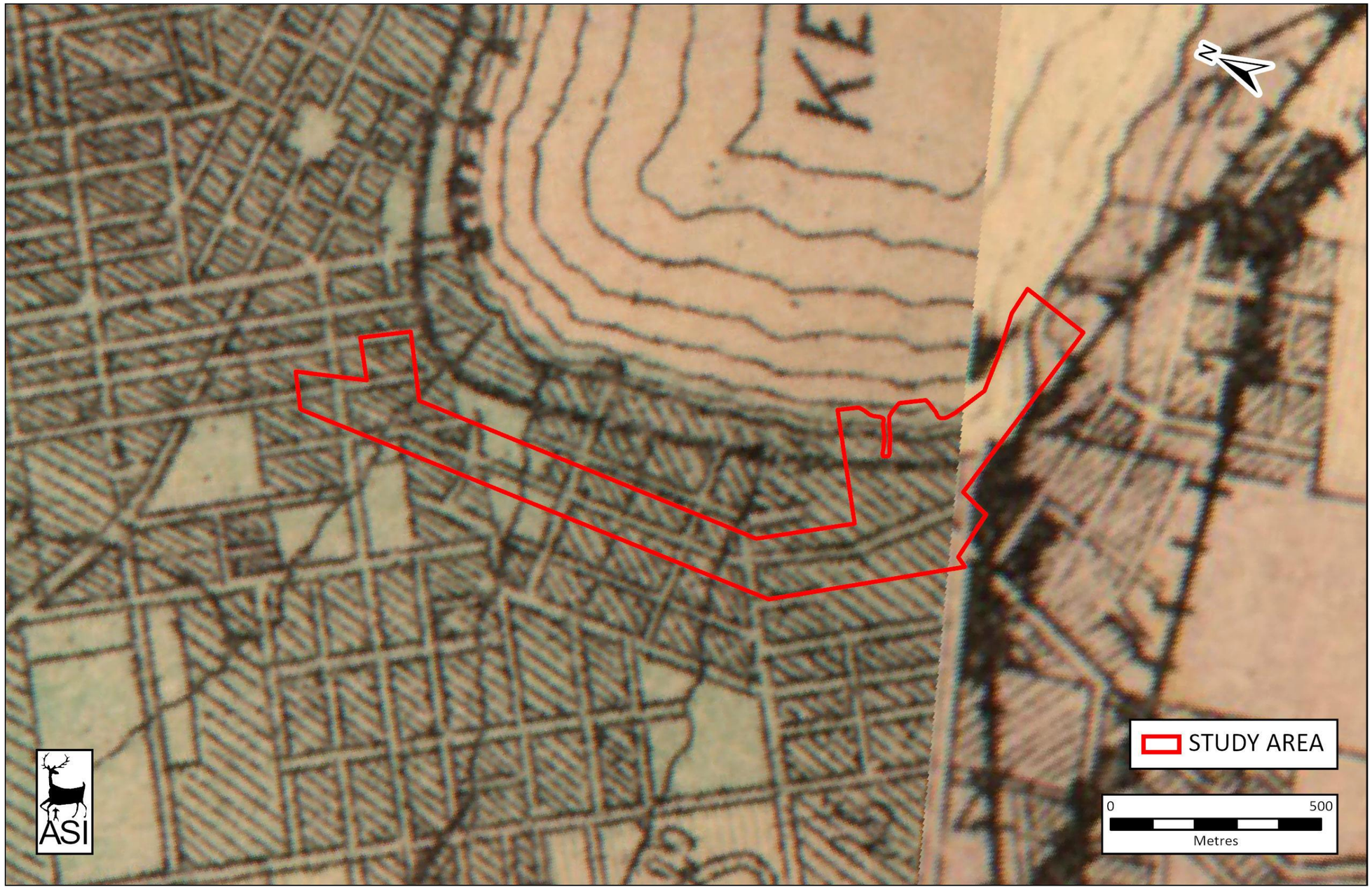

Figure 3: The Study Area overlaid on the 1881 Historical Atlas of the County of Simcoe

Base Map: (Belden, 1881)

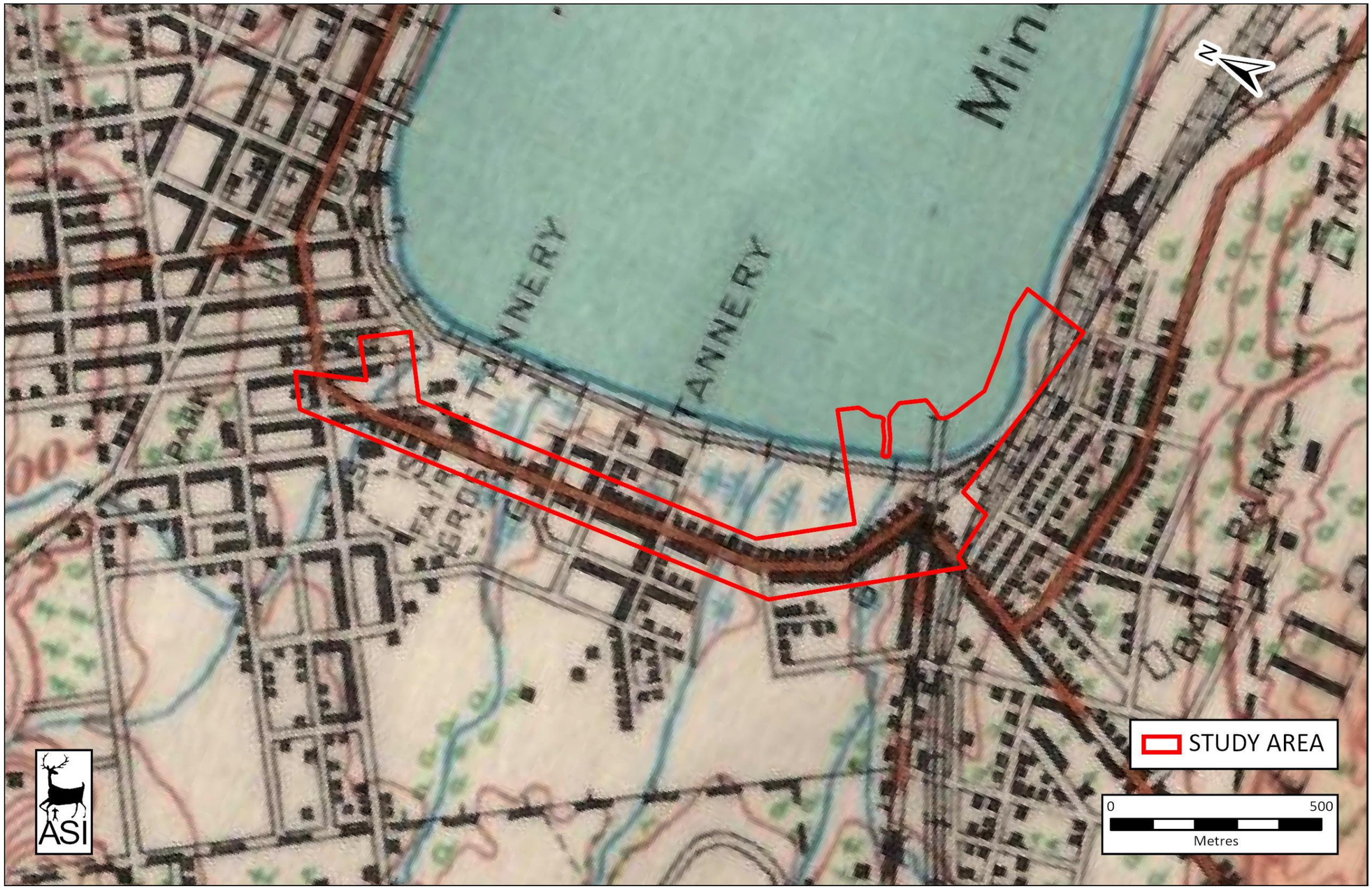

Figure 4: The Study Area overlaid on the 1928 topographic map of Barrie (Sheet 31D-5)

Base Map: (Department of National Defence, 1928)

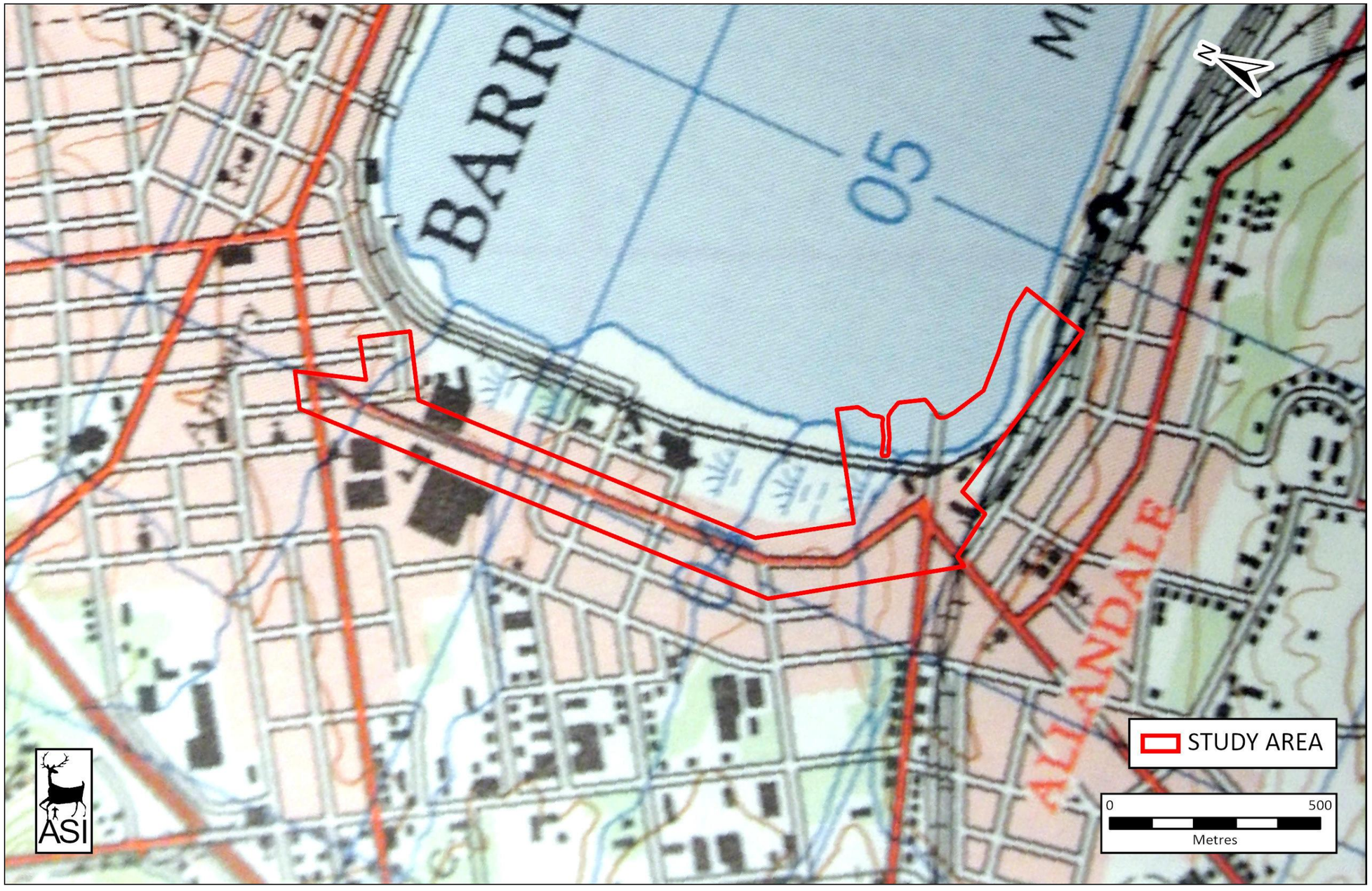

Figure 5: The Study Area overlaid on the 1968 topographic map of Barrie

Base Map: (Department of National Defence, 1968)

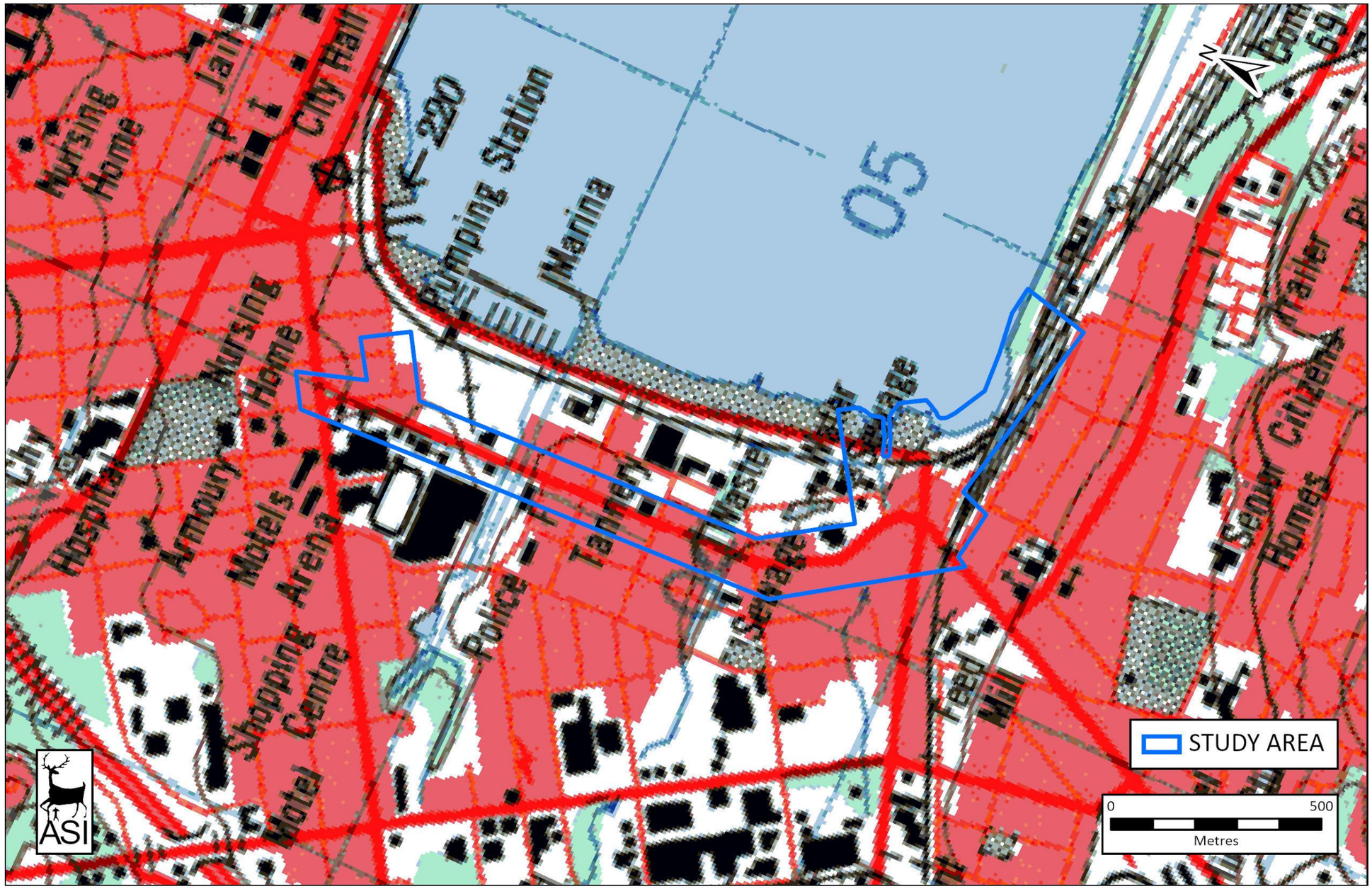

Figure 6: The Study Area overlaid on the 1986 NTS map of Barrie

Base Map: (Department of Energy, Mines and Resources, 1986)

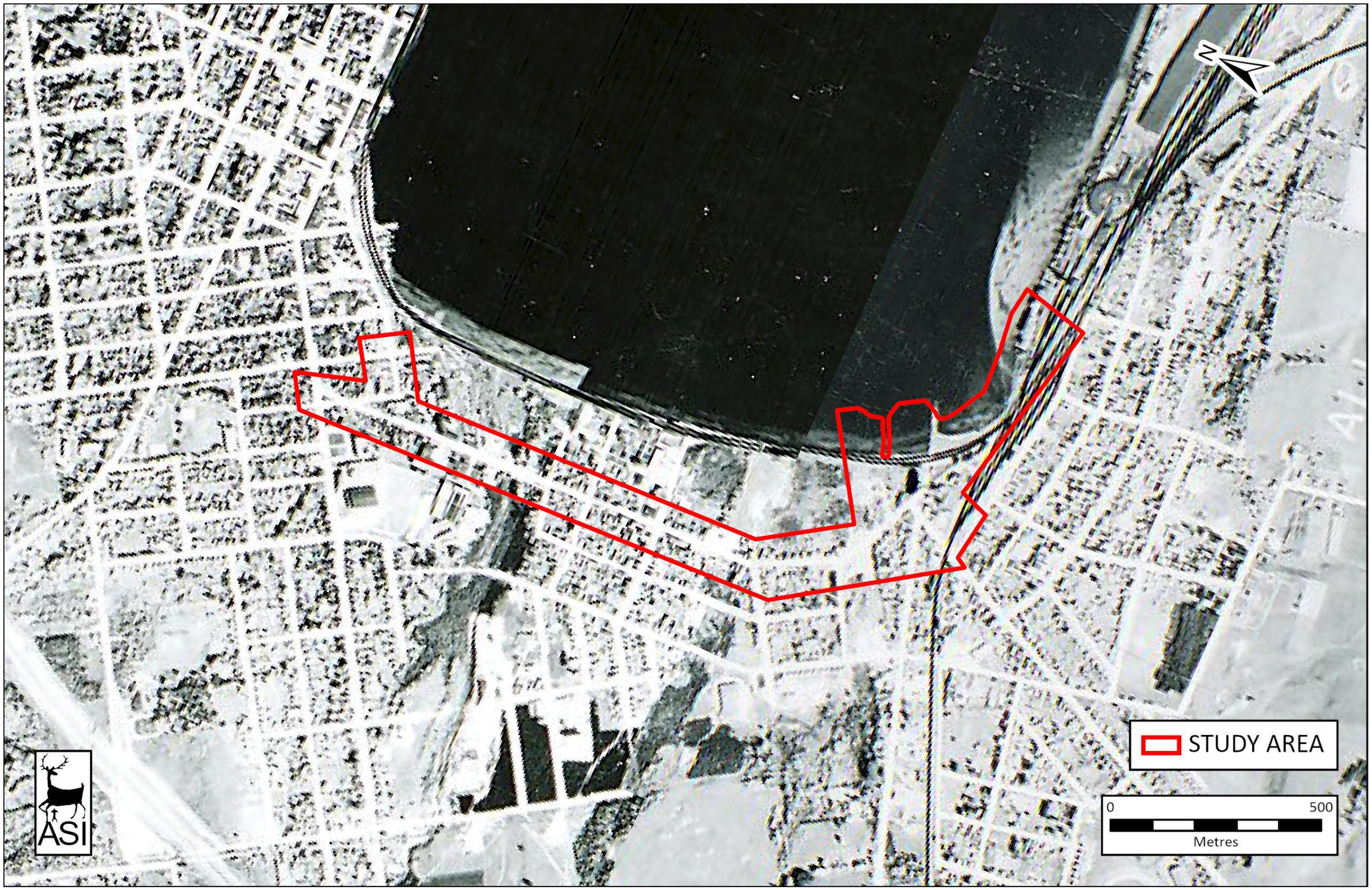

Figure 7: The Study Area overlaid on the 1954 aerial photograph of Barrie

Base Map: (Hunting Survey Corporation Limited, 1954)

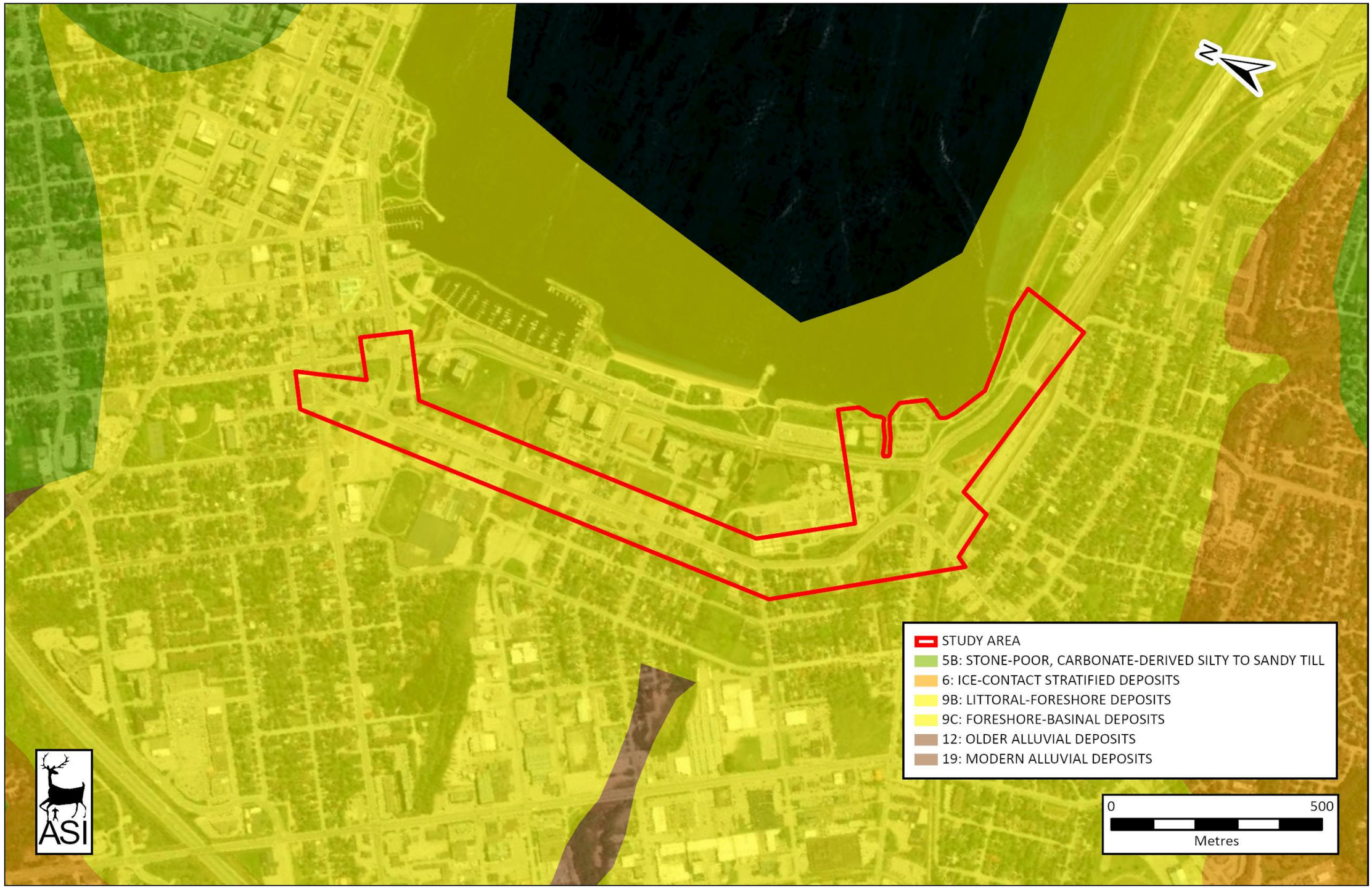

Figure 8: Study Area - Surficial Geology

Figure 9: Study Area – Drainage

Figure 10: Stage 1 Archaeological Assessment Results (Key Plan)

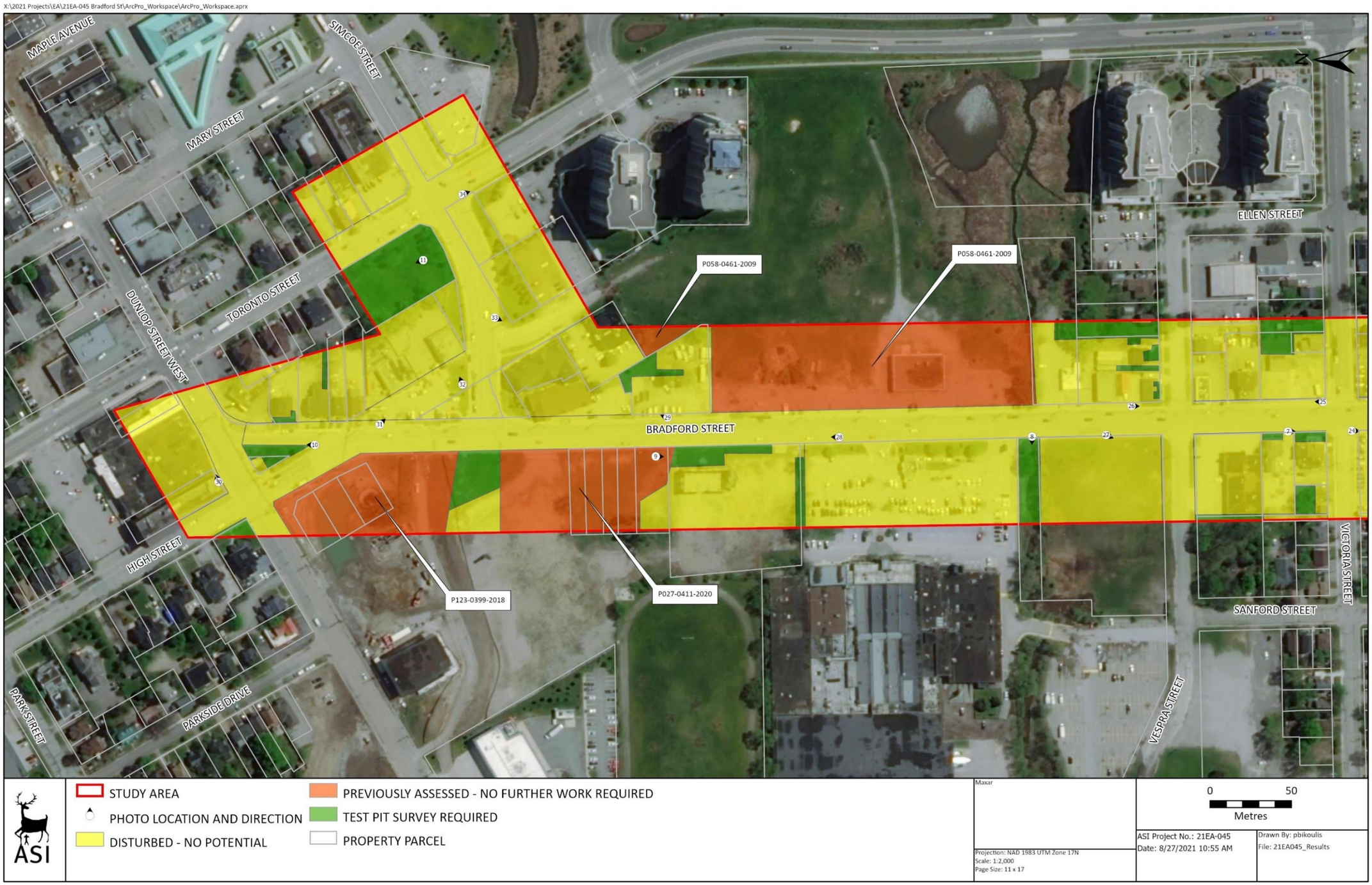

Figure 11: Stage 1 Archaeological Assessment Results (Sheet 1)

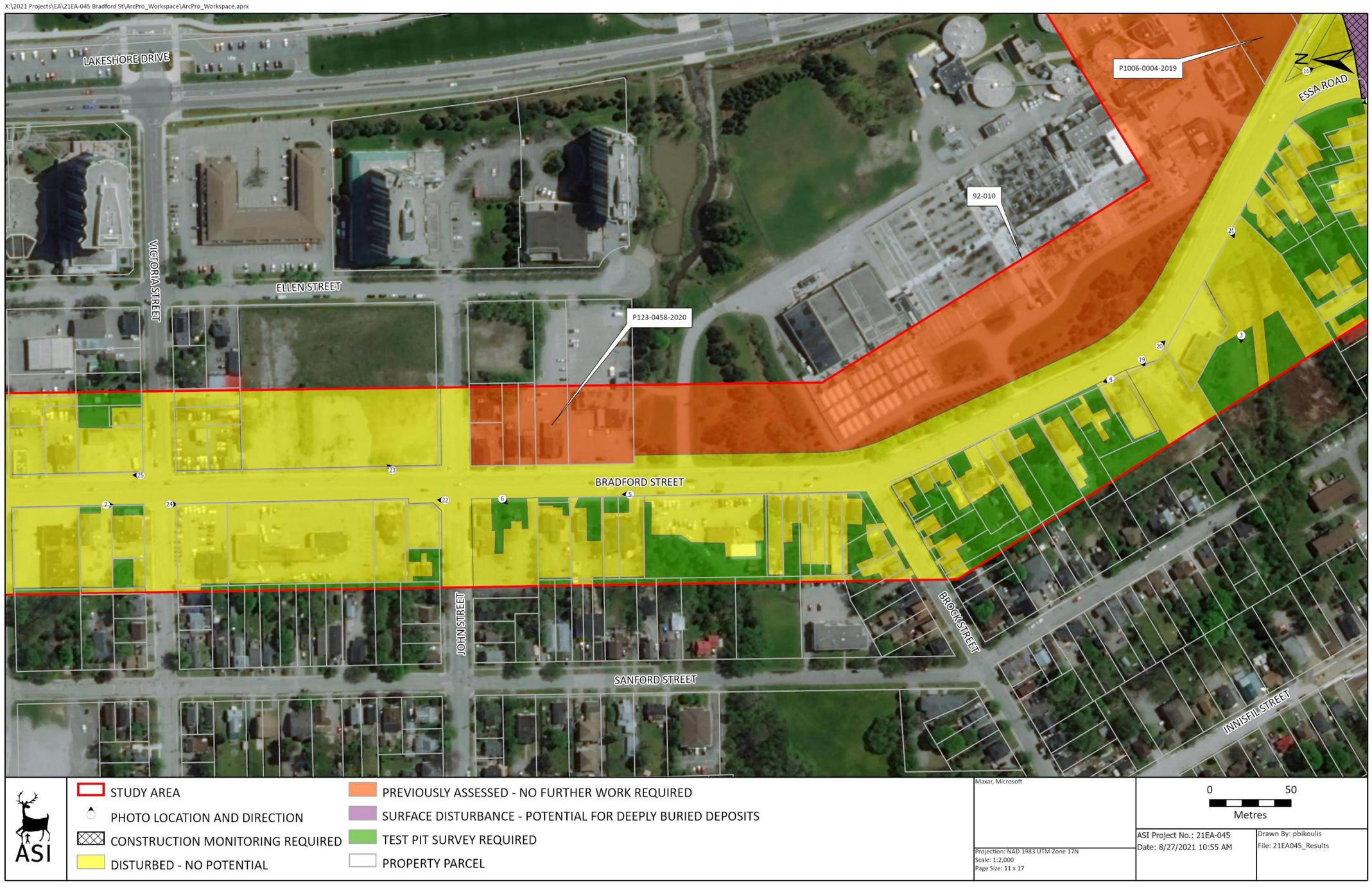

Figure 12: Stage 1 Archaeological Assessment Results (Sheet 2)

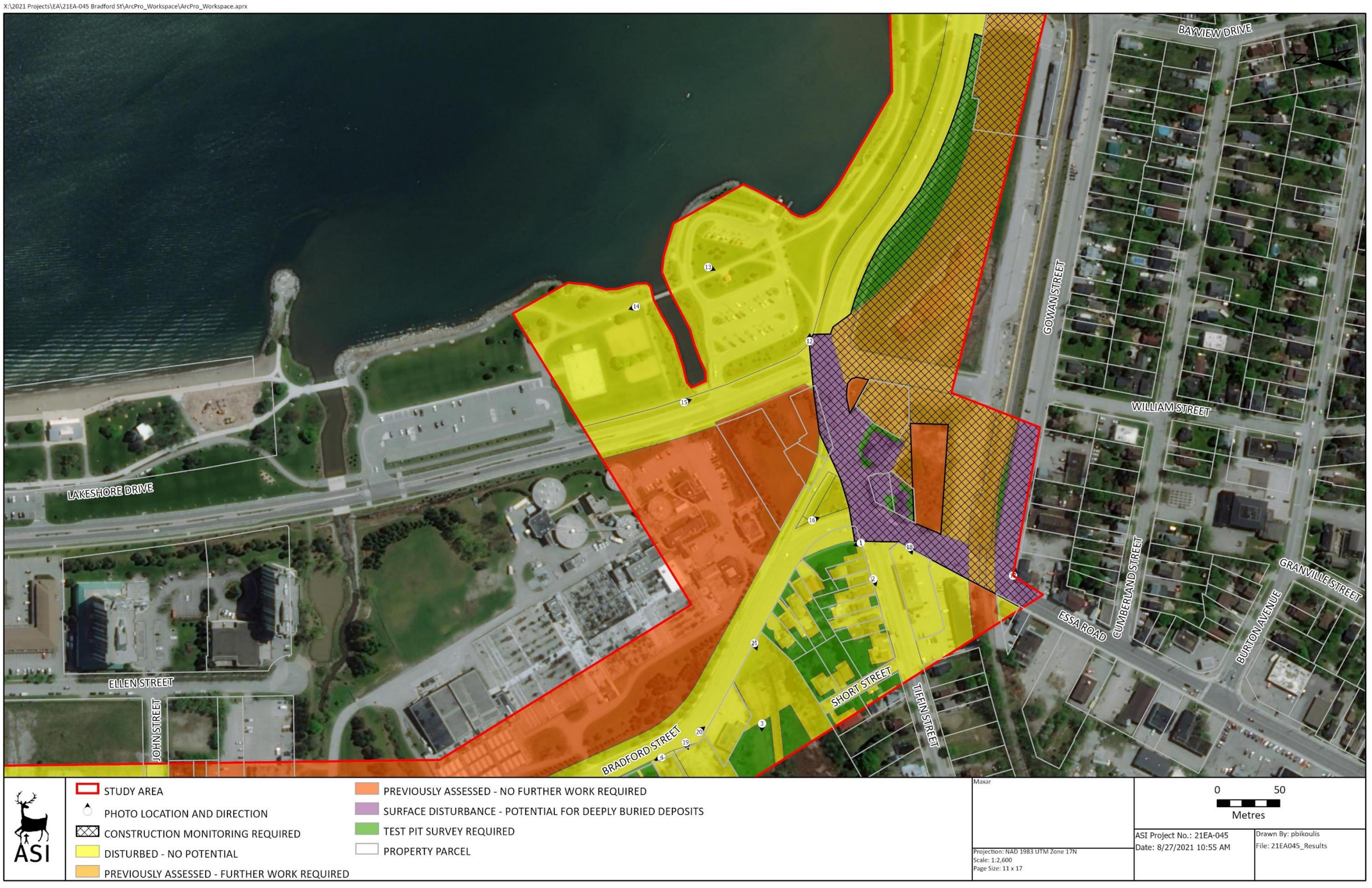

Figure 13: Stage 1 Archaeological Assessment Results (Sheet 3)

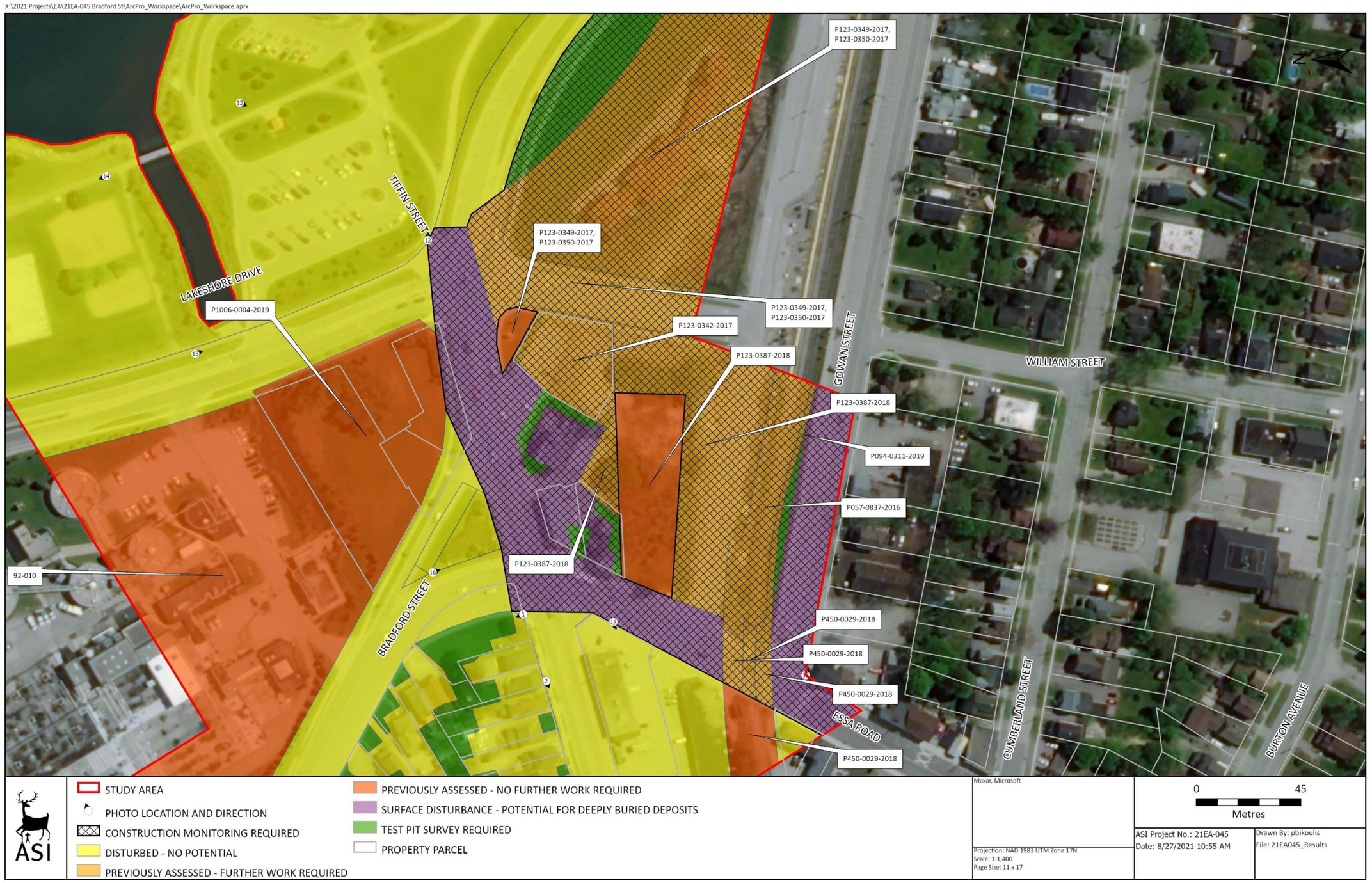

Figure 14: Stage 1 Archaeological Assessment Results (Sheet 4)

Figure 15: Stage 1 Archaeological Assessment Results (Sheet 5)