
Appendix C

Archaeological Assessment Report

**STAGE 1 ARCHAEOLOGICAL ASSESSMENT
NORTH-EAST FLOOD REMEDIATION
PART OF LOTS 31-41, CONCESSION 2
(FORMER TOWNSHIP OF BRANTFORD)
CITY OF BRANTFORD
COUNTY OF BRANT, ONTARIO**

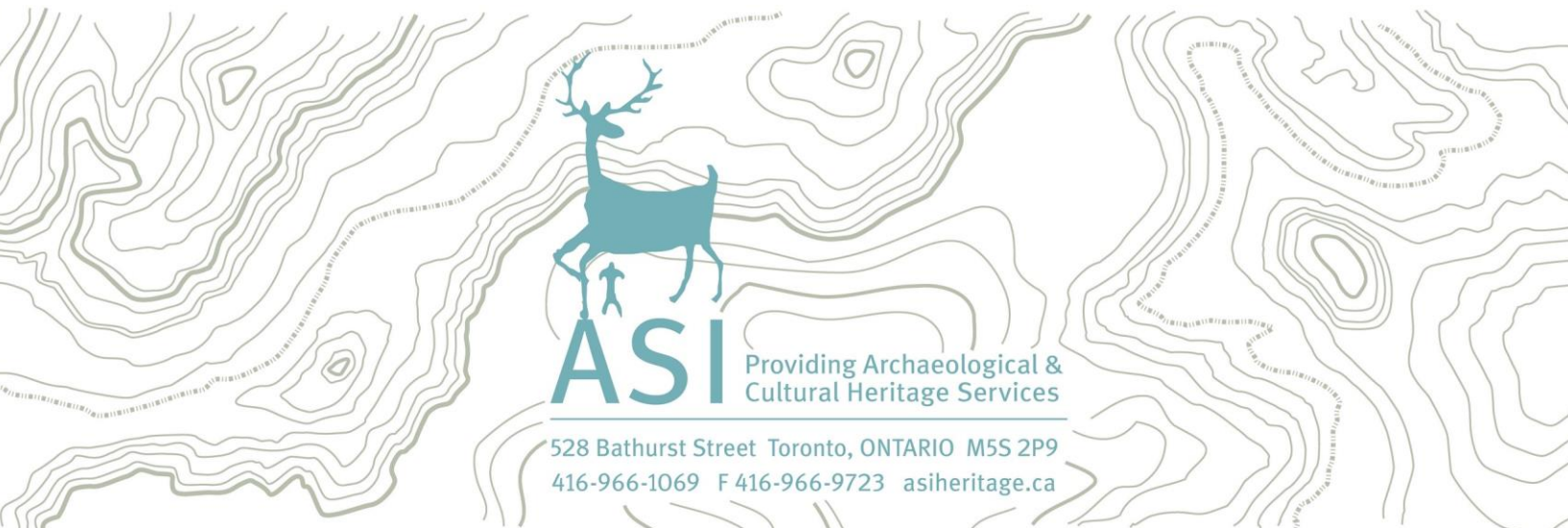
ORIGINAL REPORT

Prepared for:

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Archaeological Licence #P1066 (Lytle)
Ministry of Heritage, Sport, Tourism and Culture Industries PIF# P1066-0128-2020
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15 May 2020



**Stage 1 Archaeological Assessment
North-East Flood Remediation
Part of Lots 31-41, Concession 2
(Former Township of Brantford)
City of Brantford
County of Brant, Ontario**

EXECUTIVE SUMMARY

Archaeological Services Inc. (ASI) was contracted by Aquafor Beech Limited to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the North-East Flood Remediation Study in the City of Brantford. In response to flooding caused by severe storm events in 2018, the City of Brantford is conducting a study to investigate the causes of flooding, identify any deficiencies in the infrastructure and recommend solutions to reduce the risk of future flooding in the area.

The Stage 1 Study Area includes the larger area of research in northeast Brantford, between King George Road and east of Brantwood Park Road, from Powerline Road to Lynden Road/Fairview Drive. The focus of the property inspection and recommendations are on the Preferred Alternatives in eight areas of existing storm sewer infrastructure. Three of these areas may include work beyond the existing municipal right-of-way (ROW) along existing storm sewers.

The Stage 1 Study Area includes the larger area of research, between King George Road and east of Brantwood Park Road, from Powerline Road to Lynden Road/Fairview Drive. The focus of the property inspection and recommendations are on the Preferred Alternatives.

The Stage 1 background study determined that 31 previously registered archaeological sites are located within one kilometre of the Study Area. The property inspection determined that part of the Study Area exhibits archaeological potential and will require Stage 2 assessment.

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

1. Part of the Study Area exhibits archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey at five metre intervals, where appropriate, prior to any proposed impacts to the property;
2. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or low and wet conditions. These lands do not require further archaeological assessment; and,
3. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.



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1.0 PROJECT CONTEXT

Archaeological Services Inc. (ASI) was contracted by Aquafor Beech Limited to conduct a Stage 1 Archaeological Assessment (Background Research and Property Inspection) as part of the North-East Flood Remediation Study in the City of Brantford. In response to flooding caused by severe storm events in 2018, the City of Brantford is conducting a study to investigate the causes of flooding, identify any deficiencies in the infrastructure and recommend solutions to reduce the risk of future flooding in the area.

The Stage 1 Study Area includes the larger area of research in northeast Brantford, between King George Road and east of Brantwood Park Road, from Powerline Road to Lynden Road/Fairview Drive (Figure 1). The focus of the property inspection and recommendations are on the Preferred Alternatives in eight areas of existing storm sewer infrastructure. Three of these areas may include work beyond the existing municipal right-of-way (ROW) along existing storm sewers (see Appendix A).

All activities carried out during this assessment were completed in accordance with the *Ontario Heritage Act* (1990, as amended in 2018) and the 2011 *Standards and Guidelines for Consultant Archaeologists* (S & G), administered by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI 2011), formerly the Ministry of Tourism, Culture and Sport.

1.1 Development Context

All work has been undertaken for Due Diligence purposes

Authorization to carry out the activities necessary for the completion of the Stage 1 archaeological assessment was granted by Aquafor Beech Limited on March 30, 2020.

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 (BP) (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 BP, the environment had progressively warmed (Edwards and Fritz 1988) and populations now occupied less extensive territories (Ellis and Deller 1990).

Between approximately 10,000-5,500 BP, 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 BP; 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 BP and is indicative of increased social organization, investment of labour into social infrastructure, and the establishment of socially prescribed territories (Ellis et al. 1990; Ellis et al. 2009; Brown 1995:13).

Between 3,000-2,500 BP, populations continued to practice residential mobility and to harvest seasonally available resources, including spawning fish. The Woodland period begins around 2,500 BP and exchange and interaction networks broaden at this time (Spence et al. 1990:136, 138) and by approximately 2,000 BP, evidence exists for small community camps, focusing on the seasonal harvesting of resources (Spence et al. 1990:155, 164). By 1,500 BP there is macro botanical evidence for maize in southern Ontario, and it is thought that maize only supplemented people's diet. There is earlier phytolith evidence for maize in central New York State by 2,300 BP - it is likely that once similar analyses are conducted on Ontario ceramic vessels of the same period, the same evidence will be found (Birch and Williamson 2013:13–15). As is clearly evident in the detailed ethnographies of Anishinaabek populations, winter was a period during which some families would depart from the larger group as it was easier 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 BP, lifeways became more similar to that described in early historical documents. Between approximately 1000-1300 Common Era (CE), 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 1990:317). By 1300-1450 CE, this episodic community disintegration was no longer practised and populations now communally occupied sites throughout the year (Dodd et al. 1990:343). From 1450-1649 CE this process continued with the coalescence of these small villages into larger communities (Birch and 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. By 1600 CE, 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 Haudenosaunee¹ and the Huron-Wendat (and their Algonquian allies such as the Nipissing and Odawa) led to the dispersal of the Huron-Wendat.

Samuel de Champlain in 1615 reported that a group of Iroquoian-speaking people situated between the Haudenosaunee and the Huron-Wendat were at peace and remained “la nation neutre”. In subsequent years, the French visited and traded among the Neutral, but the first documented visit was not until 1626, when the Recollet missionary Joseph de la Roche Daillon recorded his visit to the villages of the Attiwandaron, whose name in the Huron-Wendat language meant “those who speak a slightly different tongue” (the Neutral apparently referred to the Huron-Wendat by the same term). Like the Huron-Wendat, Petun, and Haudenosaunee, the Neutral people were settled village agriculturalists. Several discrete settlement clusters have been identified in the lower Grand River, Fairchild-Big Creek, Upper Twenty Mile Creek, Spencer-Bronte Creek drainages, Milton, Grimsby, Eastern Niagara Escarpment and Onondaga Escarpment areas, which are attributed to Iroquoian populations. These settlement clusters are

¹ The Haudenosaunee are also known as the New York Iroquois or Five Nations Iroquois and after 1722 Six Nations Iroquois. They were a confederation of five distinct but related Iroquoian-speaking groups – the Seneca, Onondaga, Cayuga, Oneida, and Mohawk. Each lived in individual territories in what is now known as the Finger Lakes district of Upper New York. In 1722 the Tuscarora joined the confederacy.



believed by some scholars to have been inhabited by populations of the Neutral Nation or pre- (or ancestral) Neutral Nation (Lennox and Fitzgerald 1990).

Between 1647 and 1651, the Neutral were decimated by epidemics and ultimately dispersed by the Haudenosaunee, who subsequently settled along strategic trade routes on the north shore of Lake Ontario for a brief period during the mid seventeenth-century. Compared to settlements of the Haudenosaunee, the “Iroquois du Nord” occupation of the landscape was less intensive. Only seven villages are identified by the early historic cartographers on the north shore, and they are documented as considerably smaller than those in New York State. The populations were agriculturalists, growing maize, pumpkins, and squash. These settlements also played the important alternate role of serving as stopovers and bases for Haudenosaunee travelling to the north shore for the annual beaver hunt (Konrad 1974).

Shortly after dispersal of the Huron-Wendat, Ojibwa began to expand into southern Ontario (Rogers 1978:760–762). This history was constructed by Rogers using both Anishinaabek oral tradition and the European documentary record, and notes that it included Chippewa, Ojibwa, Mississauga, and Saulteaux or “Southeastern Ojibwa” groups. Ojibwa, likely Odawa, were first encountered by Samuel de Champlain in 1615 along the eastern shores of Georgian Bay. Etienne Brule later encountered other groups and by 1641, Jesuits had journeyed to Sault Sainte Marie (Thwaites 1896:11:279) and opened the Mission of Saint Peter in 1648 for the occupants of Manitoulin Island and the northeast shore of Lake Huron. The Jesuits reported that these Algonquian peoples lived “solely by hunting and fishing and roam as far as the “Northern sea” to trade for “ Furs and Beavers, which are found there in abundance” (Thwaites 1896-1901, 33:67), and “all of these Tribes are nomads, and have no fixed residence, except at certain seasons of the year, when fish are plentiful, and this compels them to remain on the spot” (Thwaites 1896-1901, 33:153). Algonquian-speaking groups were historically documented wintering with the Huron-Wendat, some who abandoned their country on the shores of the St. Lawrence because of attacks from the Haudenosaunee (Thwaites 1896-1901, 27:37).

Other Algonquian groups were recorded along the northern and eastern shores and islands of Lake Huron and Georgian Bay - the “Ouasouarini” [Chippewa], the “Outchougai” [Outchougai], the “Atchiligouan” [Achiligouan] near the mouth of the French River and north of Manitoulin Island the “Amikouai, or the nation of the Beaver” [Amikwa; Algonquian] and the “Oumisagai” [Mississauga; Chippewa] (Thwaites 1896-1901, 18:229, 231). At the end of the summer 1670, Father Louys André began his mission work among the Mississagué, who were located on the banks of a river that empties into Lake Huron approximately 30 leagues from the Sault (Thwaites 1896-1901, 55:133-155).

After the Huron-Wendat had been dispersed, the Haudenosaunee began to exert pressure on Ojibwa to the north. While their numbers had been reduced through warfare, starvation, and European diseases, the coalescence of various Anishinaabek groups led to enhanced social and political strength (Thwaites 1896-1901, 52:133) and Sault Sainte Marie was a focal point for people who inhabited adjacent areas both to the east and to the northwest as well as for the Saulteaux, who considered it their home (Thwaites 1896-1901, 54:129-131). The Haudenosaunee established a series of settlements at strategic locations along the trade routes inland from the north shore of Lake Ontario. From east to west, these villages consisted of Ganneious, on Napanee Bay, an arm of the Bay of Quinte; Quinte, near the isthmus of the Quinte Peninsula; Ganaraske, at the mouth of the Ganaraska River; Quintio, at the mouth of the Trent River on the north shore of Rice Lake; Ganatsekwyagon (or Ganestiquiagon), near the mouth of the Rouge River; Teyaiagon, near the mouth of the Humber River; and Quinaouatoua, on the portage between the western end of Lake Ontario and the Grand River (Konrad 1981:135). Their locations near the mouths of the Humber and Rouge Rivers, two branches of the Toronto Carrying Place, strategically linked these settlements with the upper Great Lakes through Lake Simcoe. The inhabitants of these villages were



agriculturalists, growing maize, pumpkins and squash, but their central roles were that of portage starting points and trading centres for Iroquois travel to the upper Great Lakes for the annual beaver hunt (Konrad 1974; Williamson et al. 2008:50–52). Ganatsekwyagon, Teyaiagon, and Quinaouatoua were primarily Seneca; Ganaraske, Quinte and Quintio were likely Cayuga, and Ganneious was Oneida, but judging from accounts of Teyaiagon, all of the villages might have contained peoples from a number of the Iroquois constituencies (ASI 2013).

During the 1690s, Ojibwa soon replaced the Haudenosaunee by force. By the first decade of the eighteenth century, the Michi Saagiig Nishnaabeg (Mississauga Nishnaabeg) had settled at the mouth of the Humber, near Fort Frontenac at the east end of Lake Ontario and the Niagara region and within decades were well established throughout southern Ontario. In 1736, the French estimated there were 60 men at Lake Saint Clair and 150 among small settlements at Quinte, the head of Lake Ontario, the Humber River, and Matchedash (Rogers 1978:761). This history is based almost entirely on oral tradition provided by Anishinaabek elders such as George Copway (Kahgegagahbowh), a Mississauga born in 1818 near Rice Lake who followed a traditional lifestyle until his family converted to Christianity (MacLeod 1992:197; Smith 2000). According to Copway, the objectives of campaigns against the Haudenosaunee were to create a safe trade route between the French and the Ojibwa, to regain the land abandoned by the Huron-Wendat. While various editions of Copway's book have these battles occurring in the mid-seventeenth century, common to all is a statement that the battles occurred around 40 years after the dispersal of the Huron-Wendat (Copway 1850:88; Copway 1851:91; Copway 1858:91). Various scholars agree with this timeline ranging from 1687, in conjunction with Denonville's attack on Seneca villages (Johnson 1986:48; Schmalz 1991:21–22) to around the mid- to late-1690s leading up to the Great Peace of 1701 (Schmalz 1977:7; Bowman 1975:20; Smith 1975:215; Tanner 1987:33; Von Gernet 2002:7–8).

Peace was achieved between the Haudenosaunee and the Anishinaabek Nations in August of 1701 when representatives of more than twenty Anishinaabek Nations assembled in Montreal to participate in peace negotiations (Johnston 2004:10). During these negotiations captives were exchanged and the Iroquois and Anishinaabek agreed to live together in peace. Peace between these nations was confirmed again at council held at Lake Superior when the Iroquois delivered a wampum belt to the Anishinaabek Nations.

From the beginning of the eighteenth century to the assertion of British sovereignty in 1763, there is no interruption to Anishinaabek control and use of southern Ontario. While hunting in the territory was shared, and subject to the permission of the various nations for access to their lands, its occupation was by Anishinaabek until the assertion of British sovereignty, the British thereafter negotiating treaties with them. Eventually, with British sovereignty, tribal designations changed (Smith 1975:221–222; Surtees 1985:20–21). According to Rogers (1978), by the twentieth century, the Department of Indian Affairs had divided the “Anishinaubag” into three different tribes, despite the fact that by the early eighteenth century, this large Algonquian-speaking group, who shared the same cultural background, “stretched over a thousand miles from the St. Lawrence River to the Lake of the Woods.” With British land purchases and treaties, the communities at Beausoleil Island, Cape Croker, Christian Island, Georgina and Snake Islands, Rama, Sarnia, Saugeen, the Thames, and Walpole, became known as “Chippewa” while the communities at Alderville, New Credit, Mud Lake, Rice Lake, and Scugog, became known as “Mississauga.” The northern groups on Lakes Huron and Superior, who signed the Robinson Treaty in 1850, appeared and remained as “Ojibbewas” in historical documents.

In 1763, following the fall of Quebec, New France was transferred to British control at the Treaty of Paris. The British government began to pursue major land purchases throughout Ontario in the early



nineteenth century, and entered into negotiations with various Nations for additional tracts of land as the need arose to facilitate European settlement.

During the American Revolution, Mississauga warriors supported the English military. Rebel forces destroyed the villages of the Six Nations Iroquois in New York and many people were forced to move to the Niagara area. When Six Nations Iroquois leaders learned that the English planned to make a peace treaty with the Americans and establish a boundary line that would give away their homelands they were angry. The English government offered to protect Six Nations Iroquois peoples and give them land within their boundaries. On August 8, 1783, Lord North instructed Governor Haldimand to set apart land for the Six Nations Iroquois and ensure that they carried on their hunting and fur trading with the British. On May 22, 1784, a tract of land along the Grand River was purchased by the British government from the Mississaugas who lived in the vicinity (Johnston 1964; Lytwyn 2005). The land set apart is called the Haldimand Tract. Joseph Brant led Haudenosaunee loyalists (1600 people) to the Haldimand tract in 1784 and in the fall of 1784, Sir Frederick Haldimand formally awarded the tract to the Mohawks “and others of the Six Nations [Iroquois].” They were authorized to “Settle upon the Banks of the River” and were allotted “for that Purpose six miles [10 km] deep from each Side of [it] beginning at Lake Erie, & extending in the Proportion to [its] Head.” The precise boundaries of the grant were unclear as there was no survey; for example, the northern boundary of the original deed from the Mississaugas to the Crown stated that the line extended “from the creek that falls from a small lake into...the bay known by the name of Waghquata [Burlington Bay]...until it strikes the river La Tranche [Thames].” The 1790 survey by Augustus Jones intentionally failed to include the headwaters of the Grand, an action made all the more difficult to address given the unclear description of the extent in the original deeds (Johnston 1964; Lytwyn 2005).

Brant regarded the territory as his own to manage on behalf of the Confederacy and interpreted the proclamation as tantamount to full national recognition of the Mohawks and fellow tribesmen. This interpretation was strongly denied by the British (Johnston 1964; Lytwyn 2005). Appointed as Lieutenant Governor of the new colony of Upper Canada in 1791, Simcoe refused to permit the Six Nations Iroquois to sell/lease any part of their reserve because they were arranged independently of the Crown. Brant, on the other hand, argued for the Six Nations Iroquois’ need for an immediate assured income from land sales as they could no longer hope to survive by hunting exclusively. Simcoe thought that if such practices were permitted, it could lead to other Europeans attempting to seize control by any means of the better part of the Six Nations Iroquois’ reserve and it was therefore unresolved as to whether Six Nations Iroquois people could dispose of their lands directly to whomever they chose (Johnston 1964; Lytwyn 2005).

In the first few years, Brant, who had been described, by some, as a Europeanized entrepreneur, took the initiative and invited white friends and acquaintances to the tract and provided them with rough land titles. Over the next 25 years (1784-1810), a considerable number of Europeans and Americans obtained similar leases authorizing them (in Brant’s opinion) to occupy and improve lots overlooking the river (Johnston 1964; Lytwyn 2005).

The subsequent Peter Russel administration (1797-1798), however, recognized the leases and the sales that Brant arranged with white settlers along the Grand River Valley. Trustees were appointed to act on the behalf of the Six Nations Iroquois with the authority to receive payment of purchases. On the other hand, some Six Nations Iroquois thought that the land sale practices violated the ancient principle that land was not a “commodity which could be conveyed.” Two Mohawk sachems even tried to take up arms to depose Brant because they did not agree with his ways. Their efforts were for naught and they returned



to the Bay of Quinte where other Six Nation Iroquois peoples, led by Sachem John Deseronto, had settled after the American Revolution (Johnston 1964; Lytwyn 2005).

A formal investigation of the matter was launched in 1812 although leases were not set aside. Due to problems of white encroachment including squatters without titles, settlers who bought land from individuals or through other transactions with Six Nations Iroquois, many of the leases were confirmed by the Crown in 1834-5. Unauthorized sales and agreements remained rampant (Johnston 1964; Lytwyn 2005).

In 1841, Samuel P. Jarvis (Indian Superintendent) informed the Six Nations Iroquois that the only way to keep white intruders off their land would be for them to surrender it to the Crown, to be administered for their sole benefit. With this plan, the Six Nations Iroquois would retain lands that they actually occupied and a reserve of approximately 8,094 ha. The surrender of land was made by the Confederacy in January, 1841 (Johnston 1964; Lytwyn 2005).

Today, this history and those surrenders are still contested and there are numerous specific land claims that have been filed by the Six Nations Iroquois with the federal government in regard to lands within the Haldimand Tract (Johnston 1964; Lytwyn 2005).

1.2.2 Euro-Canadian Land Use: Township Survey and Settlement

Historically, the Study Area is located in the Former Township of Brantford, in Lots 31-41, Concession 2.

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 m 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 (ASI 2006).

Brantford Township

Brantford Township originally formed part of a tract of land six miles wide on either side of the Grand River that was granted to the Six Nations of western New York by Governor Frederick Haldimand on October 25, 1784. The township is said to have received its name around 1825, in honour of the Chief



Joseph Brant or Thayendanegea (1742-1807), who was the Mohawk leader at the time of the grant. Much of the area covered by Brantford Township was not formally surveyed until 1830-31, when this task was undertaken by Lewis Burwell. The majority of the early “legal” Euro-Canadian settlers did not take up their land holdings until the 1830s. Several additional surveys followed in the years between 1833 and 1853 (Reville 1920).

After survey of the township, a network of concession roads and railroads developed through the nineteenth century. These transportation routes frequently influenced the siting of farmsteads and businesses. The Toronto, Hamilton and Buffalo rail line that intersects the east end of the property was constructed through Brantford in 1889 and abandoned in 1965. The Lake Erie and Northern rail line was constructed through Brantford in 1915 and abandoned in 1989 (Andreae 1997:132-135).

1.2.3 Historical Map Review

The 1859 *Tremaine’s Map of the County of Brant* (Tremaine 1859) and the 1875 *Illustrated Historical Atlas of the County of Brant* (Page & Smith 1875) were examined to determine the presence of historic features within the Study Area during the nineteenth century (Table 1; Figures 2-3).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases, given that they were financed by subscription, and subscribers were given preference with regard to the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases.

In addition, the use of historical map sources to reconstruct/predict the location of former features within the modern landscape generally proceeds by using common reference points between the various sources. These sources are then geo-referenced in order to provide the most accurate determination of the location of any property on historic mapping sources. The results of such exercises are often imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including the vagaries of map production (both past and present), the need to resolve differences of scale and resolution, and distortions introduced by reproduction of the sources. To a large degree, the significance of such margins of error is dependent on the size of the feature one is attempting to plot, the constancy of reference points, the distances between them, and the consistency with which both they and the target feature are depicted on the period mapping.

Table 1: Nineteenth-century property owner(s) and historical features(s) within or adjacent to the Study Area

Con #	Lot #	1859		1875	
		Property Owner(s)	Historical Feature(s)	Property Owner(s)	Historical Feature(s)
2	31	A. Thomas Thos. O. Scott	Church, schoolhouse Nine Corners	A. Thomas J. Lee A. Heartley	Church, schoolhouse, house (x4), orchard (x4)
2	32	A. Thomas Thos. O. Scott J. & T. Dodds	Oakfield Cottage	A. Thomas J. Lee A. Heartley Dodds Heirs	House, orchard
2	33	Thos. O. Scott	Oakfield Cottage	A. Thomas	House, orchard



		<i>1859</i>		<i>1875</i>	
Con #	Lot #	Property Owner(s)	Historical Feature(s)	Property Owner(s)	Historical Feature(s)
		J. & T. Dodds		J. Lee A. Heartley Dodds Heirs	
2	34	Thos. O. Scott S. Sturgis E. Bonham	Oakfield Cottage	S. Sturges J. Lee A. Heartley F. Bonham	House (x2), orchard (x2)
2	35	Stephen Ducksworth E. Bonham Edw. Jones Andrew Sharp	None	W. Kinney F. Bonham Joseph Loney Mrs. Jones	House, orchard
2	36	Walter Renwick Sam Buchanan	None	W. Turnbull Joseph Loney	House (x2), orchard (x2)
		Edw Jones			
2	37	J. & T. Dodd Wm Cox Edw. Jones	None	J. D. Dodds Mrs. Jones	House, orchard
2	38	Wm Cox H.C. Tew David Brown	None	Geo Williams David Brown	House (x2), orchard
2	39	John Nesbit Walter Sage	None	J. Gillen Walter Sage	House, orchard
2	40	Geo West John Snyder	None	J. Colbeck W. Snyder R.H. Snyder	House (x3), orchard (x3)
2	41	Thos West M.D. Baldwin	None	Wm Beel M Andrews	House (x2), orchard (x2)

According to the 1859 map, Powerline Road, King George Road and Park Road North were historic roads. A community labelled Nine Corners is shown located at the northwest corner of the Study Area, which included a church and a schoolhouse. Nine Corners is not labelled on the 1875 map. By 1875, Memorial Drive, Hayhurst Road, 17 houses, 19 orchards and a tributary of Fairchild Creek are depicted within the Study Area.

1.2.4 Twentieth-Century Mapping Review

The 1916 National Topographic Series (NTS) Brantford Sheet (Department of Militia and Defence 1916) and the 1954 aerial photography (Hunting Survey Corporation Limited 1954) were examined to determine the extent and nature of development and land uses within the Study Area (Figures 4-5). The 1916 map shows a hydro electric power line running along Powerline Road, and a bridge has been built on Park Road North. The church is not depicted in the 1916 map, and a cemetery is shown west of King



George Road. Within the Study Area, the schoolhouse and seven houses of brick or stone, as well as eight wooden houses are depicted. Nine Corners is labelled as Tranquillity, and in the 1954 aerial as Tranquility. The aerial shows the Study Area consists largely of open and agricultural fields. Dunsdon Street, Tranquility Street, Evelyn Street, and a section of road that would eventually connect to Memorial Drive can be seen being surrounded by housing development.

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 MHSTCI through “Ontario’s Past Portal”; published and unpublished documentary sources; and the files of ASI.

1.3.1 Current Land Use and Field Conditions

A review of available Google satellite imagery since 2003 shows that the location of the eight Preferred Alternatives have remained relatively unchanged.

The Stage 1 Study Area includes the larger area of research, between King George Road and east of Brantwood Park Road, from Powerline Road to Lynden Road/Fairview Drive. The focus of the property inspection and recommendations are on the Preferred Alternatives in eight areas of existing storm sewer infrastructure. Three of these areas may include work beyond the existing municipal right-of-way (ROW) along existing storm sewers (see Appendix A).

A Stage 1 property inspection was conducted on April 27, 2020. It was noted that the Preferred Alternative for Area One is located along Powerline Road and Powerline Trail, from west of Brantwood Park Road to east of Coulbert Road, and includes part of the road, trail, hydro corridor, road right-of-way, and drainage ditches. Areas Two through Eight are located within residential subdivisions. Area Two follows Brantwood Park Road from Viscount Road and Coxwell Crescent to south of Banbury Road. Area Three is along the southern section of White Owl Crescent. Area Four includes Banbury Road from north of Coulbeck Road, south to Gaitwin Street where it diverts west and then south along Hallmark Street. Area Five is located at Haney Ridge, and includes a section of existing storm sewer south of the house at 60 Hackney Ridge. Area Six is located along Royal Oak Drive and Fox Run, and a section of existing storm sewer west of 49 Fox Run. Area Seven is located on parts of Edgar Drive, Scotia Avenue, Poplar Street, Varadi Avenue, Brooks Court, Memorial Drive, and Kensington Avenue, as well as an existing section of storm sewer at 52 Kensington Avenue. Area Eight is located on parts of Rosewood Court, Hemlock Court, Skylark Road, Ivanhoe Road, Westchester Way, Oriole Parkway, Amethyst Court, Thicketwood Court, Old Farm Road, Canary Drive, Wedgewood Drive, Ashgrove Avenue, Park Road North. It includes green spaces between Ashgrove Avenue and Park Road North and meets Fairchild Creek east of Park Road.



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 BP (Karrow and Warner 1990: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 Sand Plains of the Norfolk Sand Plains of southern Ontario (Chapman and Putnam 1984).

The Norfolk Sand Plain physiographic region is a wedge-shaped feature that extends from the Lake Erie shoreline and tapers northward to a point in Brantford on the Grand River (Chapman and Putnam 1984). The region encompasses an area of 3,134 square kilometres and consists of sands and silts that were deposited as a delta in glacial Lakes Whittlesey and Warren. A massive discharge of meltwater from the Grand River area entered the lakes between the ice front and the moraines to the northwest, building the delta from west to east as the glacier withdrew, thus covering most of the area west of the Galt Moraine with sand. In the vicinity of the subject property, glaciolacustrine deep water sediments belonging to mainly glacial Lake Warren and younger deposits and consisting of stratified to varved silt and clay, minor sand, are overlain by veneer of sand (Zone 10) (Cowan 1972).

Figure 7 depicts surficial geology for the Study Area. The surficial geology mapping demonstrates that the Study Area is underlain by Coarse-textured glaciocustrine deposits of sand, gravel, minor silt and clay; Fine-textured glaciocustrine deposits of silt and clay, minor sand and gravel; and Modern alluvial deposits of clay, silt, sand, and gravel (Ontario Geological Survey 2010). Natural soils within the Study Area could not be identified (Ontario Institute of Pedology 1990).

The Study Area is located within the Fairchild Creek Subwatershed. Fairchild Creek is a major Tributary of the Grand River. It is a largely agricultural subwatershed with 68% agricultural land use and 12%



urban land use (Grand River Conservation Authority 2016). The Grand River Watershed is the largest watershed in southern Ontario, at 6,800 square kilometres. The Grand River begins in Dufferin County, and travels 280 kilometres before emptying into Lake Erie (Grand River Conservation Authority 2020).

1.3.3 Previous Archaeological Research

In Ontario, information concerning archaeological sites is stored in the Ontario Archaeological Sites Database (OASD) maintained by the MHSTCI. 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 km east to west, and approximately 18.5 km 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 *AhHb*.

According to the OASD, 31 previously registered archaeological sites are located within one kilometre of the Study Area, none of which are within 50 metres (MHSTCI 2019). A summary of the sites is provided below.

Table 2: List of previously registered sites within one kilometre of the Study Area

Borden #	Site Name	Cultural Affiliation	Site type	Researcher
AhHb-17	Francis St.	Pre-Contact Indigenous	Camp/campsite	John Redmond 1983
AhHb-42	N/A	Pre-Contact Indigenous	Unknown	ASI 1991
AhHb-43	N/A	Pre-Contact Indigenous	Unknown	ASI 1991
AhHb-61	Northridge 1	Pre-Contact Indigenous	Findspot	Robert Pearce 1995
AhHb-64	Luciani 1	Pre-Contact Indigenous	Camp/campsite	Smith 1995, 1996; TMHCI 2006
AhHb-65	Luciani 2	Pre-Contact Indigenous	Findspot	Smith 1996; TMHCI 2006
AhHb-66	N/A	Pre-Contact Indigenous; Euro-Canadian	Findspot; homestead	MHCI 1998
AhHb-67	John Cole Homestead	Pre-Contact Indigenous; Euro-Canadian	Findspot; homestead	MHCI 1998
AhHb-68	N/A	Pre-Contact Indigenous; Euro-Canadian	Findspot; homestead	MHCI 1998
AhHb-69	N/A	Archaic, Late; Archaic, Middle	Scatter	MHCI 1998
AhHb-70	N/A	Pre-Contact Indigenous; Euro-Canadian	Scatter	MHCI 1998
AhHb-71	N/A	Archaic, Late	Findspot	MHCI 1998
AhHb-73	N/A	Archaic, Early	Findspot	MHCI 1998
AhHb-82	N/A	Archaic, Early	Findspot	ASI 1999
AhHb-83	N/A	Pre-Contact Indigenous	Findspot	ASI 1999
AhHb-84	N/A	Archaic, Early	Findspot	ASI 1999
AhHb-85	N/A	Pre-Contact Indigenous	Findspot	ASI 1999



Borden #	Site Name	Cultural Affiliation	Site type	Researcher
AhHb-88	Garden Avenue	Pre-Contact Indigenous	Camp/campsite	ASI 2000
AhHb-119	Hopewell A	Pre-Contact Indigenous	Scatter	AMICK 2006
AhHb-137	Hopewell S	Pre-Contact Indigenous	Scatter	AMICK 2006
AhHb-140	N/A	Archaic, Middle	Findspot	AMICK 2006
AhHb-141	N/A	Pre-Contact Indigenous	Findspot	AMICK 2006
AhHb-142	N/A	Pre-Contact Indigenous	Findspot	AMICK 2006
AhHb-143	Innes-Welton A	Pre-Contact Indigenous	Camp/campsite	AMICK 2006, TLA 2019
AhHb-144	Innes-Welton B	Pre-Contact Indigenous	Camp/campsite	AMICK 2006, TLA 2019
AhHb-145	Innes-Welton C	Pre-Contact Indigenous	Camp/campsite	AMICK 2006, TLA 2019
AhHb-146	Innes-Welton D	Pre-Contact Indigenous	Camp/campsite	AMICK 2006, TLA 2019
AhHb-147	Innes-Welton E	Pre-Contact Indigenous	Scatter	AMICK 2006
AhHb-148	Innes-Welton F	Pre-Contact Indigenous	Scatter	AMICK 2006
AhHb-149	Innes-Welton G	Pre-Contact Indigenous	Scatter	AMICK 2006
AhHb-152	Innes-Welton J	Pre-Contact Indigenous	Scatter	AMICK 2006

AMICK- AMICK Consultants Limited
 MHCI – Mayer Heritage Consultants Inc.
 TLA – This Land Archaeology

According to the background research, six previous reports detail fieldwork within 50 m of the Study Area, none of which are located within 50 m of the Preferred Alternatives.

- (AMICK Consultants Ltd. 2007) P038-235-2006 *Report on the 2006 Stage 1-2 Archaeological Assessment of the Proposed Innes and Welton Subdivision, Part of Lot 42, Concession 2 City of Brantford, Brant County*
- (ASI 2000) 1999-007-174 *Stage 1/2 Archaeological Resource Assessment, Brantford Southern Access Road (BSAR), From CAH 403 Northerly to Dunsdon Street.*
- (ASI 2001) 2000-117-007 *Stage 1/2 Archaeological Resource Assessment, Brantford Southern Access Road (BSAR).*
- (ASI 2003) P057-002 *Stage 1 Archaeological Resource Assessment King George Road Sanitary Sewer and Pumping Station, City of Brantford, Regional Municipality of Brant, Ontario*
- (ASI 2005) P057-151 *Stage 2 Archaeological Assessment King George Road Sanitary Sewer and Pumping Station, City of Brantford, Regional Municipality of Brant, Ontario*
- (Golder Associates Ltd. 2017) P457-0040-2017 *Stage 1 Archaeological Assessment 487 Park Road North Part of Lot 37, Concession 2 Former Township of Brantford, Now City of Brantford, Ontario*



2.0 FIELD METHODS: PROPERTY INSPECTION

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 on the Preferred Alternatives under the field direction of Simon Newcombe (R1010) of ASI, on April 27, 2020, 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 visual inspection only and did not include excavation or collection of archaeological resources. Fieldwork was only conducted when weather conditions were deemed suitable and seasonally appropriate, per S & G Section 1.2., Standard 2. Previously identified features of archaeological potential were examined; additional features of archaeological potential not visible on mapping were identified and documented as well as any features that will affect assessment strategies. Field observations are compiled onto the existing conditions of the Study Area in Section 7.0 (Figures 9-14) and associated photographic plates are presented in Section 8.0 (Plates 1-20).

3.0 ANALYSIS AND CONCLUSIONS

The historical and archaeological contexts have been analyzed to help determine the archaeological potential of the Study Area. These data are presented below in Section 3.1. Results of the analysis of the Study Area property inspection are presented in Section 3.2.

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 (See Table 2);
- Water sources: primary, secondary, or past water source (Fairchild Creek);
- Early historic transportation routes (Powerline Road, King George Road, Park Road North, Memorial Drive, Hayhurst Road); and
- Proximity to early settlements (Brantford)

According to the S & G, Section 1.4 Standard 1e, 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 no properties within the Study Area are Listed or Designated under the Ontario Heritage Act.



These criteria are indicative of potential for the identification of Indigenous and Euro-Canadian archaeological resources, depending on soil conditions and the degree to which soils have been subject to deep disturbance.

3.2 Analysis of Property Inspection Results

The property inspection determined that part of the Preferred Alternative exhibits archaeological potential. This area will require Stage 2 archaeological assessment prior to any development. 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 (Plate 2; Figure 9: areas highlighted in green).

The remainder of the Study Area has been subjected to deep soil disturbance events: the majority of the proposed work is along existing storm sewer alignments, within residential subdivisions, or in existing road right-of-ways (Appendix A). According to the S & G Section 1.3.2 these areas do not retain archaeological potential (Plates 1-20; Figures 9-14: areas highlighted in yellow). These areas do not require further survey.

3.3 Conclusions

The Stage 1 background study determined that 31 previously registered archaeological sites are located within one kilometre of the Study Area. The property inspection determined that part of the Study Area exhibits archaeological potential and will require Stage 2 assessment.



4.0 RECOMMENDATIONS

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

1. Part of the Study Area exhibits archaeological potential. These lands require Stage 2 archaeological assessment by test pit survey at five metre intervals, where appropriate, prior to any proposed impacts to the property;
2. The remainder of the Study Area does not retain archaeological potential on account of deep and extensive land disturbance or low and wet conditions. These lands do not require further archaeological assessment; and,
3. Should the proposed work extend beyond the current Study Area, further Stage 1 archaeological assessment should be conducted to determine the archaeological potential of the surrounding lands.

NOTWITHSTANDING the results and recommendations presented in this study, ASI 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 Cultural Programs Unit of the MHSTCI should be immediately notified.



5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

ASI also 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 1990, 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 regard 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 *Cemeteries Act*, R.S.O. 1990 c. C.4 and the *Funeral, Burial and Cremation Services Act*, 2002, S.O. 2002, c.33 (when proclaimed in force) require that any person discovering human remains must notify the police or coroner and the Registrar of Cemeteries at the Ministry of Consumer Services.



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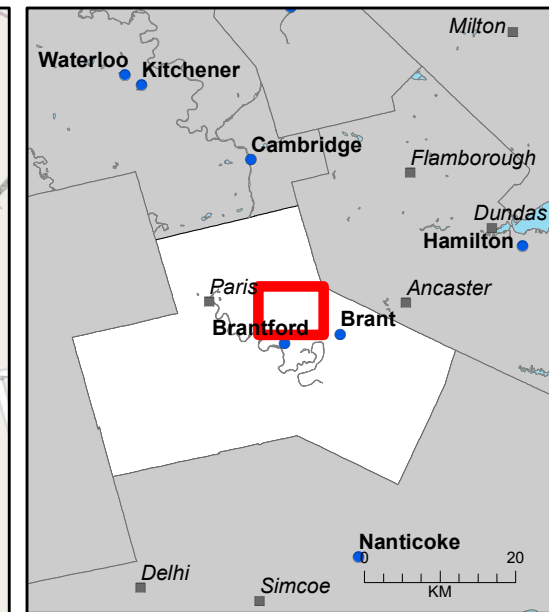
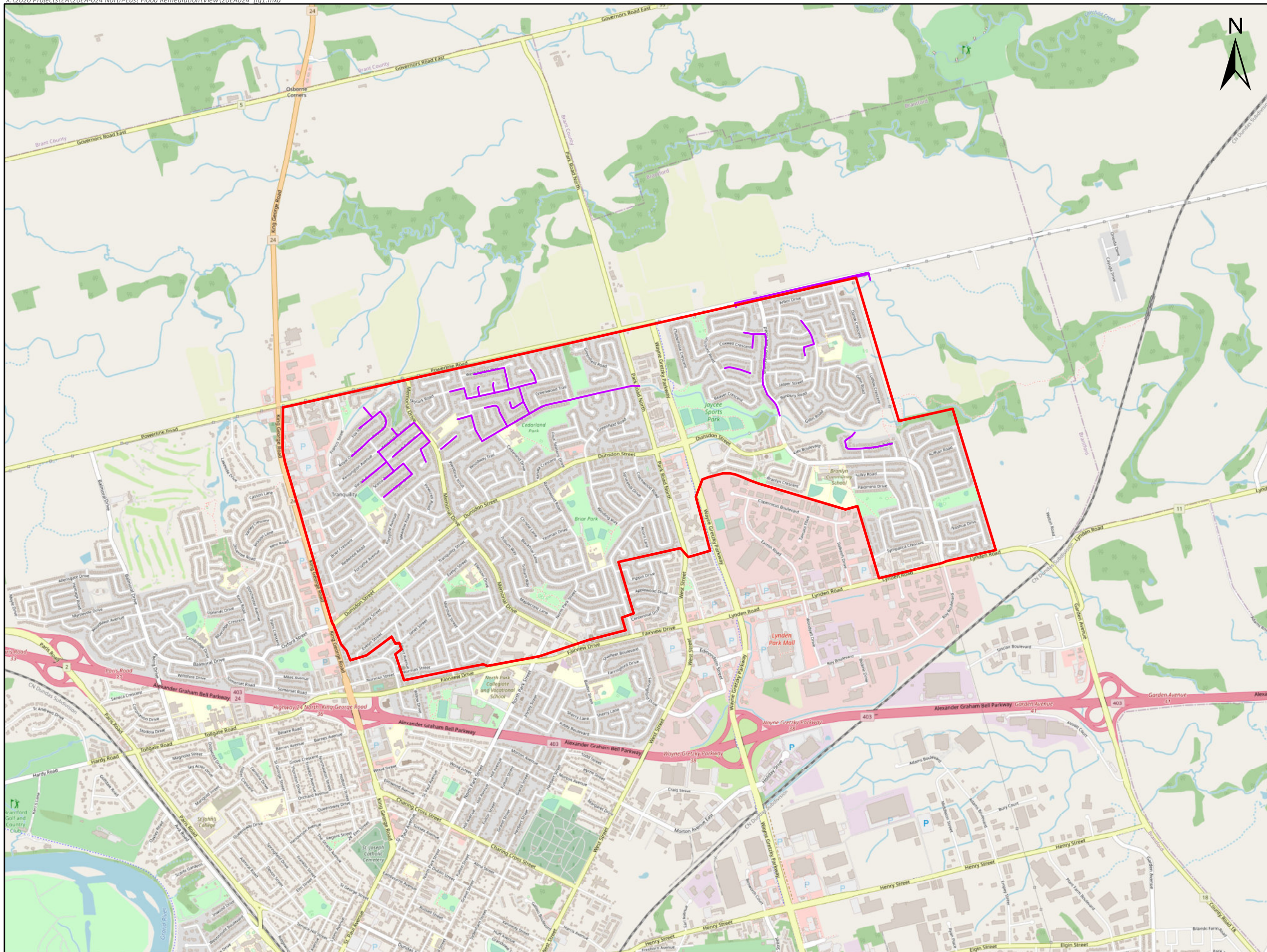


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7.0 MAPS





- STUDY AREA
- PREFERRED ALTERNATIVES

Sources: Ortho: ESRI
 Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:25,000
 Page Size: 11 x 17



ASI PROJECT NO.: 20EA-024
 DATE: 5/4/2020
 DRAWN BY: JF
 FILE: 20EA024_fig1

ASI Providing Archaeological & Cultural Heritage Services
 528 Bathurst Street Toronto, ONTARIO M5S 2P9
 T 416-966-1069 F 416-966-9723 asiheritage.ca

Figure 1: Location of the Study Area

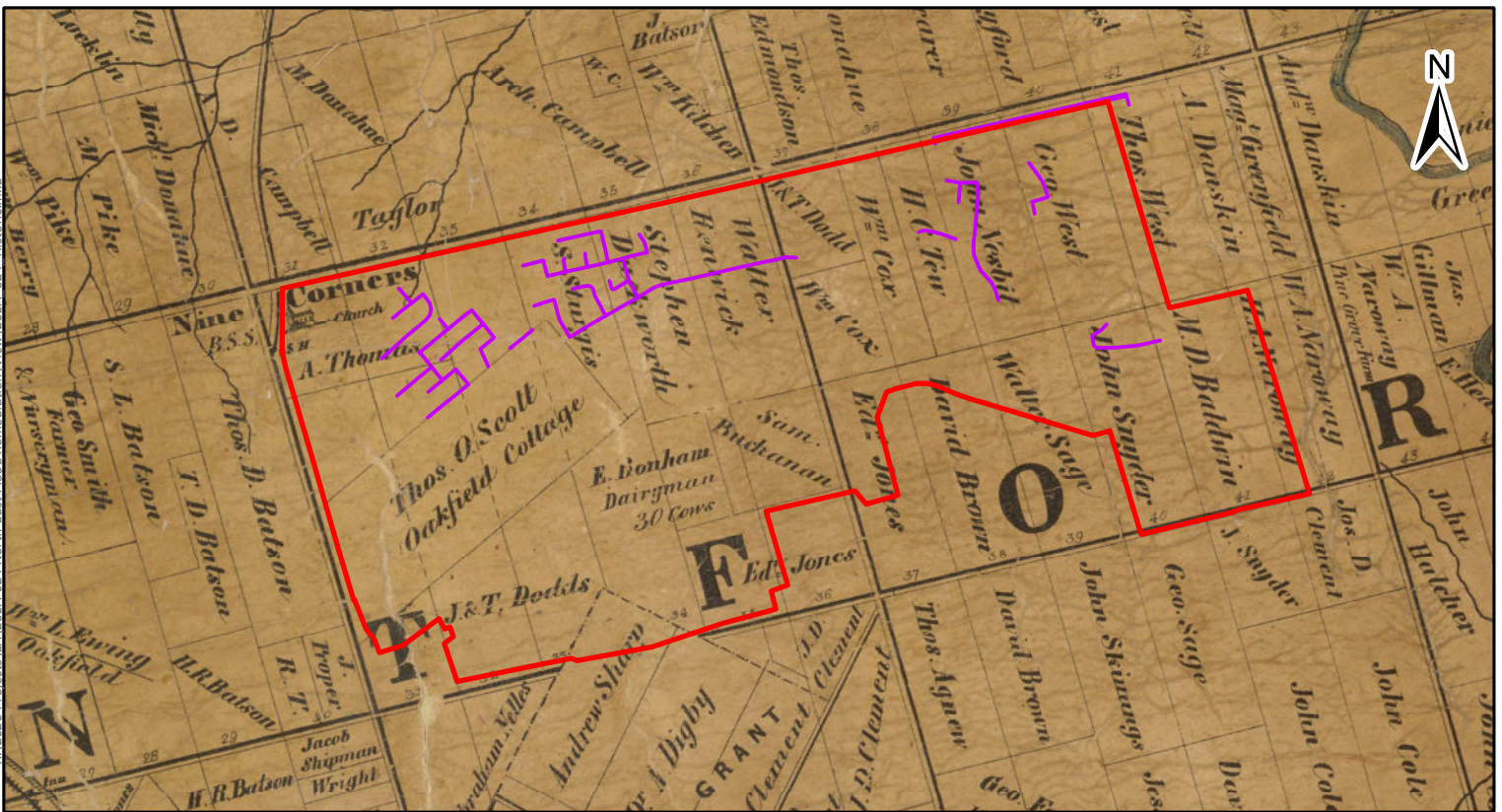


Figure 2: Study Area (Approximate Location) Overlaid on the 1859 Map of the County of Brant

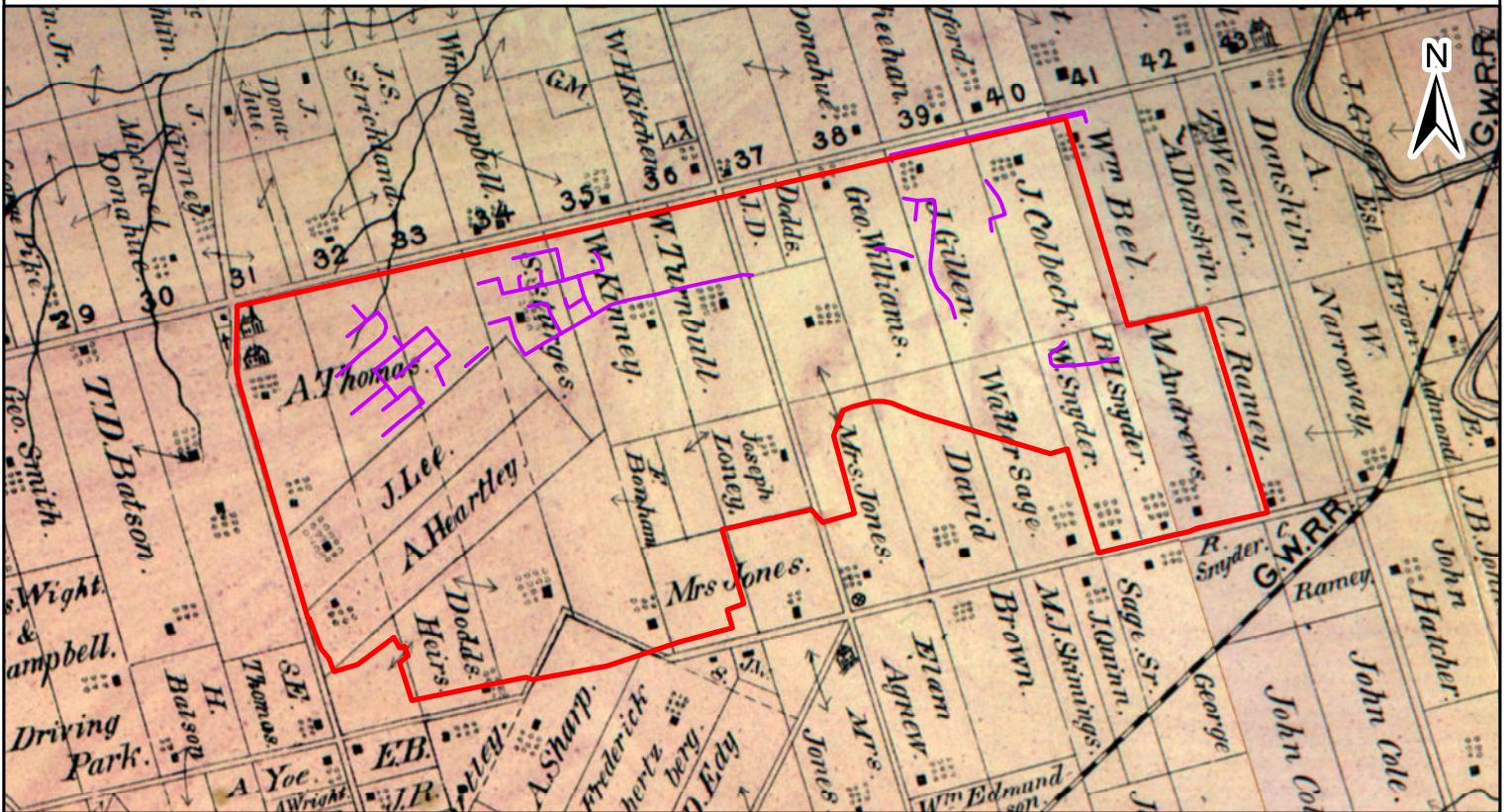



Figure 3: Study Area (Approximate Location) Overlaid on the 1875 Illustrated Historical Atlas of the County of Brant

	 STUDY AREA	Sources: Fig. 2: Treamine's Map of the County of Brant, 1859; Fig. 3: Illustrated Historical Atlas of the County of Brant, 1875.	
	 PREFERRED ALTERNATIVES		
		ASI PROJECT NO.: 20EA_024 DATE: 5/4/2020	DRAWN BY: ESB FILE: 20EA_024_Historic

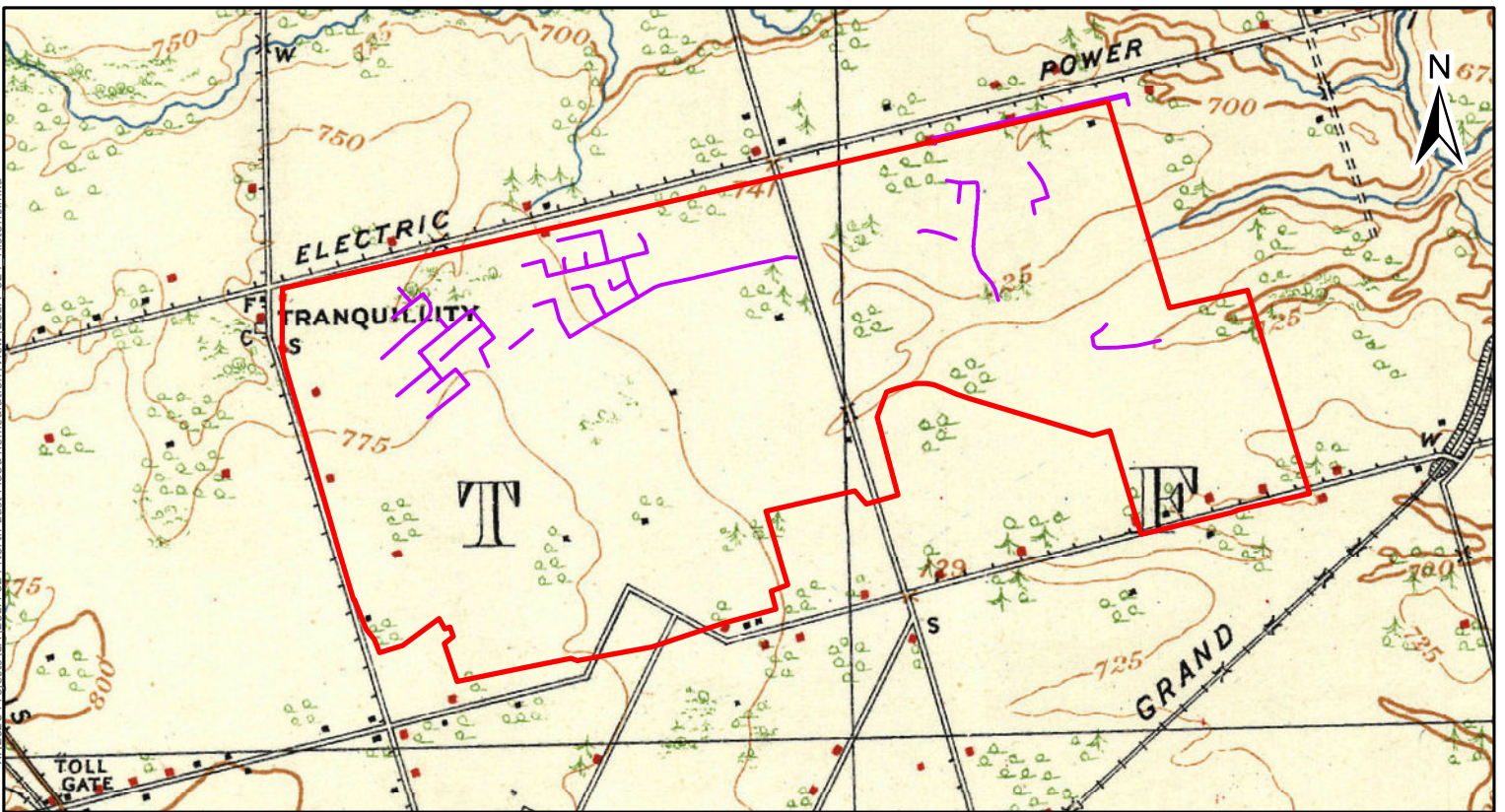



Figure 4: Study Area (Approximate Location) Overlaid on the 1916 NTS Brantford Sheet



Figure 5: Study Area (Approximate Location) Overlaid on the 1954 Aerial Photography of Brantford

	 STUDY AREA	Sources: Fig. 4: National Topographic System, Brantford Sheet, 1916; Fig. 5: University of Toronto, Map and Data Library.	 Kilometers
	 PREFERRED ALTERNATIVES		
		ASI PROJECT NO.: 20EA_024 DATE: 5/4/2020	DRAWN BY: ESB FILE: 20EA_024_Historic

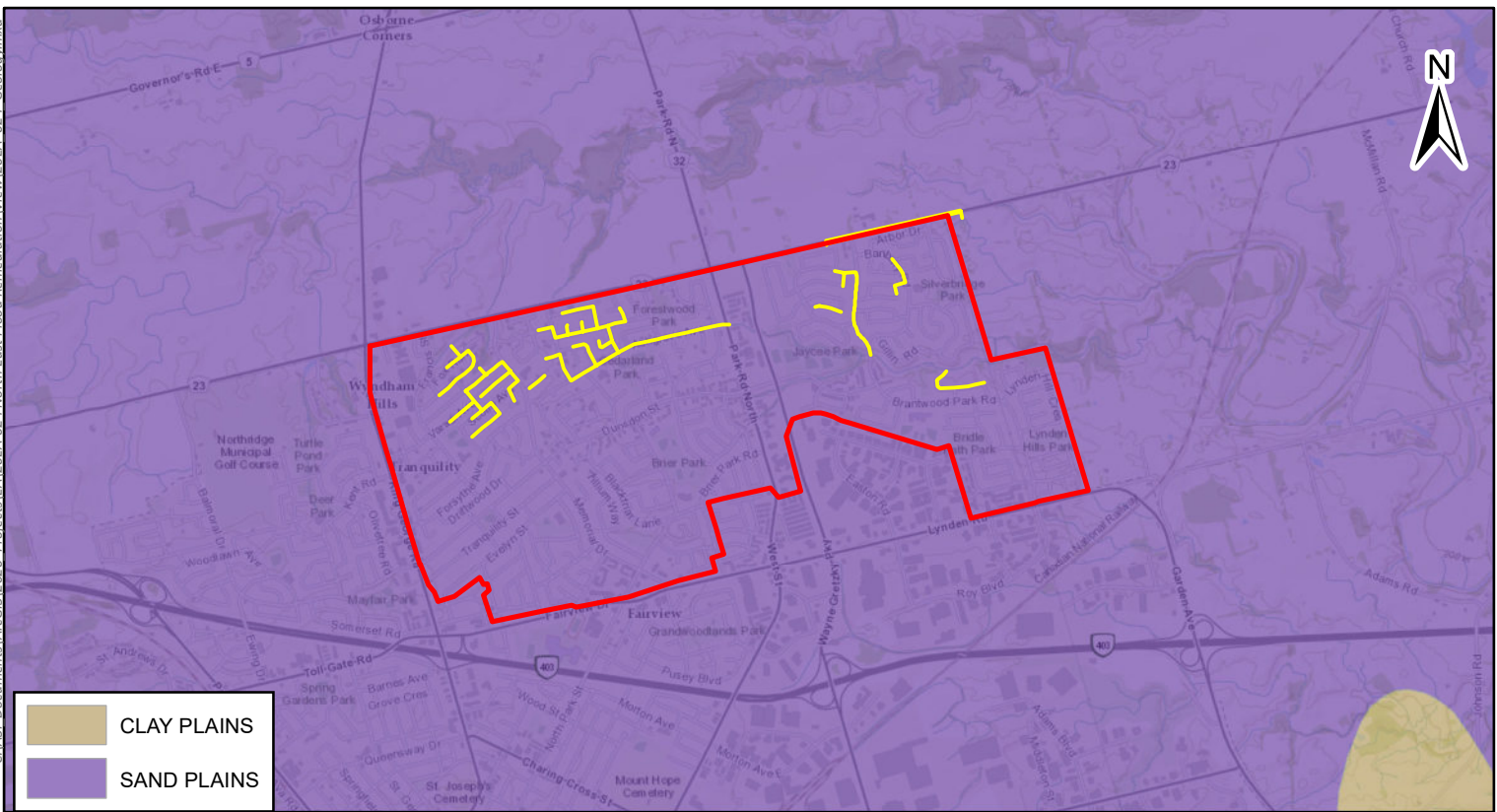


Figure 6: Study Area - Physiographic Landforms

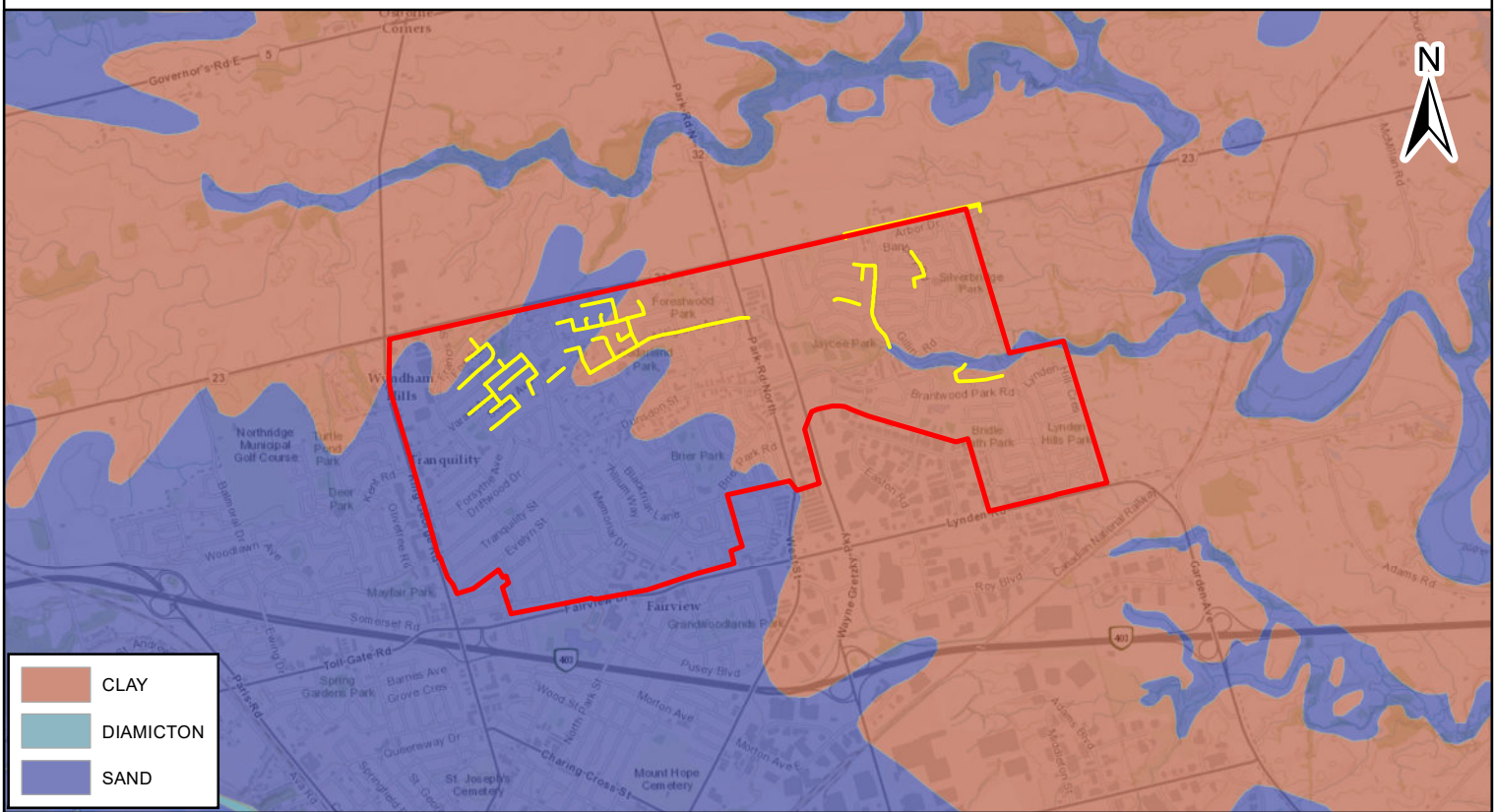




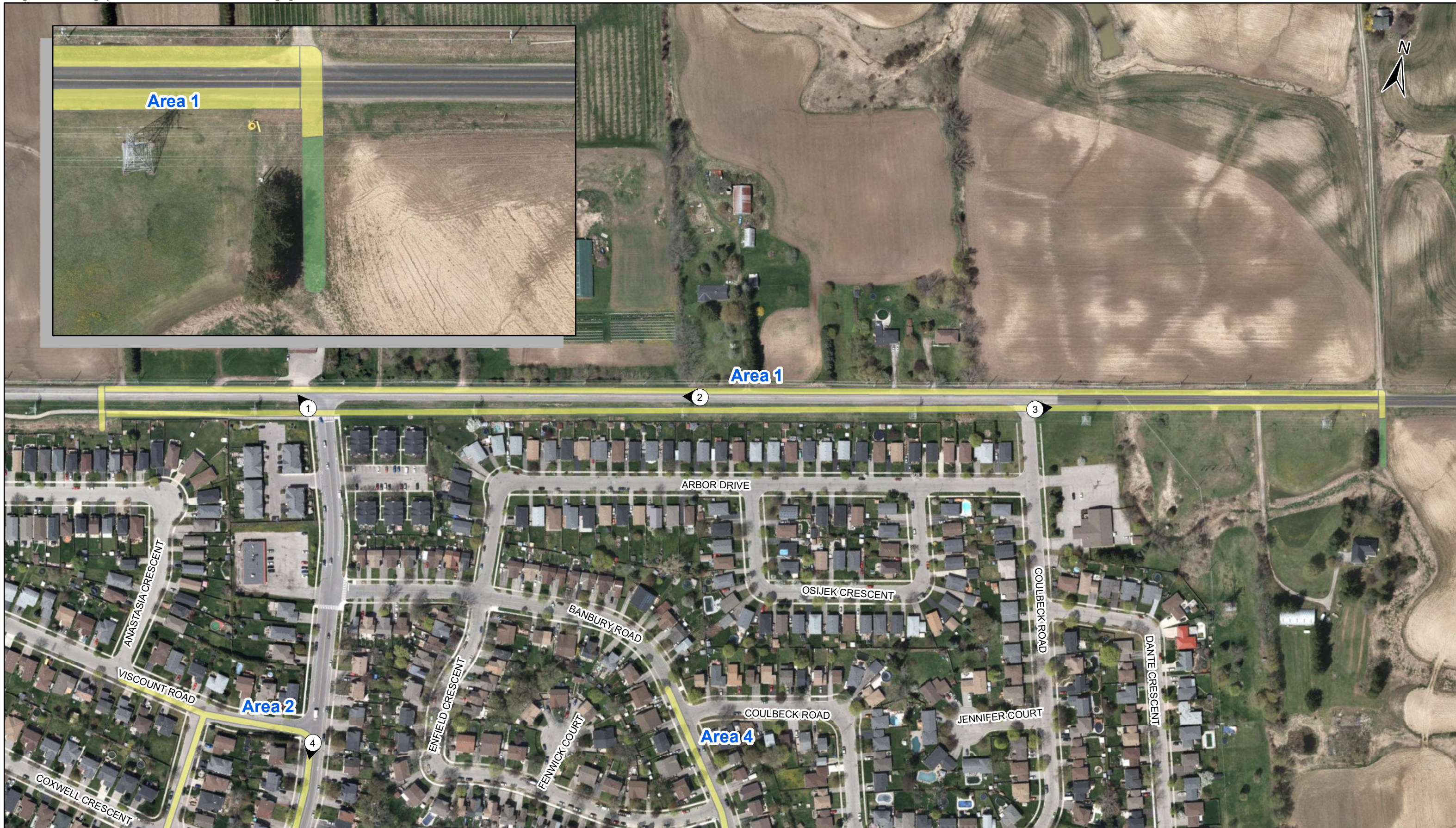




Figure 7: Study Area - Surficial Geology

	 STUDY AREA  PREFERRED ALTERNATIVES	Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong	0  1.5 Kilometers
	Projection: NAD 1983 UTM Zone 17N Scale: 1:50,000 Page Size: 8.5 x 11	ASI PROJECT NO.: 20EA_024 DATE: 2020-05-19	DRAWN BY: ESB FILE: 20EA_024_Geology

DISTURBED - NO FURTHER WORK REQUIRED
 TEST PIT SURVEY REQUIRED

 PHOTO LOCATION AND DIRECTION

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

 Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:2,530
 Page Size: 11 x 17


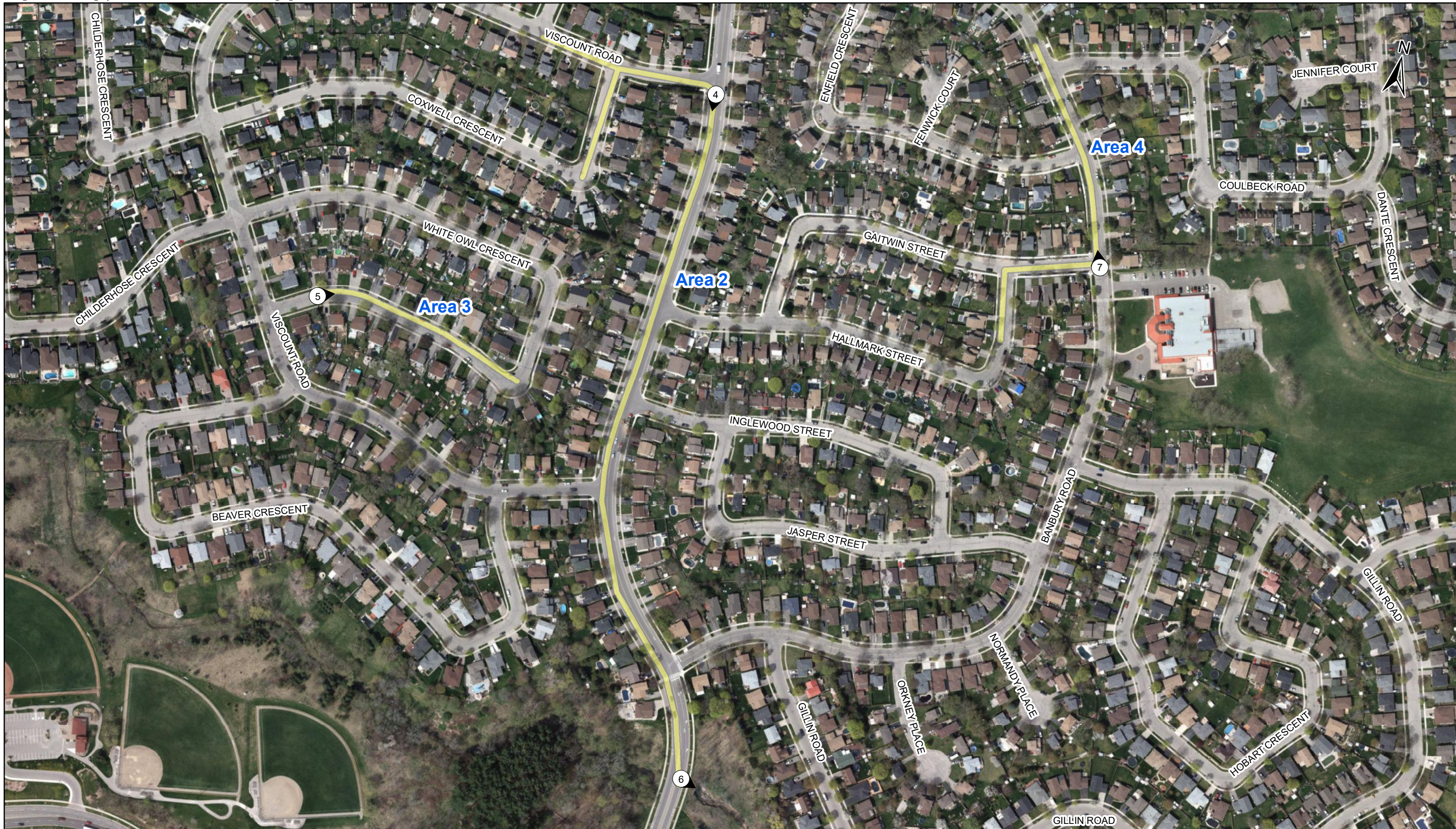
0 125

Metres
 ASI PROJECT NO.: 20EA_024 DRAWN BY: ESB
 DATE: 2020-05-19 FILE: 20EA_024_Results

Figure 9: North-East Flood Remediation - Results of Stage 1 (Sheet 1)



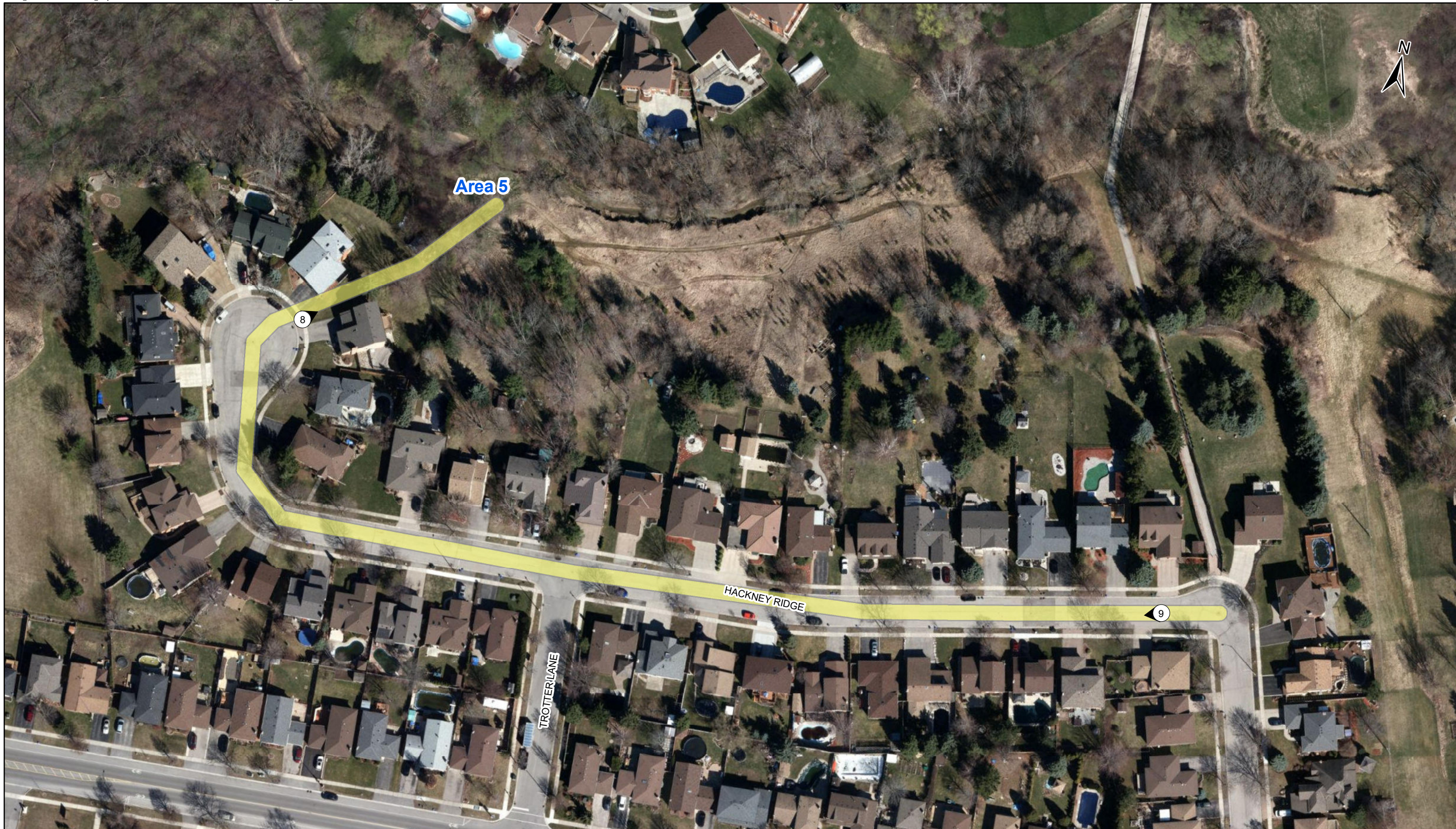
	DISTURBED - NO FURTHER WORK REQUIRED
	PHOTO LOCATION AND DIRECTION


Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community


Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:2,810
 Page Size: 11 x 17

0	125
Metres	
ASI PROJECT NO.: 20EA_024 DATE: 2020-05-11	DRAWN BY: ESB FILE: 20EA_024_Results

Figure 10: North-East Flood Remediation - Results of Stage 1 (Sheet 2)




 DISTURBED - NO FURTHER WORK REQUIRED

 PHOTO LOCATION AND DIRECTION

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:1,110
 Page Size: 11 x 17

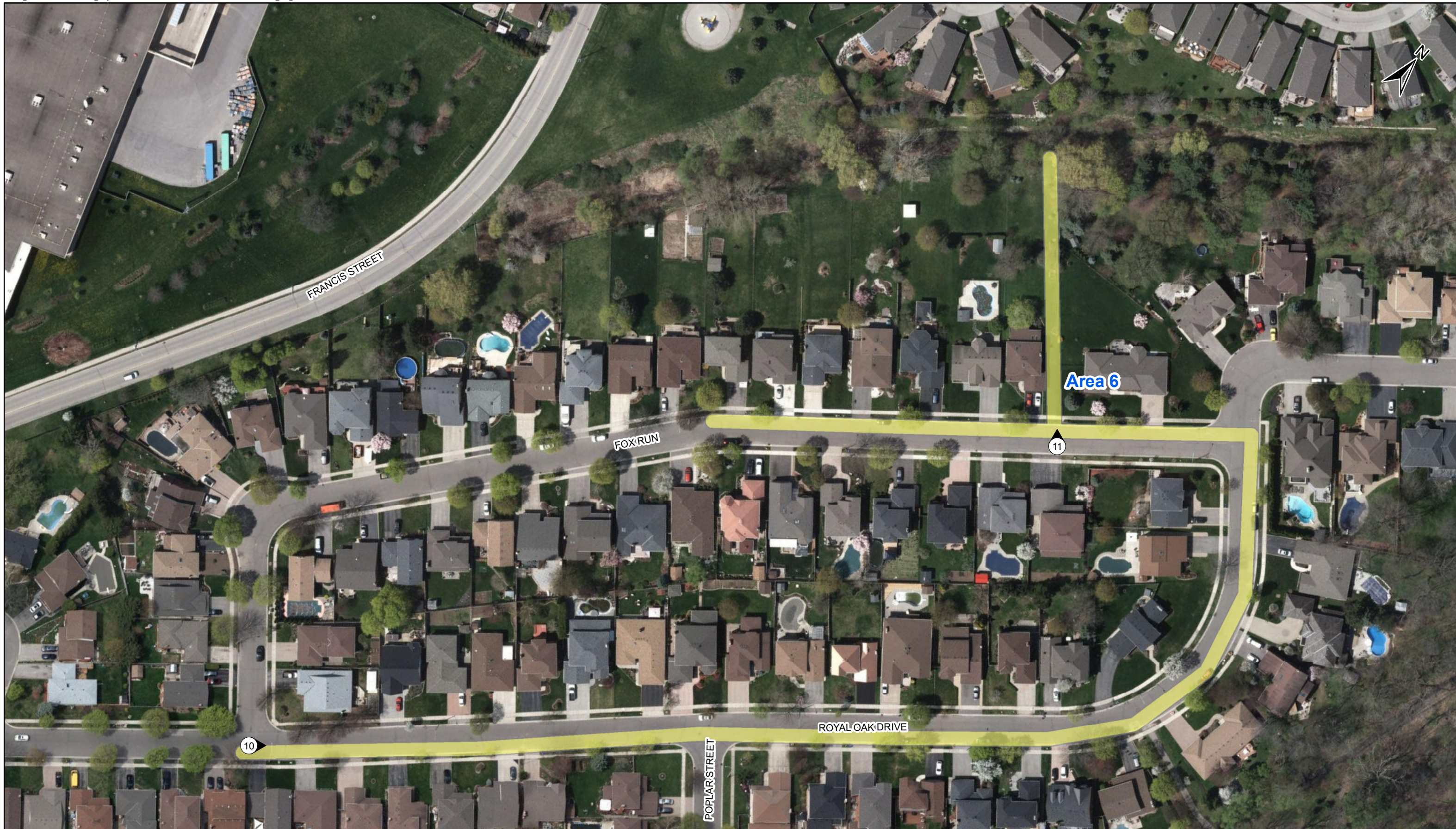
0 50



Metres

ASI PROJECT NO.: 20EA_024 DRAWN BY: ESB
 DATE: 2020-05-11 FILE: 20EA_024_Results

Figure 11: North-East Flood Remediation - Results of Stage 1 (Sheet 3)



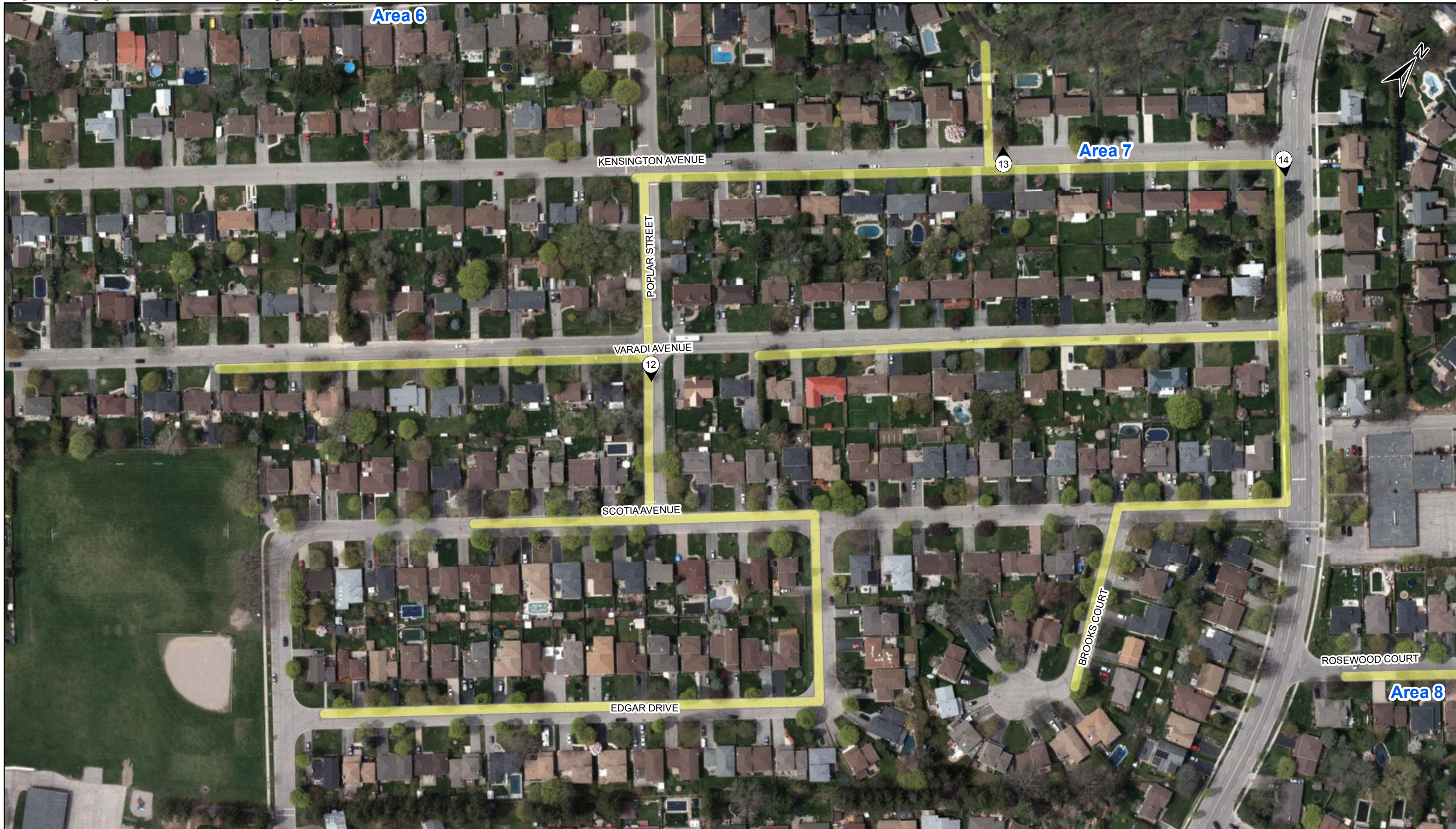
		DISTURBED - NO FURTHER WORK REQUIRED
		PHOTO LOCATION AND DIRECTION




Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:1,180
 Page Size: 11 x 17

<p>0 50 Metres</p>
<p>ASI PROJECT NO.: 20EA_024 DATE: 2020-05-11</p>
<p>DRAWN BY: ESB FILE: 20EA_024_Results</p>

Figure 12: North-East Flood Remediation - Results of Stage 1 (Sheet 4)



	 DISTURBED - NO FURTHER WORK REQUIRED
	PHOTO LOCATION AND DIRECTION

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:1,730
 Page Size: 11 x 17


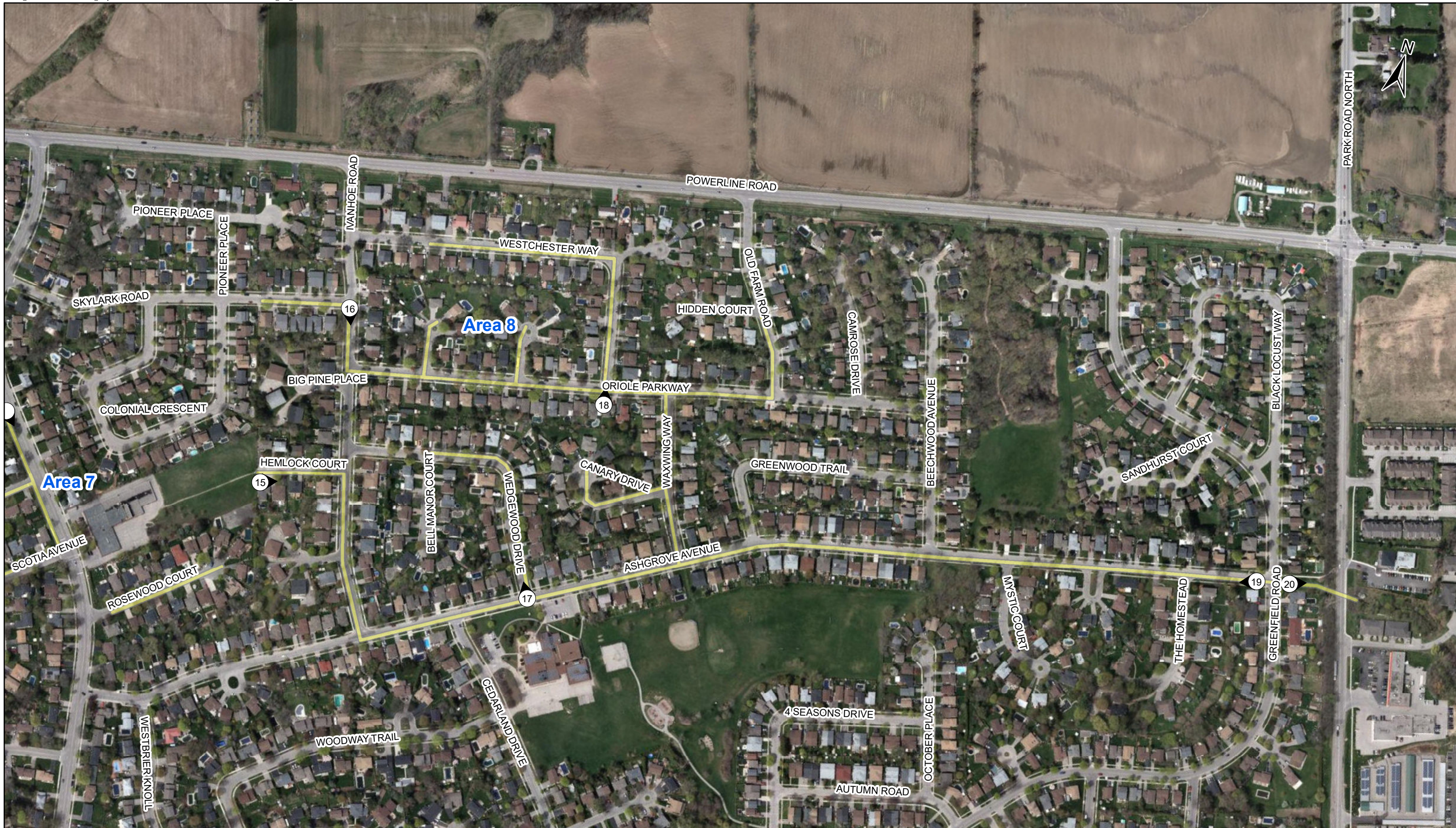



0 50	
	
Metres	
ASI PROJECT NO : 20EA_024 DATE: 2020-05-11	DRAWN BY: ESB FILE: 20EA_024_Results

Figure 14: North-East Flood Remediation - Results of Stage 1 (Sheet 5)




 **ASI**

 DISTURBED - NO FURTHER WORK REQUIRED

 PHOTO LOCATION AND DIRECTION

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Projection: NAD 1983 CSRS UTM Zone 17N
 Scale: 1:3,960
 Page Size: 11 x 17

0  200

Metres

ASI PROJECT NO.: 20EA_024
 DATE: 2020-05-11

DRAWN BY: ESB
 FILE: 20EA_024_Results

Figure 13: North-East Flood Remediation - Results of Stage 1 (Sheet 6)

8.0 IMAGES



Plate 1: [NW] Powerline Road; Area is disturbed, no potential



Plate 2: [W] Powerline Road; South side of road beyond disturbed ROW requires Stage 2 test pit Survey



Plate 3: [E] Powerline Road; Preferred Alternative is within the disturbed ROW, no potential



Plate 4: [S] Brantwood Park Road; Area is disturbed, no potential



Plate 5: [E] White Owl Crescent; Area is disturbed, no potential



Plate 6: [SE] Tributary of Fairchild Creek; Study Area is within existing disturbed storm sewer and road ROWs, no potential



Plate 7: [N] Banbury Road; Area is disturbed, no potential



Plate 8: [NE] Greenspace east of 60 Hackney Ridge; Area is disturbed from existing storm sewer alignment, no potential



Plate 9: [W] Hackney Ridge; Area is disturbed, no potential



Plate 10: [E] Royal Oak Drive; Area is disturbed, no potential



Plate 11: [N] Greenspace west of 49 Fox Run; Area is disturbed from existing utilities, no potential



Plate 12: [S] Poplar Street; Area is disturbed, no potential



Plate 13: [N] 52 Kensington Avenue; Area is disturbed, no potential



Plate 14: [S] Memorial Drive; Area is disturbed, no potential



Plate 15: [E] Hemlock Court; Area is disturbed, no potential



Plate 16: [S] Ivanhoe Road; Area is disturbed, no potential



Plate 17: [N] Wedgewood Drive; Area is disturbed, no potential



Plate 18: [N] Westchester Way; Area is disturbed, no potential



Plate 19: [W] Ashgrove Avenue; Area is disturbed, no potential



Plate 20: [E] Greenspace east of Greenfield Road; Area is disturbed from existing utilities, no potential

9.0 APPENDIX A





City of Brantford North-East End Flood Remediation Study

Legend

Existing Storm Sewer

Watercourse

Waterbodies

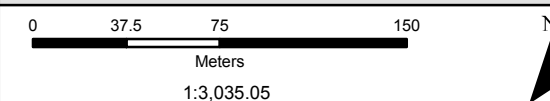
Proposed Storm Drainage System

Culvert

Ditch



Figure:
Preferred Alternative For Area 1



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford



**City of Brantford
North-East End
Flood Remediation Study**

Legend


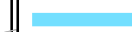





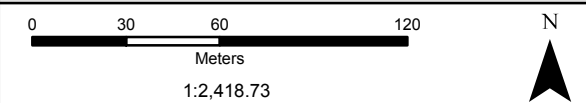
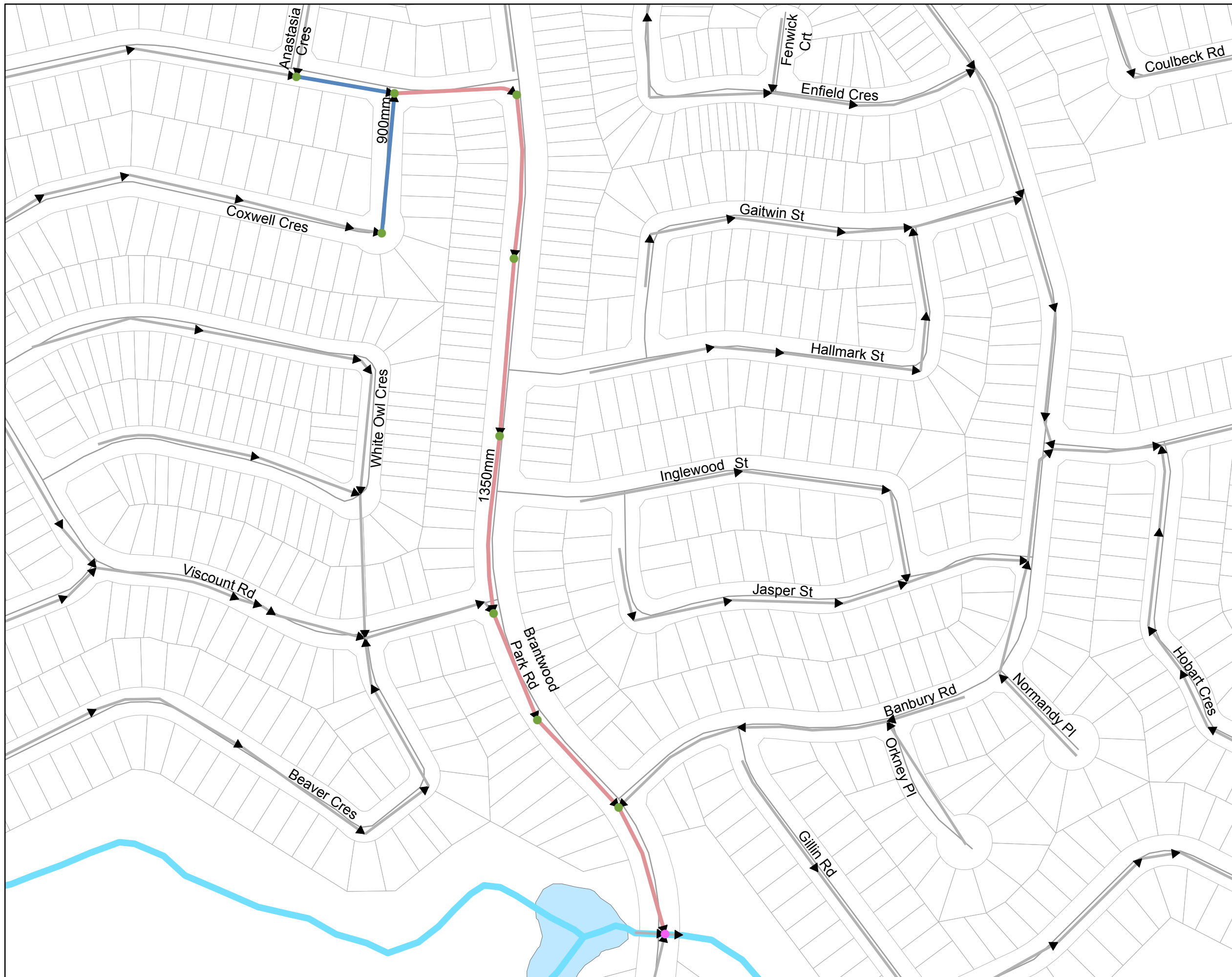
-  Existing Storm Sewer
-  Watercourse
-  Waterbodies
- Proposed Sewer Size**
-  900 mm
-  1350 mm
-  New Storm Manhole
-  New Storm Outfall

Figure:
Preferred Alternative For Area 2



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford



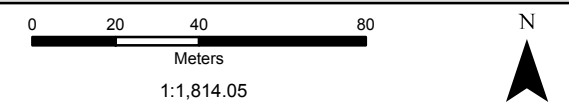


City of Brantford North-East End Flood Remediation Study

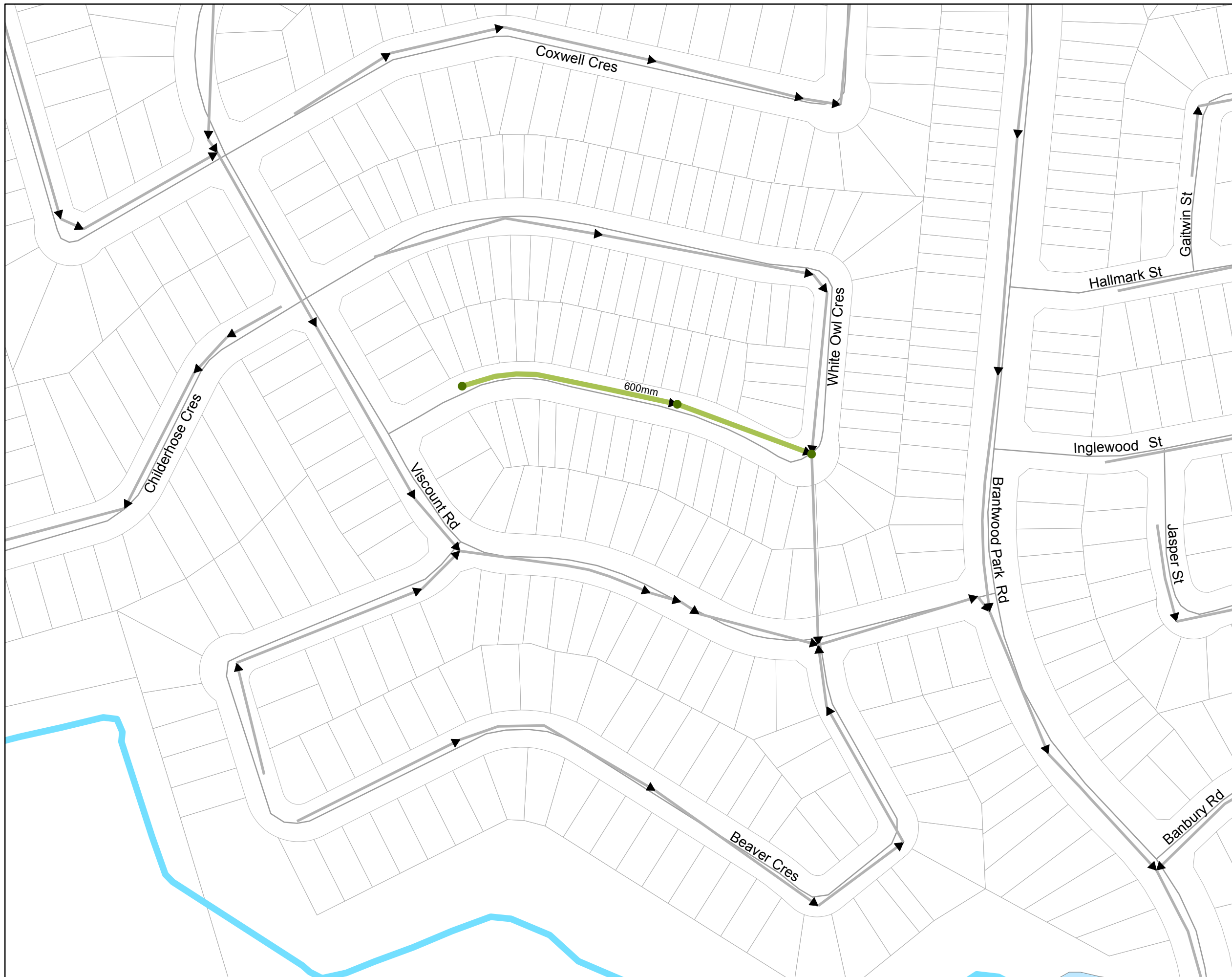
Legend

- Existing Storm Sewer
- Watercourse
- Waterbodies
- Proposed Sewer Size**
 - 600 mm
 - New Storm Manhole

Figure:
Preferred Alternative For Area 3



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford



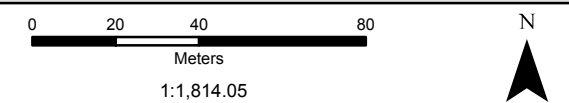


City of Brantford North-East End Flood Remediation Study

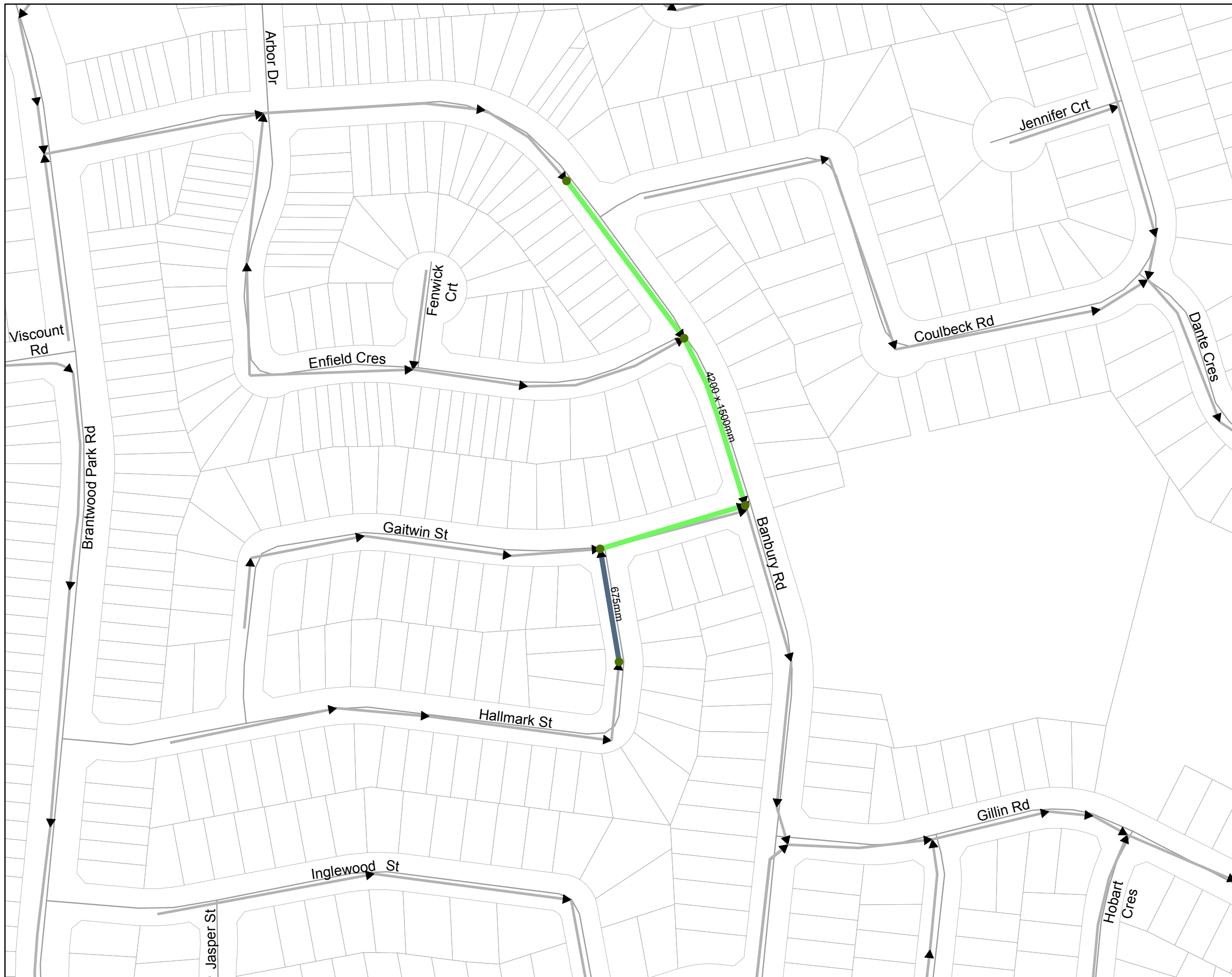
Legend

- Existing Storm Sewer
- Proposed Sewer Size
 - 675 mm
 - 4200 x 1500 mm
- New Storm Manhole

Figure:
Preferred Alternative For Area 4



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford



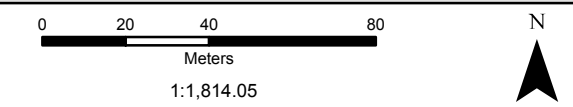


City of Brantford North-East End Flood Remediation Study

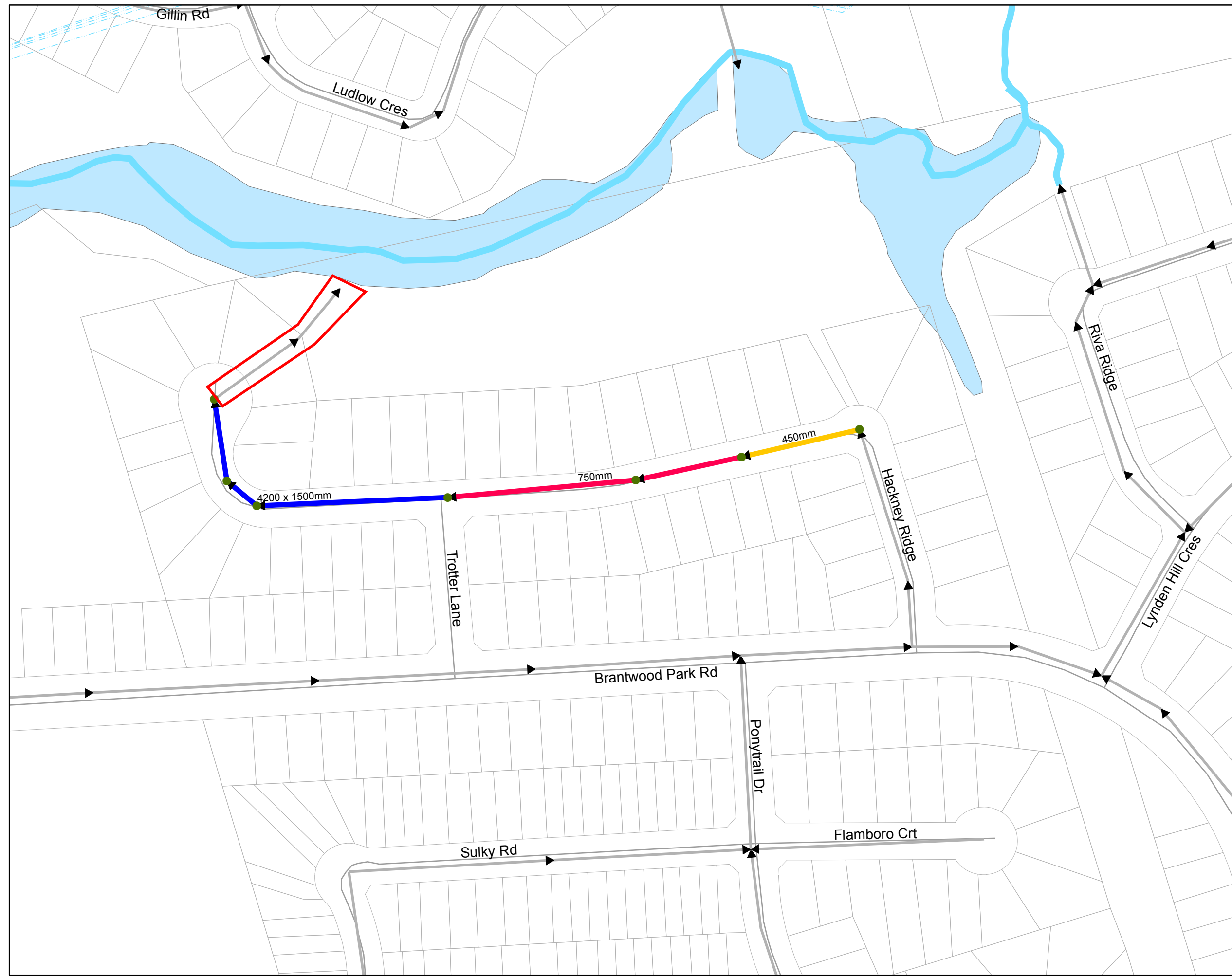
Legend

- Existing Storm Sewer
- Watercourse
- Waterbodies
- Proposed Sewer Size**
 - 450 mm
 - 750 mm
 - 4200 x 1500 mm
- New Storm Manhole

Figure:
Preferred Alternative For Area 5



Date: February 2020
 Datum: NAD_83
 Projection: CSRS_UTM_Zone_17N
 Source: City of Brantford



**City of Brantford
North-East End
Flood Remediation Study**

Legend


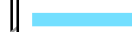





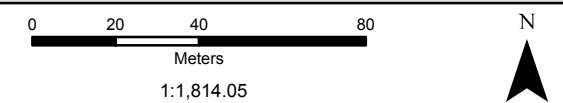
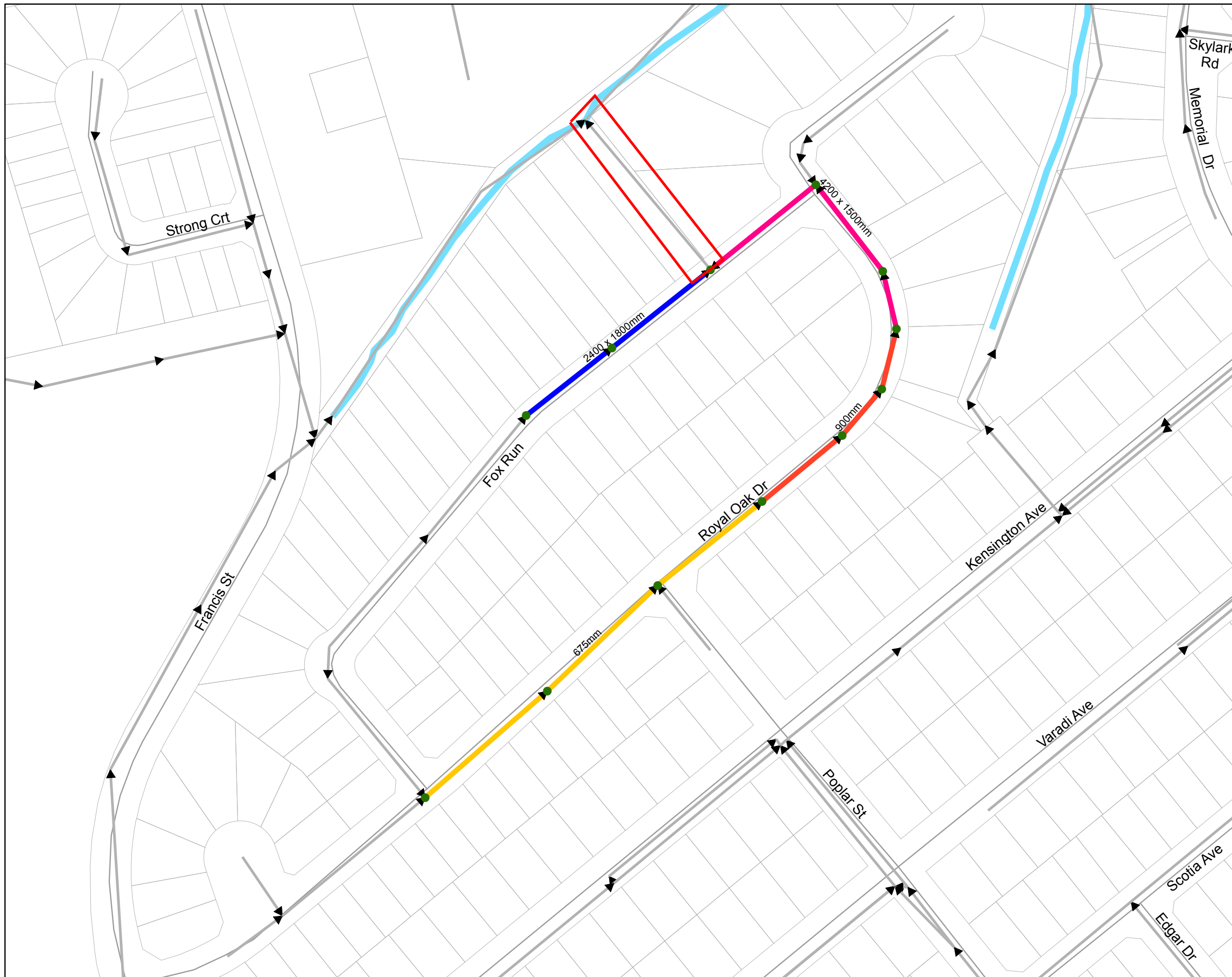
-  Existing Storm Sewer
-  Watercourse
- Proposed Sewer Size**
-  675 mm
-  900 mm
-  4200 x 1500 mm
-  2400 x 1800 mm
-  New Storm Manhole

Figure:
Preferred Alternative For Area 6



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford



**City of Brantford
North-East End
Flood Remediation Study**

Legend

Existing Storm Sewer

Watercourse

Proposed Sewer Size

375 mm

450 mm

525 mm

600 mm

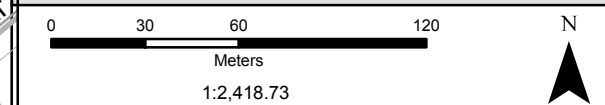
750 mm

825 mm

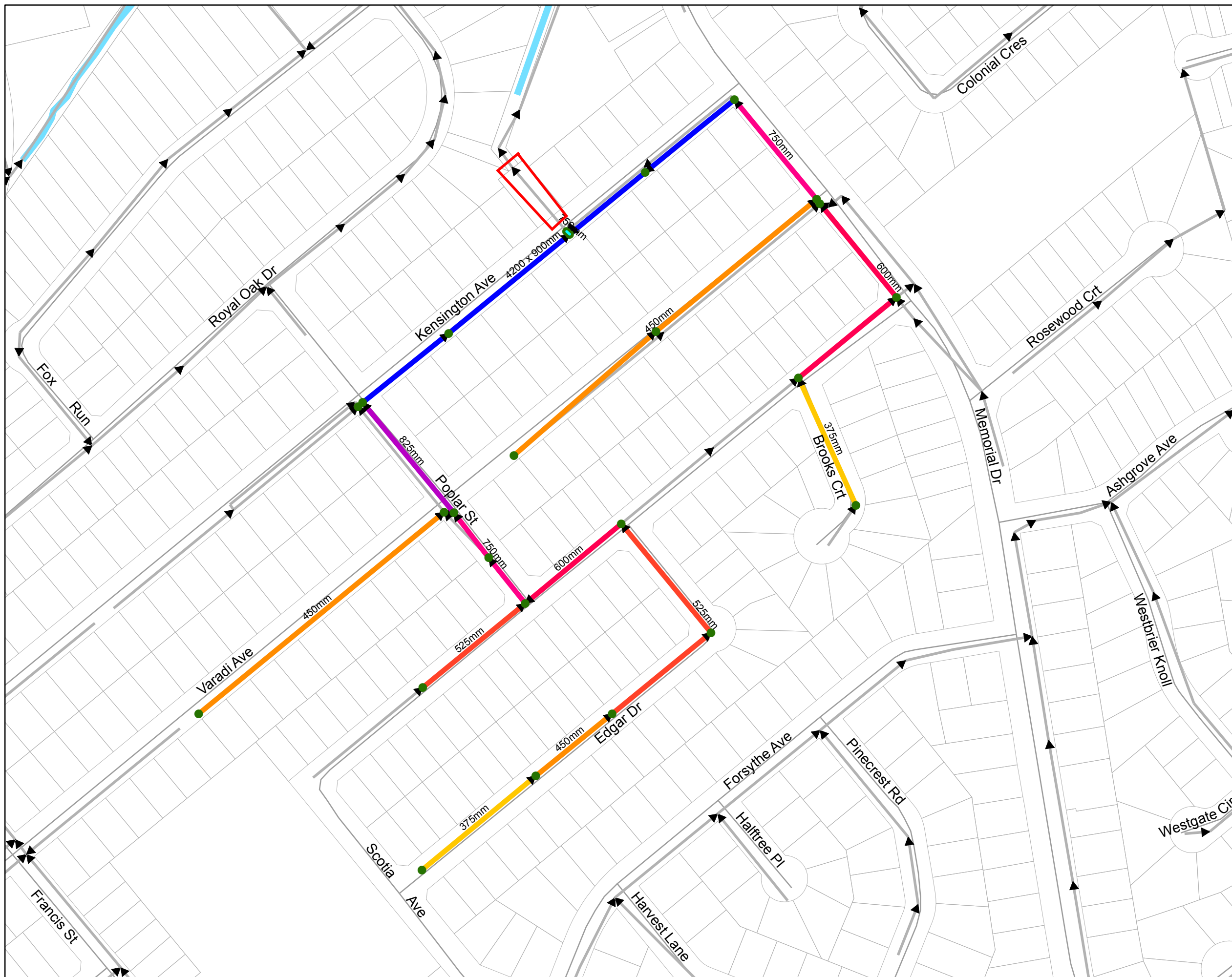
4200 x 900 mm

New Storm Manhole

Figure:
Preferred Alternative For Area 7



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford



City of Brantford North-East End Flood Remediation Study

Legend




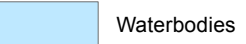
















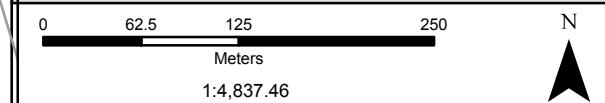
Proposed Sewer Size	→ Existing Storm Sewer
	 Watercourse
	 Waterbodies
	Proposed Sewer Object
	 New Storm Manhole
	 New Storm Outfall
	
	
	
	
	
	
	
	
	
	
	

Figure:
Preferred Alternative For Area 8



Date: February 2020
Datum: NAD_83
Projection: CSRS_UTM_Zone_17N
Source: City of Brantford

