APPENDIX F
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Stage 1 Archaeological Assessment: London Lines Replacement Project

Parts of Various Lots and Concessions,
Multiple Lower Tier Municipalities,
Middlesex and Lambton Counties, Ontario

July 10, 2020

Prepared for:

Enbridge Gas Inc.
101 Honda Boulevard
Markham, Ontario L6C 0M6

Prepared by:

Stantec Consulting Ltd
600-171 Queens Avenue
London, Ontario N6A 5J7

Licensee: Parker Dickson, MA
License Number: P256
Project Information Form #: P256-0622-2020
Project Number: 160951170

ORIGINAL REPORT

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge) to complete a Stage 1 archaeological assessment for the proposed London Lines Replacement Project (the Project). The study area for the Stage 1 assessment of the Project comprises approximately 766.88 hectares of various lots and concessions of the Geographic Townships of Dawn and Euphemia, now Township of Dawn-Euphemia, Lambton County; the Geographic Townships of Ekfrid and Mosa, now Municipality of Southwest Middlesex, Middlesex County; the Geographic Township of Caradoc, now Municipality of Strathroy-Caradoc, Middlesex County; and the Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario. The Stage 1 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990b) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016).

The Stage 1 archaeological assessment was completed under Project Information Form number P256-0622-2020 issued to Parker Dickson, MA by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). A property inspection of the study area was conducted between November 25, 2019 and June 19, 2020.

The Stage 1 archaeological assessment, involving background research and a property inspection, resulted in the determination that a portion of the study area, approximately 61.13%, retains potential for the identification and documentation of archaeological resources. Thus, in accordance with Section 1.3 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction which impacts an area of archaeological potential.**

The remaining portion of the study area, approximately 38.87%, retains low to no archaeological potential as it includes: areas of extensive land disturbance, low and permanently wet areas, and previously assessed areas. In accordance with Section 1.3.2 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is not required for any portion of the Project's anticipated construction which impacts an area of low to no archaeological potential.**

Full and detailed further work recommendations are provided in the body of the report.

The MHSTCI is asked to review the results presented and accept this report into the *Ontario Public Register of Archaeological Reports*.

The Executive Summary highlights key points form the report only; for complete information and findings, the reader should examine the complete report.

Project Personnel

Licensed Archaeologist:	Parker Dickson, MA (P256)
Project Manager:	Rooly Georgopoulos, B.Sc., Senior Associate
Task Manager:	Parker Dickson, MA (P256)
Licensed Field Directors:	Darren Kipping, MA (R422), Nathan Ng (R1223)
Report Writer:	Darren Kipping, MA (R422)
GIS Specialist:	Sean Earles, M.Sc.
Quality Review:	Parker Dickson, MA (P256)
Independent Review:	Colin Varley, MA, RPA (P002)

Acknowledgements

Proponent Contact:	Kelsey Mills, Senior Environmental Analyst – Enbridge Gas Inc.
Ministry of Heritage, Sport, Tourism and Culture Industries:	Robert von Bitter, Archaeological Sites Database Coordinator

1.0 PROJECT CONTEXT

1.1 DEVELOPMENT CONTEXT

Stantec Consulting Ltd. (Stantec) was retained by Enbridge Gas Inc. (Enbridge) to complete a Stage 1 archaeological assessment for the proposed London Lines Replacement Project (the Project) (Figures 1-0 to 1-6). The study area for the Stage 1 assessment of the Project comprises approximately 766.88 hectares of various lots and concessions of the Geographic Townships of Dawn and Euphemia, now Township of Dawn-Euphemia, Lambton County; the Geographic Townships of Ekfrid and Mosa, now Municipality of Southwest Middlesex, Middlesex County; the Geographic Township of Caradoc, now Municipality of Strathroy-Caradoc, Middlesex County; and the Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario. The Stage 1 archaeological assessment was conducted during the preliminary planning phase of the Project in accordance with the provisions of the *Ontario Heritage Act* (Government of Ontario 1990b) and the requirements of Section 4.3.4 of the Ontario Energy Board's (OEB) *Environmental Guidelines for the Location, Construction and Operation of Hydrocarbon Pipelines and Facilities in Ontario, 7th Edition* (OEB 2016).

To ensure the continued reliable delivery of natural gas, improve the integrity of the pipeline network, and to increase system flexibility, Enbridge is proposing to replace the existing London Lines natural gas pipeline network. The Project involves the installation of approximately 75 kilometres of new pipeline that will replace the two pipelines known collectively as the London Lines, as well as install a secondary new pipeline to connect to the Town of Strathroy. The Project will occur between the Town of Komoka and the existing Enbridge station (Dawn Hub) north of Dresden, Ontario. Pipeline installation will occur through an open trench technique, although select features may be crossed using a trenchless method such as bore or horizontal directional drill.

While the alignment for the new pipe is expected to largely follow the municipal road allowances and rights-of-way (ROW), the final construction easement, or temporary land use (TLU), will be determined by Enbridge at a later date. At this phase of the Project, various routing options are being considered. Thus, the current study area for the Stage 1 archaeological assessment is large, captures several different pipeline route options, and serves to capture a broad and generalized geographic area associated with the Project. The study area was developed to include the municipal road ROW plus a five metre buffer, a 15-metre-wide corridor for proposed pipeline routes off of the ROW, and a 100 metre by 100 metre footprint for proposed stations (Figures 2-0 to 2-20).

1.1.1 Objectives

In compliance with the provincial standards and guidelines set out in the Ministry of Heritage, Sport, Tourism and Culture Industries' (MHSTCI) 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), the objectives of the Stage 1 archaeological assessment are as follows:

- To provide information about the study area's geography, history, previous archaeological fieldwork, and current land conditions;

- To evaluate the study area's archaeological potential, which will support recommendations for Stage 2 survey for all or parts of the property; and
- To recommend appropriate strategies for Stage 2 survey.

To meet these objectives, Stantec archaeologists employed the following research strategies:

- A review of relevant archaeological, historic, and environmental literature pertaining to the study area;
- A review of the land use history, including pertinent historic maps;
- An examination of the *Ontario Archaeological Sites Database* to determine the presence of known archaeological sites in and around the study area; and,
- A property inspection of the study area.

Permission to conduct the Stage 1 visual assessment of the study area was provided by Enbridge. However, access to private lands for the purposes of the archaeological assessment was not obtained. Thus, photo documentation completed during the Stage 1 visual assessment was completed from the municipal road ROW and public lands.

1.2 HISTORICAL CONTEXT

1.2.1 Post-contact Indigenous Resources

"Contact" is typically used as a chronological benchmark in discussing Indigenous archaeology in Canada and describes the contact between Indigenous and European cultures. The precise moment of contact is a constant matter of discussion. Contact in what is now the province of Ontario is broadly assigned to the 16th century (Loewen and Chapdelaine 2016). Generally speaking, the western portions of the study area are considered to have been occupied by the Western Basin Tradition archaeological culture and as the Project moves east, the study area is considered to be more associated with Iroquoian peoples.

At the turn of the 16th century, the western portions of the study area are documented to have been occupied by people associated with the Western Basin Tradition archaeological culture (see Section 1.3.2). Following the turn of the 17th century, this region of the study area is understood to have been within the territory of the historic Fire Nation, an Algonkian group occupying the western end of Lake Erie. It is argued, however, that the Attiwandaron (Neutral) expanded extensively westward, displacing the Fire Nation (Lennox and Fitzgerald 1990:418-419). It is debated whether the Fire Nation was descendent from the archaeologically described Western Basin Tradition, or if they migrated into the western part of Lake Erie, displacing a previous Indigenous culture (Murphy and Ferris 1990:193-194). In 1649, the Seneca, with the Mohawk, led a campaign into southern Ontario and dispersed the Huron-Wendat, Tionontate (Petun), and Attiwandaron (Neutral) Nations and the Seneca established dominance over the region and used it as a hinterland for beaver hunting (Heidenreich 1978; Trigger 1978:345). By 1690 however, Ojibwa-speaking people had begun to displace the Seneca from southern Ontario. Historians understand that the displaced Fire Nation moved across the St. Clair and Detroit Rivers into what is modern-day lower Michigan and their populations are synonymous with the later historic Kickapoo, Miami, Potawatomi, Fox, and Sauk (Heidenreich 1990: Figure 15.1). Bkejwanong (Walpole Island) First Nation oral tradition states that nations of the Three Fires (a political confederacy constituted of the Potawatomi,

Ojibwa, and Ottawa) have occupied the delta of the St. Clair River and the surrounding region continually for thousands of years.

From the mid-16th century until the turn of the 17th century, the eastern portion of the study area was within the extended political territory of the Iroquoian populations who were probably ancestral to those historically described as the *Neutre* Nations (by the French) or the *Attiwandaron* (by the Huron-Wendat); their autonym is not conclusively known (Birch 2015). Following the turn of the 17th century, the region of the study area seems to have been abandoned of permanent settlement and constituted a liminal territory between the historic Attiwandaron (Neutral) and the historic Fire Nation. It is argued, however, that at this time the Attiwandaron (Neutral) expanded extensively westward, displacing the Fire Nation and occupying the region of modern Chatham-Kent (Lennox and Fitzgerald 1990:418-419).

The eastern portions of the study area were also heavily influenced by the dispersal of various Iroquoian-speaking communities by the New York Stage Iroquois previously described and the subsequent arrival of Algonkian-speaking groups from northern Ontario at the end of the 17th century and beginning of the 18th century (Konrad 1981; Schmalz 1991). By 1690, Algonkian speakers from the north appear to have begun to repopulate Bruce County (Rogers 1978:761). This is the period in which the Mississaugas are known to have moved into southern Ontario and the lower Great Lakes watersheds (Konrad 1981). Additionally, members of the Three Fires Confederacy immigrated from areas to the west in the late 1700s (Feest and Feest 1978:778-779). At approximately 1790, the study area was occupied by populations of Ottawa, Chippewa, Pottawatomi, and Wyandot (Feest and Feest 1978:777, 779).

The Indigenous economy, since the turn of the 18th century, focused on fishing and the fur trade, supplemented by agriculture and hunting (Konrad 1981; Rogers 1978). The study area falls within the traditional territory of the WIFN, the Aamjiwnaang (Sarnia) First Nation (Aamjiwnaang First Nation), the Wiiwkwedong and Aazhoodena (Kettle Point and Stony Point) First Nation (Lytwyn 2009), and the Deshkaan Ziibing Anishnaabeg (Chippewas of the Thames First Nation). Some populations of Wyandot (an Indigenous population of historically amalgamated Petun and Huron-Wendat individuals) also had moved to the region of Lake St. Clair at the turn of the 18th century and resided with the Three Fires nations (Tooker 1978:398).

By 1730, it is reported that a community of approximately 300 Indigenous people were living at the north end of Lake St. Clair (Rogers 1978:762). D'Anville's 1755 map (Konrad 1981: Plate 1) indicates the Mississauga (an Ojibway Nation) on the east bank of the St. Clair River. By 1760, the Chippewa community was established on the Thames River, southwest of present-day London, Ontario. By 1796, the Three Fires community of Chenail Ecarté was established (Feest and Feest 1978:777-779).

The expansion of the fur trade led to increased interaction between European and Indigenous people, and ultimately intermarriage between European men and Indigenous women. During the 18th century the progeny of these marriages began to no longer identify with either their paternal or maternal cultures, but instead as Métis. The ethnogenesis of the Métis progressed with the establishment of distinct Métis communities along the major waterways in the Great Lakes of Ontario. Métis communities were primarily focused around the upper Great Lakes and along Georgian Bay, however, Métis people have historically lived throughout Ontario (Métis Nation of Ontario 2016; Stone and Chaput 1978:607-608).

Despite the dispersal and movement of Indigenous groups throughout southern Ontario during the 17th and 18th centuries, archaeologically they can be characterized by continuity with their pre-contact Indigenous counterparts. These peoples still maintained a Terminal Woodland archaeological culture, albeit with some features of European material culture. While there was cultural and social change occurring due to contact with European colonial powers, there was equally a definite persistence of Indigenous socio-cultural practices since these groups were not so profoundly affected by European contact that they left their former lifeways behind (Ferris 2009).

Under British administration in the 19th century, the various Indigenous groups were divided into separate bands. The Anishinaabe included the western Algonquian peoples, among them the Chippewa and the Odawa. Until the 18th century, the central Algonquian-speaking peoples, among them Potawatomi, were located in the Michigan Peninsula (Blackbird 1887). In the middle of 18th century, the Chippewa were located on the south shores of Lake Huron, the east shores of Georgian Bay, and on the west end of Lake Ontario. Indigenous peoples and their communities continue to play a large role in the occupation of the study area and its environs.

Since contact with European explorers and immigrants, and later, with the establishment of provincial and federal governments (the Crown), the lands within Ontario have been included in various treaties, land claims, and land cessions. Following the American Revolutionary War, Britain focused on the settlement of European immigrants into what became province of Upper Canada in 1791. To enable widespread settlement, the British government negotiated a series of treaties with the First Nations peoples. Figure 3 provides a map of southwestern Ontario illustrating early treaties and purchases (Government of Canada n.d.). One of the earliest treaties involving lands located in close proximity to the study area was made on May 19, 1790 (Figure 3). Originally identified as the Detroit Treaty, the chiefs of the Ottawa, Chippewa, Potawatomi, and Huron Nations and representatives of the British Crown established a vast tract of land "…from the Detroit River easterly to Catfish Creek and south of the river La Tranche [now Thames River] and Chenail Ecarte [now St. Clair River], and contains Essex County except Anderdon Township and Part of West Sandwich; Kent County except Zone Township, and Gores of Camden and Chatham; Elgin County except Bayham Township and parts of South Dorchester and Malahide…[i]n Middlesex County, Del[a]ware and Westminster Township and part of North Dorchester" (Morris 1943:17). Today, this treaty is identified as Treaty Number 2, illustrated by the letter "C" on Figure 4. The study area also falls within the 1822 treaty lands identified on Figure 3, which Morris (1943) identifies as Treaty Number 21 (Figure 4). Though not an exhaustive list, Morris (1943) provides a general outline of some of the treaties within the Province of Ontario from 1783 to 1923. Based on Morris (1943), Treaty Number 21 was made with the Chippewa on March 19, 1819. The Treaty commences:

> *…..at the northerly side of the River Thames at the south west angle of the Township of London; thence along the western boundary of the Township of London, in a course north 21 degrees, 30 minutes west, twelve miles to the north west angle of the said Township; then on a course about south 62 degrees and 30 minutes west forty-eight miles more or less until it intersects a line on a course produced north two miles from the north east angle of the Shawnee [Sombra] Township; then along the eastern boundary line of the said Township, twelve miles and a half more or less to the northern boundary line of the Township of Chatham; then east twenty-four miles more or less to the River Thames; then along the water[']s edge of the River Thames against the stream*

> *to the place of beginning, reserving a tract of land situate[d] on the northerly side of the River Thames nearly opposite to the northerly angle of the Township of Southwold and south west angle of the Del[a]ware Township containing 15,360 acres; also reserving two miles square distant about four miles above the rapids where the Indians have their improvements and nearly parallel to the Moravian Village containing 5,120 acres.*
>
> (Morris 1943:24-25)

While it is difficult to exactly delineate treaty boundaries today, Figure 4 provides an approximate outline of Treaty Number 21, (identified by the letter "R").

The nature of Indigenous settlement size, population distribution, and material culture shifted as European settlers encroached upon Indigenous territory. However, despite this shift, "written accounts of material life and livelihood, the correlation of historically recorded villages to their archaeological manifestations, and the similarities of those sites to more ancient sites have revealed an antiquity to documented cultural expressions that confirms a deep historical continuity to…systems of ideology and thought" (Ferris 2009:114). As a result, Indigenous peoples have left behind archaeological resources throughout the region which show continuity with past peoples, even if they have not been explicitly recorded in Euro-Canadian documentation.

1.2.2 Euro-Canadian Resources

The study area extends though the eastern portion of Lambton County and the southwestern portion of Middlesex County. In discussing 18th and 19th century historical mapping it must be remembered that many historical county atlases were produced primarily to identify factories, offices, residences, and landholdings of subscribers and were funded by subscription fees. Landowners who did not subscribe were not always listed on the maps (Caston 1997:100). As such, structures were not necessarily depicted or placed accurately (Gentilcore and Head 1984).

Further, review of historic mapping has inherent accuracy difficulties due to potential error in georeferencing. Georeferencing is conducted by assigning spatial coordinates to fixed locations and using these points to spatially reference the remainder of the map. Due to changes in "fixed" locations over time (e.g., road intersections, road alignments, water courses, etc.), errors/difficulties of scale and the relative idealism of the historic cartography, historic maps may not translate accurately into real space points. This may provide obvious inconsistencies during the historic map review. Table 1 provides a summary of the historical townships comprising the study area.

Table 1: Summary of Historical Townships Comprising the Study Area

Geographic Township	Former County	Current Lower Tier Municipality	Current Upper Tier Municipality
Dawn	Lambton	Township of Dawn-Euphemia	Lambton County
Euphemia	Lambton	Township of Dawn-Euphemia	Lambton County
Mosa	Suffolk	Municipality of Southwest Middlesex	Middlesex County
Ekfrid	Suffolk	Municipality of Southwest Middlesex	Middlesex County

Geographic Township	Former County	Current Lower Tier Municipality	Current Upper Tier Municipality
Caradoc	Suffolk	Municipality of Strathroy-Caradoc	Middlesex County
Lobo	Suffolk	Municipality of Middlesex Centre	Middlesex County

In 1791, the Provinces of Upper Canada and Lower Canada were created from the former Province of Quebec by an act of British Parliament. At this time, Colonel John Graves Simcoe was appointed as the Lieutenant Governor of Upper Canada and was tasked with governing the new province, directing its settlement and establishing a constitutional government modelled after that of Britain (Petrhyshyn 1985). In 1792, Simcoe divided Upper Canada into 19 counties consisting of previously settled lands, new lands opened for settlement, and lands not yet acquired by the Crown. These new counties stretched from Essex in the west, to Glengarry in the east.

Lambton County was part of the District of Hesse, which in 1792 was renamed the Western District. The Western District consisted of Kent (which included Lambton County) and Essex Counties. Lambton County was named after John George Lambton, first Earl of Durham. Lambton was the author of the Durham Report, which investigated the issues that led to the rebellion of 1837. The townships in Lambton County were not completely surveyed until 1835. After the Municipal Act of 1849, which provided a means of government for towns and counties, several counties amalgamated and separated over the next few years with the former Kent County, with Lambton County finally becoming independent in 1853. Lambton County was known as the ‘Last Frontier’, as Lambton was one of the last areas of southern Ontario to be settled by European immigrants (Elford 1982).

European immigrants began settling in Middlesex County in 1793 after Colonel Simcoe passed through the area on his way to visit Detroit (Page & Co. 1878). The county was initially comprised of ten townships: Aldborough, Dunwich, Southwold, Yarmouth, Malahide, Bayham, Delaware, Westminster, Dorchester, and London. By 1842, the population of Middlesex County had reached over 31,000 European inhabitants. The area developed quickly and over the next two years roughly 7,300 hectares of land was cleared for agricultural purposes and by 1844, the county’s agricultural lands exceeded 52,000 hectares (Smith 1846). Middlesex County was known for its many good roads at this time, including Talbot Road in Westminster Township (now Colonel Talbot Road). Between 1846 and 1849, Middlesex County comprised the Townships of Adelaide, Aldborough, Bayham, Caradoc, Delaware, Dorchester, Dunwich, Ekfrid, Lobo, London, Metcalfe, Mosa, Malahide, Southwold, Westminster, Williams, Yarmouth, and the Town of London. The Townships of Yarmouth, London, Lobo, Westminster, Southwold, and Malahide were the best settled, and overall, the county contained many good farms with large clearings and expansive orchards (Smith 1846).

1.2.2.1 Geographic Township of Dawn

Dawn Township was surveyed in 1821 by Shubal Park, and settlement by European immigrants officially started in 1822. Survey records obtained from the Ministry of Natural Resources and Forestry (MNRF) were examined for evidence of Indigenous and early Euro-Canadian settlements in Dawn Township (Government of Ontario n.d.). An early survey plan of the township, originally drawn in 1821, depicts numerous land grant recipients, and illustrates how land grants changed over time, with multiple names

denoted in each lot, with many overlapping each other. The 1821 survey of Dawn Township (Government of Ontario. n.d.) confirmed by an examination of the accompanying field notes, also illustrates an Indigenous presence in the township, particularly along the banks of Bear Creek, now known as the Sydenham River (Figure 5). One instance of an “Indian Clearing” and one instance of an “Indian Village” are noted on the map as well. The survey map also indicates that much of the township at that time was poorly drained, as depicted by greenish colouring along the surveyed concessions and sidelines.

Dawn Township was originally connected with three other townships to form one municipal unit, consisting of 147 taxpayers (Lauriston 1949). The township was densely wooded and had poor drainage, which held back settlement in the 1800s. The majority of land was not cleared, and most clearings were only between five and 25 acres (Lauriston 1949). By 1835, Dawn was its own municipality, although a portion of Dawn Township was lost to Kent County when Lambton and Kent Counties split in 1849. In 1850, the township still only numbered 429 people. With sawmills in use by the 1870s, growth picked up; by 1881 the population was 2,026 and by 1901 grew to 3,659 (Elford 1982). However, even by 1901, only half of the land in Dawn Township was cultivated, and reliable roadways had not been built; most concession roads could not be traversed their entire length until the 1920s (Elford 1982). After 1901, many European settlers left the township for Western Canada with the promise of 160 free acres, causing the population of Dawn Township to decrease. However, during this time, the oil and gas resources that the area became known for were starting to be developed, which also discouraged land clearance for agricultural purposes. By 1980, only 1,796 people lived in Dawn Township (Elford 1982). Drainage continues to be an issue throughout the township and much of the poorly drained land is used as pasture for beef cattle. The remaining land is use for production of corn, soybeans, hay, tomatoes and cereal crops.

The 1880 *Illustrated Historical Atlas of Lambton County, Ontario* (Belden & Co. 1880) illustrates Dawn Township in the late 19th century (Figure 6). The township is illustrated as largely being settled (at least by those who had subscribed to the atlas and had their names associated with the map) along the eastern boundaries coinciding with the location of the Sydenham River near Florence. On Lot 26, Concession 12, a church is depicted in the southwest corner of the lot, adjacent to the northern edge of the study area. No other historic features or notations related directly to the study area are illustrated on the 1880 map of Dawn Townships.

1.2.2.2 Geographic Township of Euphemia

The area near Euphemia Township was settled by European immigrants in 1792 when a group of Moravian missionaries founded Fairfield on the north shore of the Thames River. The Moravians (or United Brethren) had come to the area from the United States with approximately 170 Delaware and Iroquois. An Order of Council dated July 10, 1793 granted 50,000 acres of land to the group. The land was surveyed and given to the ‘Moravian Society’ in trust by Order of Council on February 26, 1793 (McEvoy *et al*. 1866).

Euphemia Township was originally surveyed as Zone Township in 1822 by Samuel Smith. At the time of the survey the first fourteen lot ranges north of the Thames River were reserved by the government as the ‘Indian Zone’ for the Moraviantown Delaware Nation who had, along with Moravian missionaries,

originally settled Fairfield in 1792 (Lauriston 1949). In 1848 the Township was separated into the Townships of Euphemia and Zone, Euphemia Township remained part of Lambton County and Zone Township became part of Kent County. Fairfield was destroyed by American soldiers in 1813 after the British loss at the Battle of the Thames, which also resulted in the death of Tecumseh. The site of the Battle of the Thames is located south of the study area.

The original survey of Euphemia Township (Smith 1822) depicts numerous land grant recipients, the road layout at the time, and numerous water sources (Figure 7).

The 1880 *Illustrated Historical Atlas of Lambton County, Ontario* (Belden & Co. 1880) map of the Township of Euphemia illustrates the township in the late 19th century (Figure 8). The historical atlas depicts a rural landscape with numerous landowners, structures, early transportation routes, factories, early town sites, and creeks. Industrial and religious centres are clustered around the communities of Shetland and Sutherland's Corners, as well as along Haggerty Creek. The historical atlas also highlights that the settlement pattern of the late 19th century within the township was initially dependent more on rivers than constructed roads as evidenced by landowner clustering along the Sydenham River. Table 2 summarizes illustrated features from the 1880 map in close proximity to the study area.

Table 2: Historical Features on 1880 Map of Euphemia Township in Close Proximity to the Study Area

Lot	Concession	Landowner	Structure
31	1	John O'Brien Ward	House depicted in the southeast corner of the lot, adjacent to the study area
31	3	J. Pesha	House depicted in the south portion of the lot, adjacent to the study area
31	4	Not applicable (n/a)	School depicted in the southwest corner of the lot, adjacent to the study area
30	4	Charles Pettit	House depicted in the central portion of the lot, south of the study area
30	5	n/a	Church depicted in the northwest corner of the lot, adjacent to the study area
30	6	R. Hands	House depicted in the southern portion of the lot, south of the study area
31	7	William Broughton (tenant)	House depicted in the southwest portion of the lot, north of the study area
31	8	James McKeune	No structures illustrated
30	9	n/a	School depicted in the northeast corner of the lot, adjacent to the study area

1.2.2.3 Geographic Township of Mosa

Mosa Township is triangular in shape and is located in the southwestern corner of Middlesex County, Ontario. The township is named after the latin name for the River Meuse in Belgium (Mika and Mika 1981). The township was originally surveyed by Colonel Burwell in 1820. Up until 1849, the only large

settlement within the township was located along the Thames River in Wardsville which at the time had numerous mills in operation (Mika and Mika 1981). Mosa Township developed into and largely remains an agricultural centre.

Burwell's (1820b) original survey depicts the surveyed land and road layout of the township, with very few landowner notations (Figure 9). Although not shown on Figure 9 (due to scale), the original survey map most notably illustrates the location of the War of 1812 Battle of the Longwoods as well as what appear to be Indigenous camp sites along the Thames River, well to the south of the study area (Burwell 1820b). The survey map also indicates that much of the township at that time was poorly drained, as depicted by stippling along the surveyed concessions and sidelines.

The 1878 *Illustrated Historical Atlas of the County of Middlesex, Ont.*'s (Page & Co. 1878) map of the Township of Mosa depicts a largely rural landscape with landowners, structures, early transportation routes, railroads, and early town sites (Figure 10). Residential structures and various landowners are illustrated adjacent to the study area throughout the Township of Mosa. Industrial centres are illustrated along, or adjacent to, the Great Western Railway and the Thames River. The early Euro-Canadian communities of Wardsville and Glencoe are also depicted on the historical mapping.

1.2.2.4 Geographic Township of Ekfrid

Ekfrid Township in Middlesex County was originally surveyed in 1820 by Colonel Burwell and established in 1821. The township was named after a former Northumbrian King, Ekfrid, from ancient Britain (Mika and Mika 1977). The area along the Thames River in the southern portion of the township was the first to be settled by Euro-Canadians. However, settlement of the township was slow and by 1830 most of the lands available were still covered in dense bush (Mika and Mika 1977). Transportation within the township was navigated through established Indigenous trails and along the Thames River, with the first bridge span being constructed in the 1830s. Much like Mosa Township, Ekfrid Township became and largely remains an agricultural centre (Mika and Mika 1977).

Burwell's (1820a) original survey of Ekfrid Township depicts the surveyed land and road layout of the township, with very few landowner notations (Figure 11). The original survey map most notably illustrates areas for mill seats southeast of the study area, which are places most suitable for a water mill to be constructed (Burwell 1820a).

The 1878 *Illustrated Historical Atlas of the County of Middlesex, Ont.*'s (Page & Co. 1878) map of the Township of Ekfrid depicts a largely rural landscape with numerous landowners, structures, early transportation routes, railroads, and early town sites (Figure 12). The Great Western Railroad and the Canada Southern Railroad are seen running northwest-southeast through the study area. Residential structures, various landowners, and orchards are illustrated adjacent to the study area throughout the Township of Ekfrid.

1.2.2.5 Geographic Township of Caradoc

Caradoc Township was surveyed under the supervision of Colonel Burwell between 1821 and 1822. Early European settlement of the township was focused along Longwoods Road which had been extended westward from Delaware and graded in the 1840s (Mika and Mika 1977). The northern portion of the township was slow to be settled until the Sarnia branch of the Great Western Railway was constructed in the 1850s and homesteads developed on the cleared land (Mika and Mika 1977).

There are two historical cemeteries identified within or adjacent to the study area, the Mount Carmel Cemetery and the Hess Cemetery. Mount Carmel Cemetery is within the study area on Lot 12, Concession 6. The plot of land was originally donated by John Langhorn for the site of a Methodist Church, and although the property was not opened to be a cemetery, it was being used as such from the late 1850s onwards (Ontario Genealogical Society [OGS] 1982a). The Mount Carmel Cemetery property was also the site of the original wood church, which was constructed in 1863 and was replaced by a brick structure constructed across the street in 1906 (OGS 1982a). The Hess Cemetery, also known as the OGG Cemetery or the North Caradoc Methodist Cemetery, is a Methodist Cemetery which opened in 1855 and is adjacent to the study area on Lot 8, Concession 7 (OGS 1982b).

Burwell's (1821a) original survey map of Caradoc Township has been heavily edited with multiple land tenure transactions and it is difficult to view historical features (Figure 13). The original survey map depicts numerous land grant recipients and illustrates how land grants changed over time with multiple names denoted in each lot, with many overlapping each other. The survey map also illustrates the surveyed land and road layout for the township.

The 1878 *Illustrated Historical Atlas of the County of Middlesex, Ont.*'s (Page & Co. 1878) map of the Township of Caradoc depicts a rural landscape with numerous landowners, structures, early transportation routes, railroads, and early town sites (Figure 14). The Sarnia branch of the Great Western Railway is illustrated running northeast to southwest through the study area. Numerous landowners and their associated structures are listed adjacent to the study area throughout the Township of Caradoc. The Mount Carmel and Hess Cemeteries, as mentioned previously, are also depicted on the historical atlas.

1.2.2.6 Geographic Township of Lobo

Colonel Burwell began the survey of Lobo Township in 1819-1821. Lots were divided into 200-acre parcels arranged in 13 concessions. The township was named Lobo ("wolf" in Latin) by the British general Peregrine Maitland who was appointed lieutenant governor of Upper Canada between 1818 and 1828. Shortly after the survey, the first European settlers, many from Argyllshire in Scotland, arrived in Lobo Township (Goodspeed 1889). The principal settlements were the villages of Komoka, Lobo, Coldstream, and Poplar Hill. The township's population was growing slowly and reached 2,680 in 1888 (Goodspeed 1889). In 1998, Lobo Township, together with London and Delaware townships, was amalgamated to form the Municipality of Middlesex Centre. The village of Komoka was originally defined by three official surveys: the Wellington Survey of 1853, which established the west side; the Geddes Survey of 1854, which established the east side; and the Komoka Survey of 1855. Over time, Komoka became a crossing point of several railway lines, including the Great Western Railway and the Sarnia Branch of the

Canadian National Railway (CNR), and featured several hotels, general stores, and a post office. A settlement at Kilworth began in 1798 by the Woodhull family, who had fled New York State during the American Revolutionary War (Goodspeed 1889). A post office was opened in 1851 and in the same year the population of the hamlet approached 200 (Goodspeed 1889).

Burwell's (1821b) original survey map of Lobo Township has been heavily edited with multiple land tenure transactions and it is difficult to view historical features (Figure 15). Much like Burwell's (1821a) survey of Caradoc Township, the original survey map depicts numerous land grant recipients and illustrates how land grants changed over time as multiple names are denoted in each lot, with many overlapping each other. The survey map also illustrates the surveyed land and road layout for the township.

The 1878 *Illustrated Historical Atlas of the County of Middlesex, Ont.*'s (Page & Co. 1878) map of the Township of Lobo depicts a rural landscape with numerous landowners, structures, early transportation routes, railroads, and early town sites (Figure 16). The Great Western Railroad, as well as its Sarnia Branch are illustrated running northeast to southwest through the township. The early Euro-Canadian community of Komoka appears to be well established and numerous structures and landowners are illustrated adjacent to the study area. Table 3 summarizes illustrated features from the 1878 map in close proximity to the study area.

Table 3: Historical Features on 1878 Map of Lobo Township in Close Proximity to the Study Area

Lot	Concession	Landowner	Structure
1	3	J. Wilson	Sarnia branch of the Great Western Railroad and a house depicted in the northeast corner of the lot
2	3	A. Campbell	Northeast quarter of lot, no structures illustrated. Great Western Railroad depicted running east to west through southern portion of the lot
2	3	W. Dunn	Southeast quarter of lot, house illustrated in the southwest corner of the lot adjacent to the study area, Great Western Railroad depicted running east to west through northern portion of the lot
2	3	J. Cassidy	Southwest quarter of lot, house and possible orchard illustrated in the southeast corner of the lot, adjacent to the study area
1	1	Josh Harris	Numerous houses or structures depicted in the northern portion of the lot, adjacent to the study area
2	2	James McIntosh	House and possible orchard depicted in the southeastern portion of the lot, north of the study area
2	1	Mrs. Alex McDougall	No structures illustrated
3	1	Mrs. Alex McDougall	Western half of lot, a grist mill is illustrated along a dammed creek in the northern portion of the lot, southwest of the study area
3	1	John L. McKeller	Eastern half of the lot, no structures illustrated
3	1	David S. Smith	Western half of the lot, no structures illustrated
3	2	John McGilvray	Western half of lot, house and possible orchard illustrated in the southeast corner of the lot, adjacent to the study area

Lot	Concession	Landowner	Structure
3	2	Jason Barber	Eastern half of lot, house and orchard illustrated in the southern portion of the lot, north of the study area
4	2	J. C.	Southwest portion of the lot, house and orchard illustrated in the southwest corner of the lot, adjacent to the study area
4	2	M. Graham	Southeast quarter of the lot, house and other structures illustrated in the southeast corner of the lot, adjacent to the study area
4	1	David S. Smith	Northern portion of the lot, house and orchard illustrated in the northern portion of the lot, and two other structures illustrated in the eastern portion of the lot, adjacent to the study area
5	2	n/a	Town plan of Komoka within majority of the lot, adjacent to the study area
5	1	John Snipley	House illustrated in the eastern portion of the lot, east of the study area
5	1	A. Seabrook	House illustrated in the northwest portion of the lot, east of the study area
5	1	S.J.F. Bullen	No structures illustrated
4	1	D. Tiffany	Southern portion of the lot, house and orchard illustrated in the southeast portion of the lot, adjacent to the study area

1.2.2.7 Summary

As illustrated above, the historical context of the Stage 1 study area for the Project includes numerous examples of Indigenous and early Euro-Canadian resources. In particular, the late 19th century mapping depicts numerous residential, commercial, and industrial structures adjacent to the study area. Historic cemeteries have also been identified in close proximity to the study area. The majority of the study area has been subject to European-style agricultural practices for over 100 years, having been densely populated by Euro-Canadian farmers by the late 19th century. Portions of the study area have been cleared of forest and have had extensive drainage systems installed to reclaim swamp and marshland as agricultural field.

1.3 ARCHAEOLOGICAL CONTEXT

1.3.1 The Natural Environment

The study area spans numerous physiographic regions, as identified by Chapman and Putnam (1984): the St. Clair Clay Plain, the Bothwell Sand Plains, the Ekfrid Clay Plain, and the Caradoc Sand Plains and London Annex physiographic regions, from west to east respectively.

The St. Clair Clay Plain physiographic region comprises the western portion of the study area. Chapman and Putnam (1984:147) describe the St. Clair Clay Plain as:

> *Adjoining Lake St. Clair in Essex and Kent County Counties and the St. Clair River in Lambton County are extensive clay plains covering 2,270 square miles. The region is one of little relief, lying between 575 and 700 feet a.s.l., except for the moraine at Ridgetown and Blenheim which*

> *rises 50 to 500 feet higher….Glacial Lake Whittlesey, which deeply covered all of these lands, and Lake Warren which subsequently covered nearly the whole area, failed to leave deep stratified beds of sediment on the underlying clay till except around Chatham, between Blenheim and the Rondeau marshes, and in a few other smaller areas. Most of Lambton and Essex Counties, therefore, are essentially till plains smoothed by shallow deposits of lacustrine clay which settled in the depressions while the knolls were being lowered by wave action.*

The Bothwell Sand Plains physiographic region comprises a part of the central portion of the study area. The Bothwell Sand Plains are a large area of fine textured, water deposited sands laid down as part of the delta of the glacial Thames River. Chapman and Putnam (1984:147) describe the physiographic region as:

> *The Bothwell sand plain is the delta of the Thames River in Glacial Lake Warren…The sands were spread thinly over the clay floor, covering some 700 square miles. With only three or four feet of sand, more or less over clay, water invariably collects above the clay…*

The Ekfrid Clay Plain physiographic region also comprises a part of the central portion of the study area. Chapman and Putnam (1984:146-147) describe the Ekfrid Clay Plain as:

> *Stratified clays appear in Ekfrid and parts of nearby townships…making up an area of 360 square miles. The surface is nearly level except where cut by gullies…Here and there, knolls or low smooth ridges of sand and gravel are superimposed on the clay…The silty sediments give rise to particularly good soil, being fairly pervious and easy to till. Slow drainage is the main limitation…common dark-surfaced clay loam is a good soil when tile drained…livestock production is quite low on this little clay plain. More than half the land is in corn, soybeans and wheat…the plain is highly cleared with only 7% of land taken up by woodlots.*

The Caradoc Sand Plains and London Annex physiographic region comprises the eastern end of the study area. Chapman and Putnam (1984:146) describe the region as:

> *West and east of London there are small plains which differ from the adjacent moraines and clay plains in that they are covered with sand or other light-textured, water-laid deposits. Together they comprise about 300 square miles or 192,000 acres in which the soils are conducive to specialized agriculture.*

Generally, the study area's soil conditions would have been suitable for Indigenous and Euro-Canadian agriculture.

Major water sources close to the study area are the Sydenham River, which runs north to south through the central portion of the study area, and the Thames River which runs east to west approximately 340 metres south the eastern portion of the study area. Additionally, numerous tributaries of the Sydenham and Thames Rivers, creeks such as Haggerty Creek, Long Creek, and Newbiggen Creek, and ephemeral drainages are identified nearby or crossing through the study area (see Figures 2.1 to 2.20).

1.3.2 Pre-contact Indigenous Resources

This portion of southwestern Ontario has been occupied by Indigenous peoples since the retreat of the Wisconsin glacier approximately 11,000 years ago. Much of what is understood about the lifeways of Indigenous peoples is derived from archaeological evidence and ethnographic analogy. In Ontario, Indigenous culture prior to the period of contact with European peoples has been distinguished into cultural periods based on observed changes in material culture. These cultural periods are largely based in observed changes in formal lithic tools, and separated into the Early Paleo-Indian, Late Paleo-Indian, Early Archaic, Middle Archaic, and Late Archaic periods. Following the advent of ceramic technology in the Indigenous archaeological record, cultural periods are separated into the Early Woodland, Middle Woodland, and Late Woodland periods, based primarily on observed changes in formal ceramic decoration. It should be noted that these cultural periods do not necessarily represent specific cultural identities but are a useful paradigm for understanding changes in Indigenous culture through time. The current understanding of Indigenous archaeological culture is summarized in Table 4, based on Ellis and Ferris (1990). The provided time periods are based on the "Common Era" calendar notation system, i.e., Before Common Era (BCE) and Common Era (CE).

Table 4: Generalized Cultural Chronology related to the Study Area

Period	Characteristics	Time Period	Comments
Early Paleo-Indian	Fluted Projectiles	9000 – 8400 BCE	spruce parkland/caribou hunters
Late Paleo-Indian	Hi-Lo Projectiles	8400 – 8000 BCE	smaller but more numerous sites
Early Archaic	Kirk and Bifurcate Base Points	8000 – 6000 BCE	slow population growth
Middle Archaic	Brewerton-like Points	6000 – 2500 BCE	environment similar to present
Late Archaic	Narrow Point	2500 – 1800 BCE	increasing site size
	Broad Point	1800 – 1500 BCE	large chipped lithic tools
	Small Point	1500 – 1100 BCE	introduction of bow hunting
Terminal Archaic	Hind Points	1100 – 950 BCE	emergence of true cemeteries
Early Woodland	Meadowood Points	950 – 400 BCE	introduction of pottery
Middle Woodland	Couture Corded Pottery	400 BCE – 500 CE	increased sedentism
	Riviere au Vase Phase	500 – 800 CE	seasonal hunting and gathering
Late Woodland	Younge Phase	800 – 1200 CE	incipient agriculture
	Springwells Phase	1200 – 1400 CE	agricultural villages
	Wolf Phase	1400 – 1550 CE	earth worked villages, warfare
Contact Indigenous	Various Algonkian and Iroquoian Groups	1600 – 1875 CE	early written records and treaties
Historic	French/Euro-Canadian	1749 CE – present	European settlement

Between 9000 and 8000 BCE, Indigenous populations were sustained by hunting, fishing and foraging and lived a relatively mobile existence across an extensive geographic territory. Despite these wide territories, social ties were maintained between groups. One method in particular was through gift exchange, evident through exotic lithic material documented on many sites (Ellis 2013:35-40).

By approximately 8000 BCE, evidence exists and becomes more common for the production of ground-stone tools such as axes, chisels and adzes. These tools themselves are believed to be indicative specifically of woodworking. This evidence can be extended to indicate an increase in craft production and arguably craft specialization. This latter statement is also supported by evidence, dating to approximately 7000 BCE, of ornately carved stone objects which would be laborious to produce and have explicit aesthetic qualities (Ellis 2013:41). This is indirectly indicative of changes in social organization which permitted individuals to devote time and effort to craft specialization. Since 8000 BCE, the Great Lakes basin experienced a low-water phase, with shorelines significantly below modern lake levels (Stewart 2013: Figure 1.1.C). It is presumed that the majority of human settlements would have been focused along these former shorelines. At approximately 6500 BCE the climate had warmed considerably since the recession of the glaciers and the environment had grown more similar to the present day. By approximately 4500 BCE, evidence exists from southern Ontario for the utilization of native copper (naturally occurring pure copper metal) (Ellis 2013:42). The known origin of this material along the north shore of Lake Superior indicates the existence of extensive exchange networks across the Great Lakes basin.

At approximately 3500 BCE, the isostatic rebound of the North American plate following the melt of the Laurentide glacier had reached a point which significantly affected the watershed of the Great Lakes basin. Prior to this, the Upper Great Lakes had drained down the Ottawa Valley via the French-Mattawa river valleys. Following this shift in the watershed, the drainage course of the Great Lakes basin had changed to its present course. This also prompted a significant increase in water-level to approximately modern levels (with a brief high-water period); this change in water levels is believed to have occurred catastrophically (Stewart 2013:28-30). This change in geography coincides with the earliest evidence for cemeteries (Ellis 2013:46). By 2500 BCE, the earliest evidence exists for the construction of fishing weirs (Ellis *et al*. 1990: Figure 4.1). Construction of these weirs would have required a large amount of communal labour and are indicative of the continued development of social organization and communal identity. The large-scale procurement of food at a single location also has significant implications for permanence of settlement within the landscape. This period is also marked by further population increase and by 1500 BCE evidence exists for substantial permanent structures (Ellis 2013:45-46).

By approximately 950 BCE, the earliest evidence exists for populations using ceramics. Populations are understood to have continued to seasonally exploit natural resources. This advent of ceramic technology correlated, however, with the intensive exploitation of seed foods such as goosefoot and knotweed as well as mast such as nuts (Williamson 2013:48). The use of ceramics implies changes in the social organization of food storage as well as in the cooking of food and changes in diet. Fish also continued to be an important facet of the economy at this time. Evidence continues to exist for the expansion of social organization (including hierarchy), group identity, ceremonialism (particularly in burial), interregional exchange throughout the Great Lakes basin and beyond, and craft production (Williamson 2013:48-54).

By approximately 550 CE, evidence emergences for the introduction of maize into southern Ontario. This crop would have initially only supplemented the Indigenous diet and economy (Birch and Williamson 2013:13-14). Maize-based agriculture gradually became more important to societies and by approximately 900 CE permanent communities emerge which are primarily focused on agriculture and the storage of crops, with satellite locations oriented toward the procurement of other resources such as

hunting, fishing and foraging. By approximately 1250 CE, evidence exists for the common cultivation of historic Indigenous cultigens, including maize, beans, squash, sunflower and tobacco. The cultural affiliation of populations within the region of the study area at this time period is debated, whether they may have spoken a form of Iroquoian language or Algonquian (Murphy and Ferris 1990). The extant archaeological record demonstrates many cultural traits similar to historic Indigenous nations (Williamson 2013:55).

By the Late Woodland period there was a distinctive cultural occupation in southwestern Ontario, including Essex, Kent, and Lambton counties, which includes the western portion of the study area. The primary Late Woodland occupants of the Windsor area were populations described by archaeologists as belonging to the Western Basin Tradition. Murphy and Ferris (1990:189) indicate that these people had ties with populations in southeastern Michigan and northwestern Ohio and represent an *in situ* cultural development from the earlier Middle Woodland groups. The Western Basin Tradition seems to have been centered in the territory comprising the eastern drainage basin of Lake Erie, Lake St. Clair, and the southern end of Lake Huron. The Western Basin Tradition is divided into four phases based on differences in settlement and subsistence strategies and pottery attributes. By the time of increased European interaction in the last half of the 16th century and early 17th century, there were no Western Basin Tradition sites in the Essex County area, having moved west into Michigan (Ferris 2009:32-33).

The eastern portion of study area is located on the margin of the geographic extent of the Western Basin Tradition, an archaeological cultural sequence documented throughout southwestern Ontario west of London. Specifically, the Thames Valley just west of London is documented to have been occupied between 700 CE and 1000 CE (i.e., Neeb site; Murphy and Ferris 1990: Table 7.1). Between 1000 CE and until the turn of the 16th century, Western Basin Tradition site locations in Ontario focus towards the western end of Lake Erie. The study area is also located within the understood territory of the ancestral Neutral Nation (Birch 2015).

1.3.3 Registered Archaeological Sites and Surveys

In Canada, archaeological sites are registered within the Borden system, a national grid system designed by Charles Borden in 1952 (Borden 1952). The grid covers the entire surface area of Canada and is divided into major units containing an area that is two degrees in latitude by four degrees in longitude. Major units are designated by upper case letters. Each major unit is subdivided into 288 basic unit areas, each containing an area of 10 minutes in latitude by 10 minutes in longitude. The width of basic units reduces as one moves north due to the curvature of the earth. In southern Ontario, each basic unit measures approximately 13.5 kilometres east-west by 18.5 kilometres north-south. In northern Ontario, adjacent to Hudson Bay, each basic unit measures approximately 10.2 kilometres east-west by 18.5 kilometres north-south. Basic units are designated by lower case letters. Individual sites are assigned a unique, sequential number as they are registered. These sequential numbers are issued by the MHSTCI who maintain the *Ontario Archaeological Sites Database*. The study area under review is within Borden Blocks: AeHn, AeHm, AeHl, AeHk, AeHj, AfHj, and AfHi.

Information concerning specific site locations is protected by provincial policy and is not fully subject to the *Freedom of Information and Protection of Privacy Act* (Government of Ontario 1990a). The release of

such information in the past has led to looting or various forms of illegally conducted site destruction. Confidentiality extends to media capable of conveying location, including maps, drawings, or textual descriptions of a site location. The MHSTCI will provide information concerning site location to the party or an agent of the party holding title to a property, or to a licensed archaeologist with relevant cultural resource management interests.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 100 archaeological sites registered within a one kilometre radius of the study area (Government of Ontario 2020a). Table 5 provides a summary of the previously registered archaeological sites.

Table 5: Registered Archaeological Sites within One Kilometre of the Study Area

Borden #	Site Name	Site Type	Cultural Affiliation
AeHl-36	Tower	Scatter	Indigenous
AeHm-20	Molly	Scatter	Indigenous, Early/Late Woodland
AeHn-10	Not applicable (n/a)	Dump	Euro-Canadian
AeHn-11	Location 13	Homestead	Euro-Canadian
AfHi-18	n/a	Unknown	Indigenous, Early Woodland
AfHi-19	Brodie	Scatter	Indigenous, Late Archaic/Middle Woodland
AfHi-25	Cornell	Burial	Indigenous, Late Woodland
AfHi-27	Komoka Bridge Historic 1 and 2	House	Euro-Canadian
AfHi-28	Brodie Historic 2	House	Euro-Canadian
AfHi-29	Campbell	Camp	Indigenous, Late Woodland
AfHi-31	Komoka 3	Hamlet	Indigenous, Woodland
AfHi-58	Huron Rye	Camp	Indigenous, Late Archaic/Middle Woodland
AfHi-119	Tom O'Shea	Findspot	Indigenous, Late Archaic
AfHi-133	Scott Wales	Scatter	Indigenous, Late Archaic/Early Woodland/Late Woodland
AfHi-136	Old Barn	Scatter	Indigenous, Late Archaic/Early Woodland
AfHi-168	Rob's Toss	Burial	Indigenous
AfHi-169	Spool	Scatter	Indigenous
AfHi-249	n/a	Camp	Indigenous, Late Archaic/Woodland
AfHi-250	Keith Wales	Scatter	Euro-Canadian; Indigenous
AfHi-251	n/a	Findspot	Indigenous, Late Archaic
AfHi-326	n/a	Camp	Indigenous, Late Woodland
AfHi-327	n/a	Camp	Indigenous, Late Archaic
AfHi-335	n/a	Scatter	Indigenous, Early Woodland/Middle Woodland
AfHi-382	n/a	Scatter	Indigenous

Borden #	Site Name	Site Type	Cultural Affiliation
AfHi-383	n/a	Scatter	Indigenous, Late Archaic/Middle Woodland/Late Woodland
AfHi-384	n/a	Scatter	Indigenous
AfHi-389	n/a	Scatter	Indigenous
AfHi-390	n/a	Scatter	Indigenous
AfHi-391	n/a	Scatter	Indigenous, Woodland
AfHj-13	Gripton	Burial	Indigenous
AfHj-15	Lambert	Findspot	Indigenous, Paleo-Indian
AfHj-16	Caradoc 1	Scatter	Indigenous, Early Archaic/Late Woodland
AfHj-19	MiV18	Village	Indigenous, Late Woodland
AfHj-21	Roeland I	Hamlet	Indigenous
AfHj-24	Hardy	Village	Indigenous, Early Woodland/Late Woodland
AfHj-30	n/a	Scatter	Indigenous
AfHj-31	n/a	Unknown	Unknown
AfHj-33	Roeland	Unknown	Unknown
AfHj-34	Caradoc 7	Scatter	Indigenous
AfHj-35	n/a	Camp/Homestead	Euro-Canadian; Indigenous
AfHj-36	John Kellestine II	Camp, Homestead	Indigenous, Early Archaic; Euro-Canadian
AfHj-37	n/a	Camp	Indigenous
AfHj-38	n/a	Camp	Indigenous, Late Woodland
AfHj-39	n/a	Camp	Indigenous, Middle Archaic/Middle Woodland
AfHj-40	Vrooman	Camp	Indigenous, Late Archaic
AfHj-41	n/a	Scatter	Indigenous
AfHj-42	n/a	Camp	Indigenous, Late Woodland
AfHj-43	n/a	Camp	Indigenous; Euro-Canadian
AfHj-44	n/a	Scatter	Indigenous
AfHj-45	n/a	Camp	Indigenous, Middle Archaic
AfHj-46	n/a	Scatter	Indigenous, Early Archaic
AfHj-47	n/a	Scatter	Indigenous
AfHj-48	n/a	Camp/Findspot	Indigenous, Late Archaic/Late Woodland
AfHj-49	n/a	Camp	Indigenous
AfHj-50	n/a	Camp	Indigenous, Middle Woodland
AfHj-53	n/a	Findspot	Indigenous, Woodland
AfHj-54	n/a	Camp	Indigenous, Middle Archaic
AfHj-55	n/a	Scatter	Indigenous

Borden #	Site Name	Site Type	Cultural Affiliation
AfHj-57	n/a	Findspot	Indigenous
AfHj-58	n/a	Camp	Indigenous, Late Woodland
AfHj-59	n/a	Findspot	Indigenous, Early Archaic
AfHj-60	n/a	Camp/Homestead	Indigenous, Late Archaic/Late Woodland; Euro-Canadian
AfHj-61	n/a	Findspot	Indigenous
AfHj-62	n/a	Camp	Indigenous, Woodland
AfHj-63	n/a	Findspot	Indigenous, Middle Archaic
AfHj-64	n/a	Findspot	Indigenous
AfHj-73	n/a	Findspot	Indigenous
AfHj-74	n/a	Findspot	Indigenous
AfHj-77	n/a	Scatter	Indigenous
AfHj-79	n/a	Findspot	Indigenous
AfHj-80	n/a	Findspot	Indigenous
AfHj-81	n/a	Camp	Indigenous
AfHj-82	Butler's Woods	Camp	Indigenous, Middle Woodland
AfHj-91	Strathroy PUC #1	Camp	Indigenous
AfHj-92	Strathroy PUC #2	Camp	Indigenous
AfHj-93	Strathroy PUC #3	Camp	Indigenous
AfHj-94	Strathroy PUC #4	Camp	Indigenous
AfHj-95	Strathroy PUC #5	Camp	Indigenous, Early Archaic
AfHj-96	Strathroy PUC #6	Camp	Indigenous, Early Woodland
AfHj-97	Strathroy PUC #7	Camp	Indigenous
AfHj-98	Strathroy PUC #8	Camp	Indigenous, Late Archaic/Late Woodland
AfHj-99	Strathroy PUC #9	Camp	Indigenous
AfHj-521	n/a	Scatter	Indigenous, Late Woodland
AfHj-100	Strathroy PUC #10	Findspot	Indigenous
AfHj-103	Strathroy 1	Unknown	Indigenous, Late Woodland
AfHj-109	AfHj-109	Camp	Indigenous, Middle Woodland/Late Woodland
AfHj-110	n/a	Scatter	Indigenous, Woodland
AfHj-116	n/a	Unknown	Euro-Canadian; Indigenous
AfHj-127	Brooke	Scatter	Euro-Canadian
AfHj-128	Vegso	Scatter	Indigenous
AfHj-129	Vegso	Findspot	Indigenous, Middle Woodland
AfHj-130	Vegso	Findspot	Indigenous
AfHj-131	Vegso	Findspot	Indigenous

Borden #	Site Name	Site Type	Cultural Affiliation
AfHj-522	Trout Creek 1	Camp	Indigenous, Woodland
AfHj-523	Trout Creek 2	Scatter	Indigenous
AfHj-524	Trout Creek 3	Scatter	Indigenous, Late Archaic
AfHj-525	Trout Creek 4	Scatter	Indigenous
AfHj-526	Trout Creek 5	Scatter	Indigenous, Late Archaic
AfHj-527	McEroy Site	Homestead	Euro-Canadian
AfHj-528	n/a	Scatter	Indigenous, Woodland

Of the registered archaeological sites noted above, four Indigenous sites and one Euro-Canadian archaeological site are located within 50 metres of the existing route and alternative segments for the Project. These are the Scott Wales site (AfHi-133), Keith Wales site (AfHi-250), AfHi-326, AfHi-335, and the McEroy site (AfHj-526), and are discussed further below. Tile 1 in the Supplementary Documentation provides an illustration of the registered archaeological sites within one kilometre of the study area.

In addition to the above, an examination of the *Ontario Public Register of Archaeological Reports* (Government of Ontario 2020b) has identified 23 archaeological assessments which may document work within 50 metres of the study area. Despite some previous archaeological assessments overlapping with the current Stage 1 study area, Stantec has determined that illustrating all previously surveyed areas, especially those which pre-date 2011 and include low resolution mapping, is not practical given the size and scale of the current study area. Following confirmation of the preferred route and delineation of any temporary construction easement required for the Project, the proximity of previous archaeological assessments and previously surveyed lands will be re-evaluated as part of the Stage 2 archaeological assessment for the Project. A summary of previous archaeological assessments is presented in Table 6.

Table 6: Archaeological Assessments within 50 metres of the Study Area

Company / Author	Report	Project Information Form (PIF) Number	Year
Riddell, David	*Preliminary Report on Sydenham River Survey 2*	n/a	1991
Riddell, David	*Report of the Sydenham River Survey 2*	n/a	1992
Riddell, David	*Review of Sydenham River Survey 3*	n/a	1993
Wilson, Jim	*The Middle Thames River Settlement/Subsistence Project*	1996-060	1997
Archaeologix Inc. (Archaeologix)	*Archaeological Assessment (Stages 1,2 & 3) Johnston Brothers Aggregate Pit, Part of Lot 3 & 4, Conc. 1, Lobo Township, Middlesex County, Ontario*	2000-002-059	2000
Archaeologix	*A A. (Stage 4), The Johnston Bros. Site (AfHi-249) & The Keith Wales Site (AfHi-250), Johnston Brothers Aggregate Pit, Part of Lot 3 & 4, Con. 1, Lobo Twp., Middlesex County, Ontario*	2000-002-081	2001
Archaeologix.	*A.A. (Stages 1&2), Don Young Trucking Sand Pit, Part Lot 24, Con. 3, Geo. Twp. of Caradoc, County of Middlesex, Ontario*	P001-072	2003

Company / Author	Report	Project Information Form (PIF) Number	Year
Timmins Martelle Heritage Consultants Inc. (TMHC)	*Stage 3 & 4 A. A. AfHi-250 - The Keith Wales Site, Johnston Brothers Aggregate Pit, Komoka, Ontario - Komoka, Ontario - Part of Lot 3 & 4, Conc. 1, Lobo Twp., Middlesex County, Ontario*	P064-037, P064-032	2004
Stantec	*Stage 1 Archaeological Assessment, Sydenham Wind Energy Centre, Lambton County and the Municipality of Chatham-Kent, Ontario*	P002-0194-2010	2011
D.R. Poulton & Associates Inc.	*The 2010-2011 Stage 2 Archaeological Assessment of the Proposed Sydenham Wind Energy Centre, Lambton County & Municipality of Chatham-Kent, Ontario*	P316-0099-2010; P316-0107-2011	2012
Stantec	*Stage 1-2 Archaeological Assessment: Dawn Parkway System, Dawn H Compressor Station Project, Part of Lots 25, 26, and 27 Concession 2, Geographic Township of Dawn, now Township of Dawn-Euphemia, Lambton County, Ontario*	P389-0215-2015	2015
Golder Associates Inc.	*Stage 1-2 Archaeological Assessment, Komoka Provincial Park and Proposed New Parking Areas, City of London, Middlesex County, Ontario.*	P364-0097-2015	2016
TMHC	*Revised Report: Stage 1-3 Archaeological Assessment, Johnston Brothers Aggregate Pit Expansion, Komoka, Ontario. Part of Lot 4, Concession 1, Lobo Twp. Middlesex County, Ontario*	P064-078 P064-084	2016
Stantec	*Stage 1 Archaeological Assessment: Glendon Drive Streetscape Improvements, Schedule C Municipal Class Environmental Assessment, Various Lots and Concessions, Geographic Township of Lobo, now Municipality of Middlesex Centre, and Geographic Township of Caradoc, now Township of Strathroy-Caradoc, Middlesex County, Ontario*	P256-0367-2015	2016a
Stantec	*Stage 1 Archaeological Assessment: Panhandle Reinforcement Project (Dawn-Dover), Parts of Various Lots and Concessions, Geographic Township of Dawn, now Township of Dawn-Euphemia, and Geographic Township of Sombra, now Township of St. Clair, Lambton County; and Geographic Townships of Chatham and Dover, now Municipality of Chatham-Kent, Ontario*	P256-0388-2015	2016b
Stantec	*Stage 2 Archaeological Assessment: Panhandle Reinforcement Project (Dawn-Dover), Parts of Various Lots and Concessions, Geographic Township of Dawn, now Township of Dawn-Euphemia, and Geographic Township of Sombra, now Township of St. Clair, Lambton County; and Geographic Townships of Chatham and Dover, now Municipality of Chatham-Kent, Ontario*	P256-0401-2016	2016c
Stantec	*Stage 1 Archaeological Assessment: Dawn-Enniskillen Pipeline Project, Parts of Various Lots and Concessions, Geographic Township of Dawn, now Township of Dawn-Euphemia and Township of Enniskillen, Lambton County, Ontario*	P083-0272-2016	2017a
Stantec	*Stage 3 Archaeological Assessment: Location 13 (AeHn-11), Panhandle Reinforcement Project (Dawn-Dover), Part of Lot 25, Concession 1, Geographic Township of Dawn, now Township of Dawn-Euphemia, County of Lambton, Ontario*	P256-0410-2016	2017b

Company / Author	Report	Project Information Form (PIF) Number	Year
TMHC	*Stage 1 & 2 Archaeological Assessment Proposed Aggregate Pit Amiens Road Part of Lots 1 and 2, Concession 2 Geographic Township of Lobo Middlesex County, Ontario*	P324-0105-2016	2018
AMICK Consultants Ltd.	*Stage 1-2 Archaeological Property Assessment of 22805 Adelaide Road, Mount Brydges, Part of the East Half of Lot 17, Concession 3 (Geographic Township of Caradoc), Township of Strathroy-Caradoc, County of Middlesex*	P038-0931-2017	2018
Stantec	*Stage 1-2 Archaeological Assessment: Proposed Land Swap between the Municipality of Middlesex Centre and Infrastructure Ontario Part of Lot 4, Concession 1, Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario*	P256-0557-2018	2019a
Stantec	*Stage 1-2 Archaeological Assessment: Proposed Booster Pumping Station and Existing Komoka Wastewater Treatment Facility, Parts of Lot 4 and Lot 5, Concession 1, Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario*	P256-0572-2019	2019b
Stantec	Stage 3 Archaeological Assessment: Scott Wales (AfHi-133), Construction Footprint for the Proposed Water Booster Pumping Station, Komoka WasteWater Treatment Facility Part of Lot 4 and 5, Concession 1, Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario	P256-0581-2019	2019c

The earliest systematic archaeological investigation in close proximity to the study area was conducted by David Riddell as part of the Sydenham River Surveys conducted over two separate field seasons from 1991 to 1993 (Riddell 1991; 1992; 1993). This survey focused on the middle Sydenham River area in an area extending from Cairo Road to one kilometre south of Alvinston, a distance of approximately 10 kilometres (following the river). Within that survey area, Riddell identified 29 archaeological resources, spanning archaeological cultures from the Late Archaic through to the Late Woodland. Riddell's goal was to provide links between contemporaneous site and Indigenous groups based on comparative samples (Riddell 2006). The survey results showed that the general area was an interface zone between the Western Basin and Iroquoian archaeological traditions and that the archaeological sites in this interface zone have important ramifications for understanding the Late Woodland period in south-western Ontario.

As part of *The Middle Thames River Settlement/Subsistence Project* in 1992 and 1993, Wilson (1997) assessed portions of land directly south of the eastern portion of the current study area along the terrace overlooking the Thames River. Pedestrian survey identified a large lithic scatter consisting of 506 pieces of chipping detritus, as well as utilized flakes, bifaces, cores, drills, and diagnostic projectile points. The archaeological site was registered with the MHSTCI as the Scott Wales site (AfHi-133). Wilson temporally affiliated the site with the Early Woodland period with numerous Meadowood and Middlesex phase artifacts. Further investigation revealed that this site had been known about and collected for years by local amateurs who had quite extensive collections, including birdstones (Wilson 1997).

Archaeologix conducted a Stage 1, 2, and 3 archaeological assessment in 2000 for a proposed aggregate pit on parts of Lots 3, and 4, Concession 1, Lobo Township, Middlesex County, Ontario (Archaeologix 2000). The Stage 2 archaeological assessment resulted in the identification of numerous archaeological sites. Portions of the Archaeologix Stage 2 archaeological assessment likely overlap with the study area for the current Project. However, due to the possible inaccuracies and larger scale of the mapping associated with the report, it is difficult to directly ascertain where those areas overlap; therefore, they have not been included on the current mapping as being previously assessed. Some of the identified archaeological sites were subject to Stage 3 archaeological investigations, two of which (Johnston Bros. site [AfHi-249] and Keith Wales site [AfHi-250]) were recommended for further Stage 4 mitigation (Archaeologix 2000). Archaeologix conducted Stage 4 mitigation of the two sites in the same year subsequent to their Stage 3 investigation (Archaeologix 2001). The Johnston Bros. site (AfHi-249) was interpreted to be a multi-component Late Archaic / Woodland camp site and was completely excavated during the Stage 4 mitigation and the site retains no further cultural heritage value or interest (Archaeologix 2001). The Keith Wales site (AfHi-250) was subject to partial Stage 4 mitigation and Archaeologix (2001) recommended further archaeological investigation should any future projects impact the remaining portions of the site.

In 2003, Archaeologix conducted a Stage 1 and Stage 2 archaeological assessment for a proposed aggregate pit on 3.5 hectares of Lot 24, Concession 3, Caradoc Township, Middlesex County, Ontario (Archaeologix 2003). The Stage 2 archaeological assessment resulted in the identification of four archaeological sites. Locations 3 and 4 were interpreted to have low archaeological significance and no further archaeological work was recommended (Archaeologix 2003). Location 1 (AfHi-326) was identified as a large, Early Late Woodland period archaeological site and Location 2 (AfHi-327) was identified as a small, Archaic period archaeological site (Archaeologix 2003). Both sites were avoided as part of the aggregate project but are recommended for further archaeological assessment (Archaeologix 2003).

In 2001 and 2004, TMHC conducted further Stage 3 and Stage 4 archaeological assessment on the Keith Wales site (AfHi-250) (TMHC 2001; 2004). The archaeological assessment in 2004 assisted in defining the archaeological site limits and mitigated the northern limits of the Keith Wales site (AfHi-250); however, TMHC recommended further archaeological assessment for the remaining portions of the site (TMHC 2004).

In 2005, TMHC conducted Stage 1, 2, and 3 archaeological assessment for a proposed aggregate pit expansion on part of Lot 4, Concession 1, Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario (TMHC 2016). The assessment resulted in the identification of a large Indigenous lithic scatter which was registered with the MHSTCI as AfHi-335. A Stage 3 archaeological assessment was subsequently conducted consisting of 89 one-metre test units, which resulted in the recovery of 2,351 Indigenous artifacts related to the Early and Middle Woodland periods (TMHC 2016). The Stage 3 confirmed evidence of a large archaeological site with intact subsurface archaeological deposits and Stage 4 archaeological mitigation was recommended to be completed prior to commencement of any ground disturbing activities associated with aggregate extraction (TMHC 2016). An examination of the *Ontario Archaeological Sites Database* site location mapping (Government of Ontario 2019a) shows the location of AfHi-335 identified by TMHC (2016) much further north than the actual site location depicted in TMHC's (2016) report. This discrepancy is possibly a coordinate mapping

error. The actual location of AfHi-335 identified by TMHC (2016) is in the same location as the Scott Wales site (AfHi-335) identified by Wilson (1997). These locations are the same archaeological site and it can be inferred that their material culture is related.

In 2010, Stantec conducted a Stage 1 archaeological assessment for a proposed Sydenham Wind Energy Centre within the Townships of Brooke-Alvinston and Dawn-Euphemia in Lambton County and the Municipality of Chatham-Kent, Ontario (Stantec 2011). The Stage 1 archaeological assessment determined that the study area retained high potential for previously undiscovered archaeological resources and recommended Stage 2 archaeological assessment of all project-related infrastructure and construction areas (Stantec 2011).

Subsequent to Stantec's Stage 1 archaeological assessment of the proposed Sydenham Wind Energy Centre, D.R. Poulton & Associates Inc. (D.R. Poulton) conducted a Stage 2 archaeological assessment for the project's study area (D.R. Poulton 2012). The Stage 2 archaeological assessment resulted in the identification of six archaeological locations. Four of the archaeological sites were pre-contact Indigenous isolated finds and no further work was recommended. The other two sites were Euro-Canadian surface scatters, one of which was considered to be an early-20th century site which did not warrant any further archaeological investigation. The other Euro-Canadian site was identified as AeHl-64 and Stage 3 archaeological assessment was recommended (D.R. Poulton 2012).

In 2015, Stantec conducted a Stage 1-2 archaeological assessment for a new compressor station for Union Gas on part of Lots 25, 26, and 27, Concession 2, Geographic Township of Dawn, now Township of Dawn-Euphemia, Lambton County, Ontario (Stantec 2015). The Stage 1-2 archaeological assessment resulted in the identification of a single 20th century Euro-Canadian refuse deposit (Location 1 [AeHn-10]), which did not meet the criteria for Stage 3 archaeological investigation and no further archaeological work was recommended (Stantec 2015). A portion of the Stage 1-2 archaeological assessment overlaps with the study area for the current Project (see Figure 17-1).

In 2015, Golder Associates Inc. (Golder) conducted a Stage 1-2 archaeological assessment for Komoka Provincial Park (Golder 2016). Golder's assessment determined that the entire area of Komoka Provincial Park has archaeological potential for Indigenous and Euro-Canadian resources and a Stage 2 archaeological assessment should be conducted prior to any ground disturbing activities (Golder 2016). Additionally, Golder conducted a Stage 2 archaeological assessment of two "access zones" which would be used to develop new parking areas within the park. An area designated as "Access Zone 2" is located within and directly east of the current study area for this Project, adjacent to Komoka Road (see Figure 17-70). A test pit assessment of this area did not result in the identification of any archaeological resources and no further archaeological work was recommended (Golder 2016).

Stantec conducted a Stage 1 archaeological assessment in 2016 for proposed streetscape improvements along Glendon Drive in Komoka, Ontario (Stantec 2016a). The Stage 1 archaeological assessment determined that much of the municipal ROW in the study area retained low to no archaeological potential as it had been subject to extensive land disturbance. Areas outside of the municipal ROW, with the exception of paved and gravel driveways, commercial frontages, industrial quarry lands, and residential

buildings, were considered to retain archaeological potential (Stantec 2016a). Portions of the Stage 1 archaeological assessment overlap with the current study area for the Project (see Figure 17-68).

Stantec also conducted a Stage 1 archaeological assessment in 2016 for a proposed pipeline (Dawn-Dover project) from the Dawn compressor station in the Geographic Township of Dawn, now Township of Dawn-Euphemia, and Geographic Township of Sombra, now Township of St. Clair, Lambton County to the Geographic Townships of Chatham and Dover, now Municipality of Chatham-Kent, Ontario (Stantec 2016b). Stantec determined the archaeological potential of the study area to be moderate to high, however, portions of the study area, particularly along the existing pipeline route, had been subject to extensive land disturbance (Stantec 2016b). Stantec recommended Stage 2 archaeological assessment for portions of the study area that retained archaeological potential (Stantec 2016b). Stantec conducted a Stage 2 archaeological assessment for the Dawn-Dover project the same year, resulting in the identification of 26 new archaeological locations (Stantec 2016c). Of these, 11 archaeological locations were recommended for further Stage 3 archaeological investigation, and 15 required no further archaeological assessment (Stantec 2016c).

In 2017, Stantec conducted a Stage 1 archaeological assessment for the proposed Dawn-Enniskillen Pipeline from the Dawn compressor station in the Geographic Township of Dawn, now Township of Dawn-Euphemia, to the Township of Enniskillen, Lambton County, Ontario (Stantec 2017a). Stantec determined that some portions of the study area retained low to no archaeological potential due to extensive land disturbance. However, Stantec determined that large portions of the study area exhibited a moderate to high potential for archaeological resources (Stantec 2017a). Stantec recommended Stage 2 archaeological assessment for portions of the study area that retained archaeological potential (Stantec 2017a).

In 2017, Stantec conducted a Stage 3 archaeological assessment of Location 13 (AeHn-11) which was previously identified during the Stage 2 archaeological assessment of the Dawn-Dover project (Stantec 2017b). The Stage 3 resulted in the documentation of a Euro-Canadian site dating from the late-19th century to the early-20th century. As 80% of the artifact assemblage did not represent a period of use that dates prior to 1870, Stantec determined the site retained no further cultural heritage value or interest and no further archaeological work was recommended (Stantec 2017b).

In 2018, TMHC conducted a Stage 1-2 archaeological assessment for approximately 24.5 hectares of parts of Lots 1 and 2, Concession 2, in the Geographic Township of Lobo, now in the Municipality of Thames Centre, Middlesex County, Ontario (TMHC 2018). The Stage 2 archaeological assessment resulted in the identification of six new archaeological locations. Of those, three were recommended for further Stage 3 archaeological assessment (TMHC 2018). At the time of this project, the proponent decided to protect the site within the area as to conduct the archaeological work at a later date (TMHC 2018). A portion of TMHC's (2018) Stage 2 assessment overlaps with the current study area for this Project (see Figure 17-68).

AMICK Consultants Ltd. (AMICK) conducted a Stage 1-2 archaeological assessment in 2017 for a proposed subdivision development on part of the East Half of Lot 17, Concession 3, Geographic Township of Caradoc, Municipality of Strathroy-Caradoc, Middlesex County, Ontario (AMICK 2018). The

Stage 2 archaeological assessment resulted in the identification of a Euro-Canadian surface scatter, identified as the McEroy Site (AfHj-527). AMICK (2018) determined the site may represent a significant, early Euro-Canadian site and recommended further archaeological assessment. At the time of writing this report it is Stantec's knowledge that a Stage 3 archaeological assessment has been conducted at the McEroy Site (AfHj-527) but the report has not been submitted or approved.

In 2018, Stantec conducted a Stage 1-2 archaeological assessment for two parcels of land involved in a proposed land swap between the Municipality of Middlesex Centre and Infrastructure Ontario on part of Lot 5, Concession 1, Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario (Stantec 2019a). The Stage 2 archaeological assessment of the study area resulted in the identification of a large archaeological site associated with the previously identified Scott Wales site (AfHi-133) (Stantec 2019a). Stantec recommended further Stage 3 archaeological assessment of the Scott Wales site (AfHi-133) (Stantec 2019a). Portions of the Stage 2 assessment overlap with the study area for the current Project (see Figure 17-70).

Based on the results of the Stage 2 archaeological assessment (Stantec 2019a), it was determined that the Scott Wales site (AfHi-133) likely extended beyond the initial land swap study area into adjacent lands which may be impacted by a proposed Booster Pumping Station (BPS), including lands within the existing Komoka Wastewater Treatment Facility (WWTF). In consultation with the MHSTCI, BPS construction work was halted until an archaeological assessment was completed for all lands involved in the BPS. Subsequently, Stantec was retained by the Municipality to complete a Stage 1-2 archaeological assessment for the additional lands (the Project) to be impacted by the construction of the BPS and the existing Komoka WWTF grounds prior to further development as per the MHSTCI's advice (Stantec 2019b). The subsequent Stage 1-2 archaeological assessment resulted in the identification of additional archaeological resources associated with the Scott Wales site (AfHi-133) (Stantec 2019b). Stantec also recommended further Stage 3 archaeological assessment for the newly identified extent of the Scott Wales site (AfHi-133) (Stantec 2019b). Portions of the additional Stage 2 assessment overlap with the study area for the current Project (see Figure 17-70).

To mitigate impacts of the proposed BPS, Stantec conducted a Stage 3 archaeological assessment for a portion of the avoidance and protection buffers associated with the Scott Wales site (AfHi-133) (Stantec 2019c). Stage 3 archaeological assessment was undertaken prior to the construction of the proposed BPS) and transfer main as part of upgrades to the existing Komoka WWTF. The Stage 3 archaeological assessment was limited to the proposed BPS construction footprint and a portion of the avoidance and protection buffers associated with the Scott Wales site (AfHi-133). The Stage 3 assessment resulted in the recovery of a small assemblage of lithic Indigenous artifacts. While the artifacts are likely associated with the Scott Wales site (AfHi-133) to the south, the site was determined to not extend into the Stage 3 investigation area as the artifacts from the Stage 3 archaeological assessment of the portion of the avoidance and protection buffers associated with the Scott Wales site (AfHi-133) were recovered from a disturbed context (Stantec 2019c). Therefore, Stantec determined that no further archaeological work was recommended for the portion of the avoidance and protection buffers associated with the site within the BPS construction footprint (Stantec 2019c). The area subject to Stage 3 archaeological assessment partially overlaps with the study area for the current Project (see Figure 17-70). Stantec also recommended that the portion of the Scott Wales site (AfHi-133) outside of the Stage 3 investigation

area, including other portions of the site's avoidance and protection buffers, retained further cultural heritage value or interest and should be subject to Stage 3 archaeological assessment (Stantec 2019c). A portion of the Scott Wales site (AfHi-133) is within the study area for the current Project (see Tile 1 and Tile 2 in the Supplementary Documentation).

1.3.4 Existing Conditions

The Stage 1 property inspection of the study area was conducted over five days between November 25, 2019 and June 19, 2020 under PIF P256-0622-2020 issued to Parker Dickson, MA by the MHSTCI. The study area for the Project comprises approximately 766.88 hectares of various lots and concessions of the Geographic Townships of Dawn and Euphemia, now Township of Dawn-Euphemia, Lambton County; the Geographic Townships of Ekfrid and Mosa, now Municipality of Southwest Middlesex, Middlesex County; the Geographic Township of Caradoc, now Municipality of Strathroy-Caradoc, Middlesex County; and the Geographic Township of Lobo, now Municipality of Middlesex Centre, Middlesex County, Ontario. The proposed Project will be conducted between the Town of Komoka and the existing Enbridge station (Dawn Hub) north of Dresden, Ontario. Pipeline installation will occur through an open trench technique, although select features may be crossed using a trenchless method such as bore or horizontal directional drill.

Broadly, much of the study area consists of municipal road ROWs and active agricultural field, smaller pockets of sparse forest, and grassy or scrubland areas. The study area is also inundated with numerous water sources, municipally constructed drains, and gravel roads. The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. Thus, the current study area for the Stage 1 archaeological assessment is relatively large, captures several different pipeline route options, and serves to capture a broad and generalized geographic area associated with the Project.

2.0 FIELD METHODS

Initial background research compiled information concerning known and/or potential archaeological resources within the study area. A property inspection was conducted between November 25, 2019 and June 19, 2020 under PIF P256-0622-2020 issued to Parker Dickson, MA by the MHSTCI in accordance with Section 1.2 of the MHSTCI's *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The study area was developed to include the municipal road ROW plus a five metre buffer, a 15-metre-wide corridor for proposed pipeline routes off of the ROW, and a 100 metre by 100 metre footprint for proposed stations (see Figures 2.0 to 2.20). Permission to conduct the Stage 1 visual assessment of the study area was provided by Enbridge. However, access to private lands for the purposes of the archaeological assessment was not obtained. Thus, photo documentation completed during the Stage 1 visual assessment was completed from the municipal road ROW and public lands. The property inspection involved spot-checking the entirety of the study area to identify the presence or absence of any features of archaeological potential. During the property inspection the weather adequate for the identification of features of archaeological potential (Table 7). At no time were field, lighting, or weather conditions detrimental to the identification of features of archaeological potential.

Table 7: Weather and Field Conditions during Property Inspection

Date	Field Director	Activity	Weather	Comment
November 25, 2019	Nathan Ng (R1223)	Photo documentation	Overcast, cool	Visibility of land features and features of archaeological potential is excellent
November 26, 2019	Nathan Ng (R1223)	Photo documentation	Mainly sunny, cool	Visibility of land features and features of archaeological potential is excellent
November 27, 2019	Nathan Ng (R1223)	Photo documentation	Partly cloudy, cool	Visibility of land features and features of archaeological potential is excellent
November 29, 2019	Darren Kipping (R422)	Photo documentation	Overcast, cool	Visibility of land features and features of archaeological potential is excellent
June 19, 2020	Darren Kipping (R422)	Photo documentation	Sunny and hot	Visibility of land features and features of archaeological potential is excellent

The photography from the property inspection conducted between November 25, 2019 and June 19, 2020 is presented in Section 7.1 and confirms that the requirements for a Stage 1 property inspection were met, as per Section 1.2 and Section 7.7.2 Standard 1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Figures 17-0 to 17-70 illustrate photo locations and the archaeological potential of the study area.

The study area involves large portions of agricultural field, forest, scrubland, and manicured lawn. Approximately 61.13% of the study area retains potential for archaeological resources. Photos 1 to 18 illustrate typical examples of the areas that retain archaeological potential.

As noted elsewhere, the study area involves numerous municipal roads and ROWs from Enbridge's existing Dawn Station in the west to Komoka in the east. The study area includes the municipal ROWs, as well as private and public lands adjacent to the ROWs. Approximately 37.00% of the study area consists of modern disturbances from the existing paved roads, paved and gravel road shoulders, engineered foreslope and backslope for existing roads and ditching, gravel and paved driveways/laneways, buried utilities and municipal infrastructure (e.g., sewers, pipelines, etc.), as well as disturbance from existing commercial and residential frontages. Photos 19 to 34 illustrate typical examples of disturbance identified throughout the study area.

A small portion of the study area consists of low and permanently wet areas (approximately 0.11%). Photos 35 to 42 illustrate typical examples of low and permanently wet areas.

The remaining portion of the study area, approximately 1.76%, comprise areas which have been modernly subject to archaeological assessment and do not require re-survey (i.e., Golder 2016; Stantec 2016a; 2019a; 2019b; 2019c; TMHC 2018). These areas were not photo-documented as part of this Stage 1 archaeological assessment.

3.0 ANALYSIS AND CONCLUSIONS

Archaeological potential is established by determining the likelihood that archaeological resources may be present on a subject property. Stantec applied archaeological potential criteria commonly used by the MHSTCI (Government of Ontario 2011) to determine areas of archaeological potential within the region under study. These variables include proximity to previously identified archaeological sites, distance to various types of water sources, soil texture and drainage, glacial geomorphology, elevated topography and the general topographic variability of the area. However, it is worth noting that extensive land disturbance can eradicate archaeological potential (Government of Ontario 2011).

Potable water is the single most important resource for any extended human occupation or settlement and since water sources in Ontario have remained relatively stable over time, proximity to drinkable water is regarded as a useful index for the evaluation of archaeological site potential. In fact, distance to water is one of the most commonly used variables for predictive modeling of archaeological site locations. Distance to modern or ancient water sources is generally accepted as the most important determinant of past human settlement patterns and, considered alone, may result in a determination of archaeological potential. However, any combination of two or more other criteria, such as well-drained soils or topographic variability, may also indicate archaeological potential.

As discussed above, distance to water is an essential factor in archaeological potential modeling. When evaluating distance to water it is important to distinguish between water and shoreline, as well as natural and artificial water sources, as these features affect site location and type to varying degrees. The MHSTCI categorizes water sources in the following manner:

- Primary water sources: lakes, rivers, streams, creeks;
- Secondary water sources: intermittent streams and creeks, springs, marshes and swamps;
- Past water sources: glacial lake shorelines, relic river or stream channels, cobble beaches, shorelines of drained lakes or marshes; and
- Accessible or inaccessible shorelines: high bluffs, swamp or marshy lake edges, sandbars stretching into marsh.

As stated in Section 1.3.1, numerous primary water sources run near, or through the study area including the Sydenham River which runs through the central portion of the study area, and the Thames River which runs east to west approximately 340 metres south of the eastern portion of the study area. Additionally, numerous tributaries of the Sydenham and Thames Rivers, creeks such as Haggerty Creek, Long Creek, and Newbiggen Creek, as well as ephemeral drainages are identified nearby or crossing through the study area. Ancient and/or relic tributaries of other primary water sources may have existed but are not identifiable today and are not indicated on historic mapping. Further examination of the study area's natural environment identified soil conditions suitable for Indigenous and Euro-Canadian agriculture and areas of elevated topography.

An examination of the *Ontario Archaeological Sites Database* has shown that there are 93 registered Indigenous archaeological sites (or components of multi-period sites) within one kilometre of the broad

Stage 1 study area and four registered Indigenous archaeological sites are within 50 metres of the study area. Additionally, early township plans identify an Indigenous presence around the study area based on mapping notations like “Indian Clearing”, “Indian Village”, and dashed lines representing former Indigenous trails.

For Euro-Canadian sites, archaeological potential can be extended to areas of early Euro-Canadian settlement, including places of military or pioneer settlements; early transportation routes; and properties listed on the municipal register or designated under the *Ontario Heritage Act* (Government of Ontario 1990b) or property that local histories or informants have identified with possible historical events, activities or occupations. To determine the need for a Cultural Heritage Assessment Report (CHAR), the Ministry of Heritage, Sport, Tourism, and Culture Industries (MHSTCI) *Criteria for Evaluation Potential for Built Heritage Resources and Cultural Heritage Landscapes* checklist (the checklist) was completed in March 2020. Preparation of the checklist included a desktop survey and consultation with relevant agencies and municipalities including the Ontario Heritage Trust, MHSTCI, Township of Dawn-Euphemia, Municipality of Southwest Middlesex, Municipality of Strathroy-Caradoc, and Municipality of Middlesex Centre. The results of the consultations and desktop survey identified that the study area contained historical cemeteries, contained historical structures of more than 40 years old, 19th century churches, railways corridors, and hamlets, and that the study area was within the Thames River (Canadian Heritage River) watershed (MHSTCI 2020).

Historical mapping demonstrates that the study area follows the early road structure, and that numerous farmsteads, historical railways, early residential structures, churches, and industrial structures are adjacent to or within the study area. Much of the established road and agricultural settlement from the early 19th century is still visible today. The Stage 1 property inspection also identified two historical cemeteries within, or adjacent to the study area. There are 12 registered Euro-Canadian archaeological sites (or components of multi-period sites) within one kilometre of the study area and one registered Euro-Canadian site within 50 metres of the study area.

Considering these factors, the study area retains potential for the identification of Indigenous and Euro-Canadian archaeological resources. However, as noted above, extensive and deep land alteration can eradicate archaeological potential. Large portions of the study area, approximately 37.00%, have been subject to extensive land disturbance. These areas include most of the municipal road ROWs which have been subject to modern disturbance such as the existing paved and gravel roads, paved and gravel shoulders, engineered foreslope and backslope for existing roads, ditching, gravel and paved driveways/laneways, buried utilities and municipal infrastructure (e.g., sewers, pipelines, etc.), as well as disturbance from existing commercial and residential frontages. These portions of the study area retain low to no potential for archaeological resources.

The Stage 1 property inspection has determined that a large portion of the study area retains archaeological potential. These areas include agricultural fields, forests, scrubland, and manicured lawns not visually identified to be previously disturbed. Thus, these areas, comprising approximately 61.13% of the study area, are considered to retain archaeological potential. Similarly, other areas of likely modern disturbance (e.g., railways, residential buildings, commercial complexes, etc.) were not specifically examined during the property inspection and may still retain archaeological potential. As such, these

areas have been included as part of the determination that the majority of the study area exhibits potential for the identification and recovery of archaeological resources.

Low to no archaeological potential has also been determined for low and permanently wet areas which comprise approximately 0.11% of the study area.

Small portions of the study area (approximately 1.76%) have been subject to previous archaeological assessment and retain no further cultural heritage value or interest, with the exception of the portion of the study area within the Scott Wales site (AfHi-133). The areas subject to previous archaeological assessment with no identified cultural resources retain no further archaeological potential. However, the study area that overlaps with the Scott Wales site (AfHi-133), requires Stage 3 archaeological assessment if development or construction impacts cannot avoid the site or its avoidance and protection buffers.

In summary, while the entire study area was determined to retain potential for the identification of Indigenous and Euro-Canadian archaeological resources based on historical documentation, background research, and natural topographic landforms, the Stage 1 property inspection has determined that portions of the study area, approximately 61.13%, retains potential for the identification and documentation of archaeological resources. As noted above, numerous farm complexes, residences, commercial structures, and other existing features of potential disturbance (e.g., existing roads, railways, residential and commercial complexes, and buried utilities and infrastructure) are located throughout the study area; however, they were not specifically examined as part of a Stage 1 property inspection due to portions of these features being located outside of the municipal road ROW, and may still retain archaeological potential. Further, areas of steep slope may exist within the study area but were not specifically examined as part of a Stage 1 property inspection. As such, these areas have been included as part of the determination that the study area exhibits potential for the identification and recovery of archaeological resources.

However, the remaining portion of the study area, approximately 38.87%, was determined to retain low to no archaeological potential as it includes: extensive land disturbance, low and permanently wet areas, previously assessed areas, and existing Enbridge infrastructure, such as metering stations, pipelines, pumping stations, and storage facilities, are also located within the study area.

The final route and construction easement, including any temporary land use, for the Project will be determined at a later date. A refinement of archaeological potential specific to the Project's anticipated impacts will be included as part of the Stage 2 archaeological assessment for the Project. The results of the Stage 1 assessment are illustrated on Figures 17-0 to 17-70.

4.0 RECOMMENDATIONS

The Stage 1 archaeological assessment, involving background research and a property inspection, resulted in the determination that much of the study area, approximately 61.13%, retains potential for the identification and documentation of archaeological resources. Thus, in accordance with Section 1.3 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is required for any portion of the Project's anticipated construction which impacts an area of archaeological potential (Figures 17-0 to 17-70).**

The objective of the Stage 2 archaeological assessment will be to document archaeological resources within the study area and to determine whether these archaeological resources require further assessment. The Stage 2 archaeological assessment of the study area may consist of a combination of pedestrian survey and test pit survey. The pedestrian survey of agricultural fields and accessible lands will entail the systematic walking of open ploughed fields at five metre intervals as outlined in Section 2.1.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). Areas to be subjected to test pit survey will be assessed according to Section 2.1.2 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011). If the archaeological field team judges any lands to be low and wet, steeply sloped, or disturbed during the course of the Stage 2 field work, those areas will not require physical survey, but will be photographically documented instead in accordance with Section 2.1 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011).

The remaining portion of the study area, approximately 38.87%, retains low to no archaeological potential as it includes: extensive land disturbance, low and permanently wet areas, and previously assessed areas. In accordance with Section 1.3.2 and Section 7.7.4 of the MHSTCI's 2011 *Standards and Guidelines for Consultant Archaeologists* (Government of Ontario 2011), **Stage 2 archaeological assessment is not required for any portion of the Project's anticipated construction which impacts an area of low to no archaeological potential (Figures 17-0 to 17-70).**

Additionally, a small portion of the study area overlaps with the Scott Wales site (AfHi-133) and its associated avoidance and protection buffers (see Stantec 2019c). Thus, in accordance with the recommendations of Stantec (2019c), **Stage 3 archaeological assessment is required for any portion of the Project's anticipated construction which impacts the Scott Wales site (AfHi-133) or its associated avoidance and protection buffers.** Full and detailed further work recommendations related to the Scott Wales site (AfHi-133) are provided in Stantec (2019c).

The MHSTCI is asked to review the results presented and to accept this report into the *Ontario Public Register of Archaeological Reports*.

5.0 ADVICE ON COMPLIANCE WITH LEGISLATION

This report is submitted to the Minister of Heritage, Sport, Tourism and Culture Industries as a condition of licensing in accordance with Part VI of the *Ontario Heritage Act*, R.S.O. 1990, c O.18 (Government of Ontario 1990b). The report is reviewed to ensure that it complies with the standards and guidelines that are issued by the Minister, and that the archaeological fieldwork and report recommendations ensure the conservation, protection and preservation of the cultural heritage of Ontario. When all matters relating to archaeological sites within the study area of a development proposal have been addressed to the satisfaction of the MHSTCI, 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* (Government of Ontario 1990b) 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 fieldwork 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 Archaeological Reports* referred to in Section 65.1 of the *Ontario Heritage Act* (Government of Ontario 1990b)

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* (Government of Ontario 1990b) 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 Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990b)

The *Funeral, Burial and Cremation Services Act,* 2002, S.O. 2002, c.33 (Government of Ontario 2002), 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 Government and Consumer Services is also immediately notified.

Archaeological sites recommended for further archaeological fieldwork remain subject to Section 48(1) of the *Ontario Heritage Act* (Government of Ontario 1990b) and may not be altered, or have artifacts removed, except by a person holding an archaeological license.

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7.0 IMAGES

7.1 PHOTOGRAPHS

Photo 1: Agricultural field and municipal road ROW, facing east

Photo 2: Agricultural field and municipal road ROW, facing west

Photo 3: Manicured lawn and agricultural field, facing east

Photo 4: Agricultural field, facing southwest

Images
July 10, 2020

Photo 5: Scrubland near water source, facing southeast

Photo 6: Scrubland near water source, facing east-northeast

Photo 7: Agricultural field near water source, facing west-northwest

Photo 8: Forested land adjacent to pipeline ROW, facing east-northeast

Images
July 10, 2020

Photo 9: Agricultural field and municipal road ROW, facing northeast

Photo 10: Agricultural field, facing east-northeast

Photo 11: Manicured lawn, facing northeast

Photo 12: Mount Carmel Cemetery, facing west

Images
July 10, 2020

Photo 13: Hess Cemetery, facing southwest

Photo 14: Manicured lawn, facing east-northeast

Photo 15: Manicured lawn, agricultural field, and municipal road ROW, facing east-northeast

Photo: 16: Agricultural field, facing west-southwest

Images
July 10, 2020

Photo 17: Agricultural field and municipal road ROW, facing southeast

Photo 18: Agricultural field, facing west-southwest

Photo 19: Previously disturbed, paved road, facing west

Photo 20: Previously disturbed ditching and underground infrastructure, facing west

Images
July 10, 2020

Photo 21: Previously disturbed, gravel road, facing north

Photo 22: Previously disturbed, ROW and ditching, facing west

Photo 23: Previously disturbed, road and ROW, facing east

Photo 24: Previously disturbed, rail line, facing northeast

Images
July 10, 2020

Photo 25: Previously disturbed, gravel road, facing northeast

Photo 26: Previously disturbed, rail line, facing northwest

Photo 27: Previously disturbed, gravel road, facing northeast

Photo 28: Previously disturbed, facing southeast

Images
July 10, 2020

Photo 29: Previously disturbed, pump station, facing south

Photo 30: Previously disturbed, paved road and commercial frontage, facing southeast

Photo 31: Previously disturbed, ditching and underground infrastructure, facing northeast

Photo 32: Previously disturbed, Highway 402 and ROW, facing southwest

Images
July 10, 2020

Photo 33: Previously disturbed, paved road and engineered foreslope, facing northwest

Photo 34: Previously disturbed, paved road and ditching, facing southeast

Photo 35: Low and permanently wet, facing south

Photo 36: Low and permanently wet, facing southeast

Images
July 10, 2020

Photo 37: Low and permanently wet, facing southeast

Photo 38: Low and permanently wet area, facing southeast

Photo 39: Low and permanently wet area, facing east-southeast

Photo 40: Low and permanently wet area, facing east-southeast

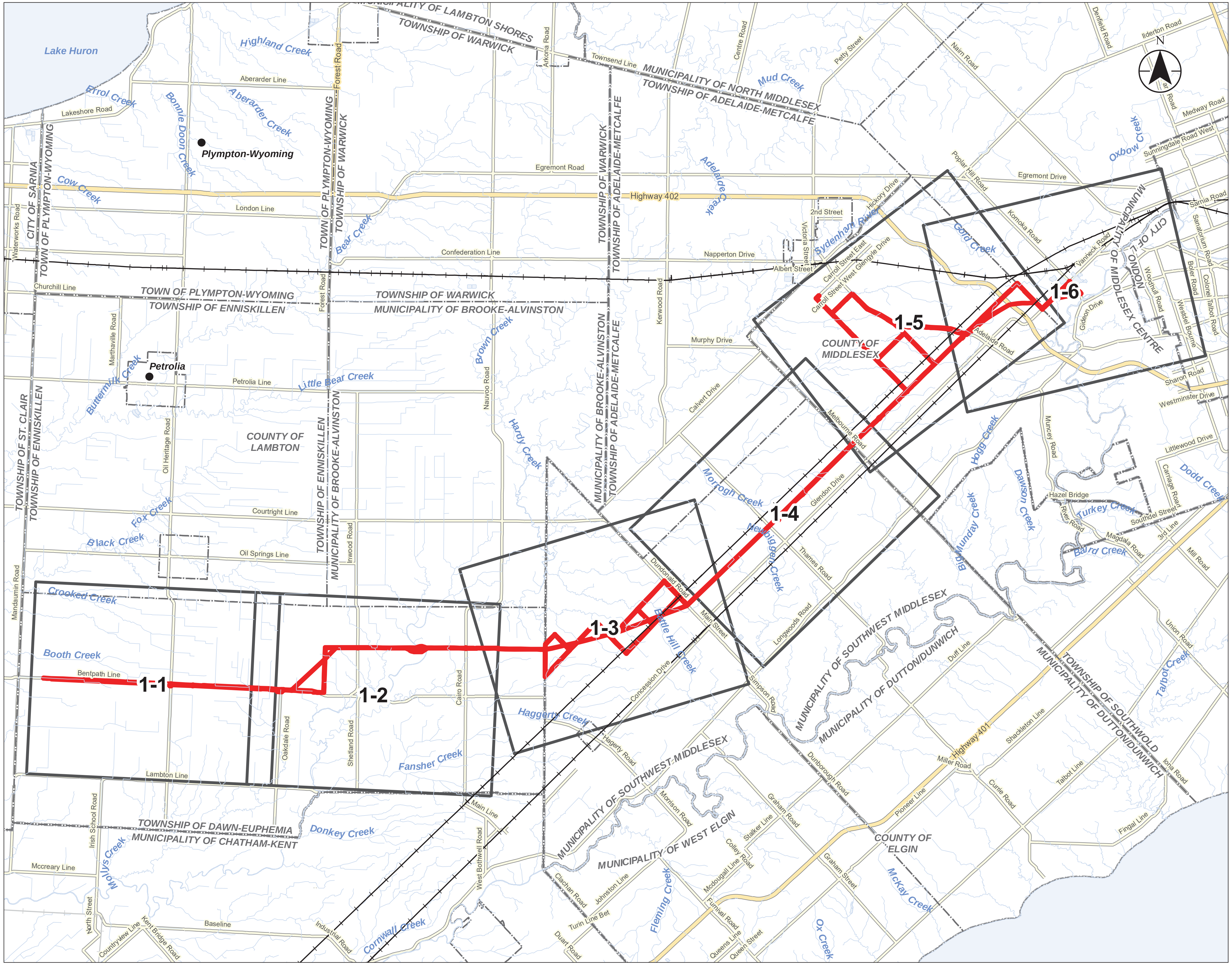
Images
July 10, 2020

Photo 41: Low and permanently wet area, facing northeast

Photo 42: Low and permanently wet area, facing west

8.0 MAPS

General maps of the study area will follow on succeeding pages. Maps identifying exact archaeological site locations do not form part of this public report; they may be found in the Supplementary Documentation.



Legend

- Study Area
- Railway - Operational
- Railway - Discontinued
- Expressway / Highway
- Major Road
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Waterbody

0 4.5 9 Kilometers

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Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
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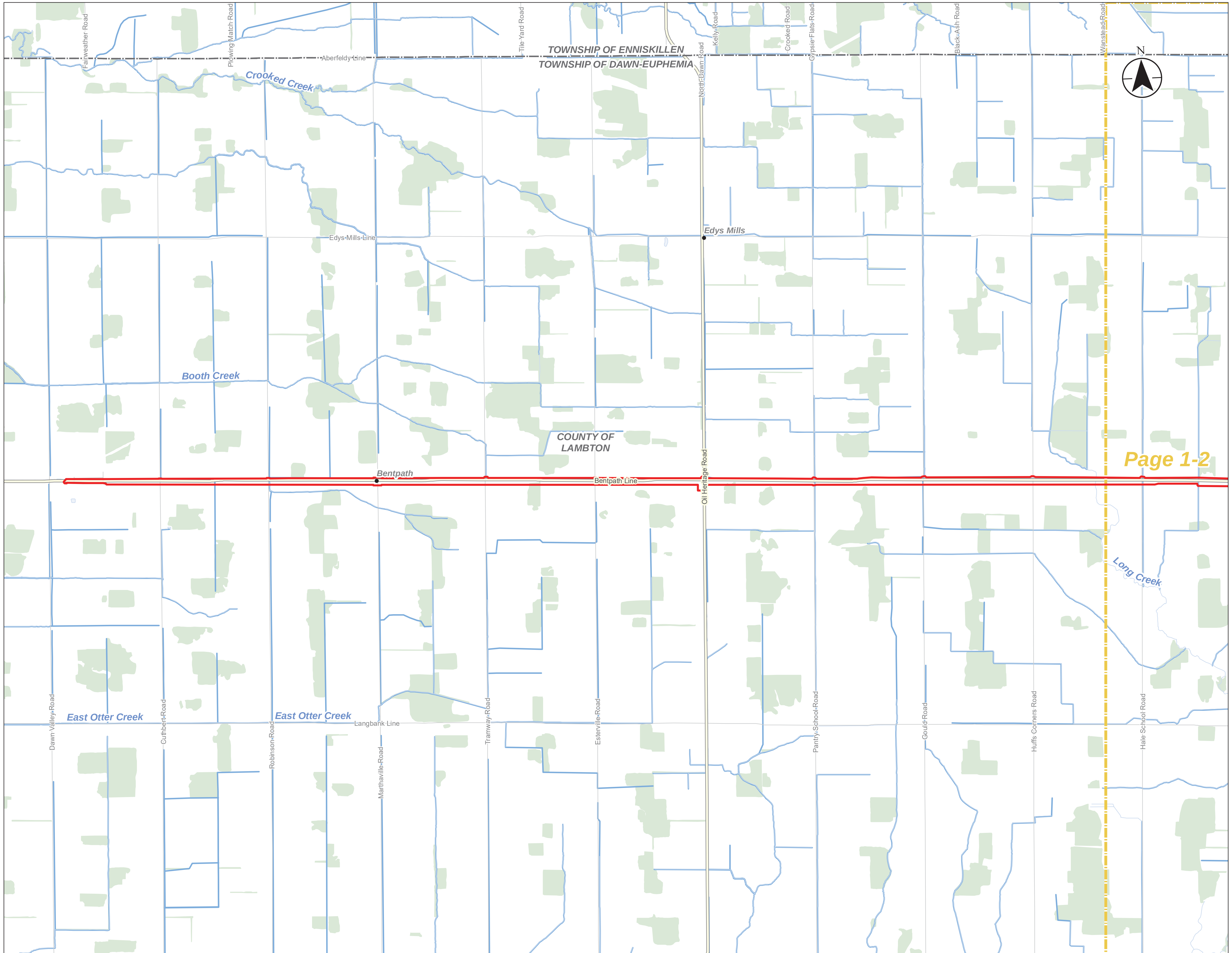
Project Location 160951170
Counties of Lambton and Middlesex
Prepared by SPE on 2020-07-09
Technical Review by BCC on 2020-07-02

Client/Project
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
1-0

Title
Project Location- Overview



Stantec

Legend

- Study Area
- Constructed Drain
- Major Road
- Minor Road
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody
- Wooded Area

0 1 2 Kilometers

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Notes

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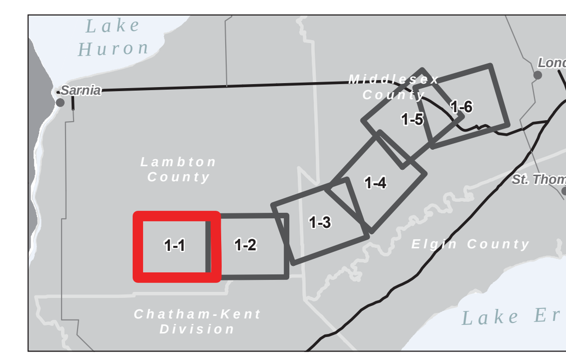


Project Location 160951170

Counties of Lambton and Middlesex

Prepared by SPE on 2020-07-09

Technical Review by BCC on 2020-07-02

Client/Project

ENBRIDGE GAS INC.

LONDON LINES REPLACEMENT PROJECT

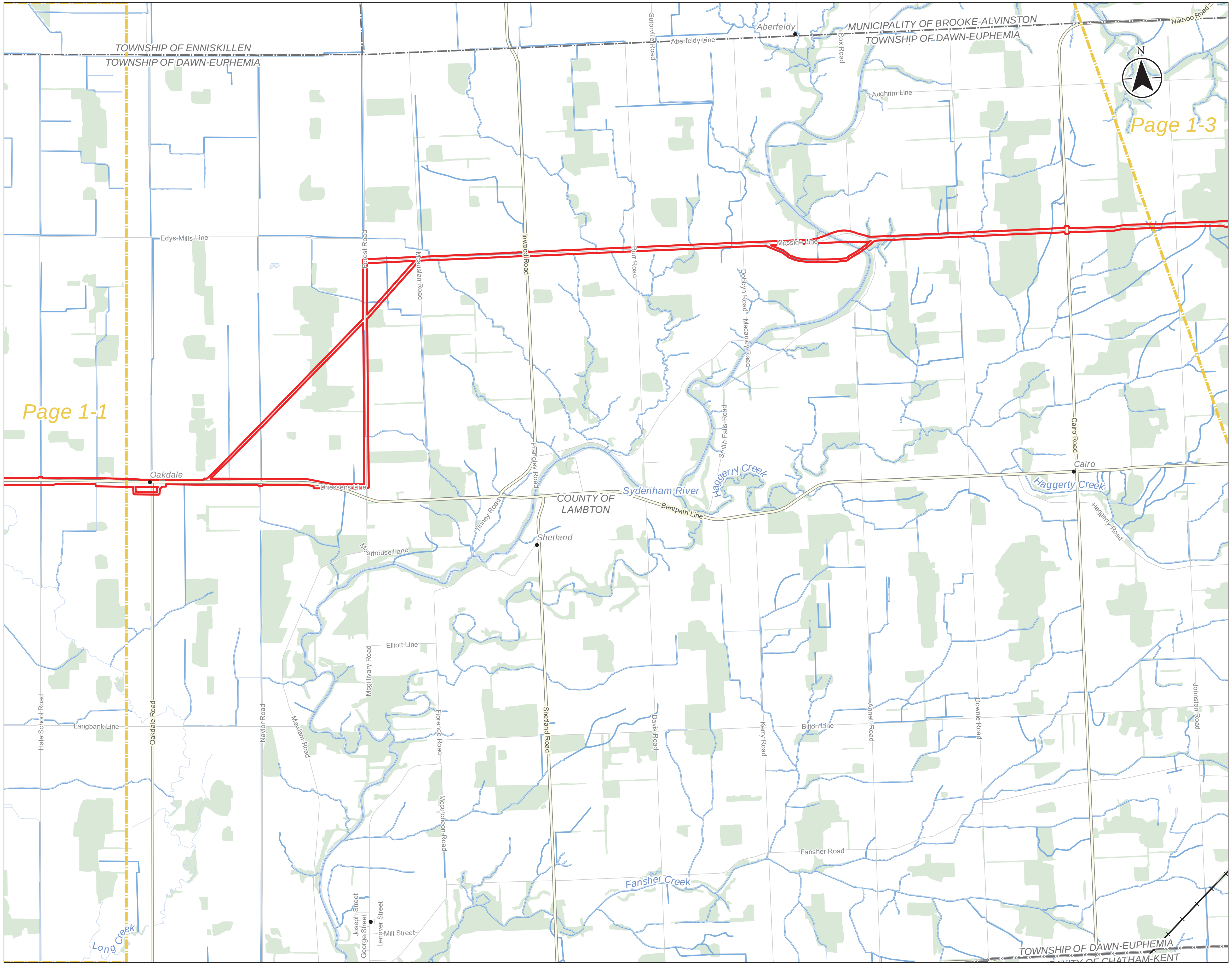
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.

1-1

Title

Project Location Details - Index



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Stantec

Legend

- Study Area
- Constructed Drain
- Major Road
- Minor Road
- Railway - Operational
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody
- Wooded Area

0 1 2 Kilometers
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Notes
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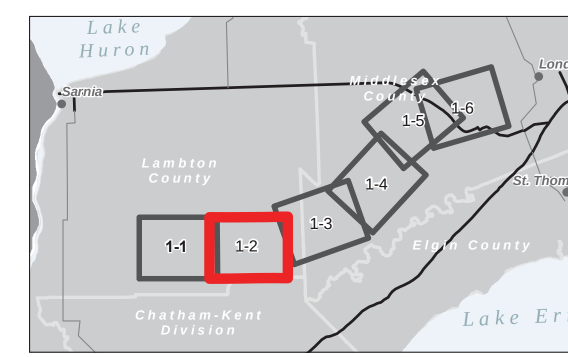


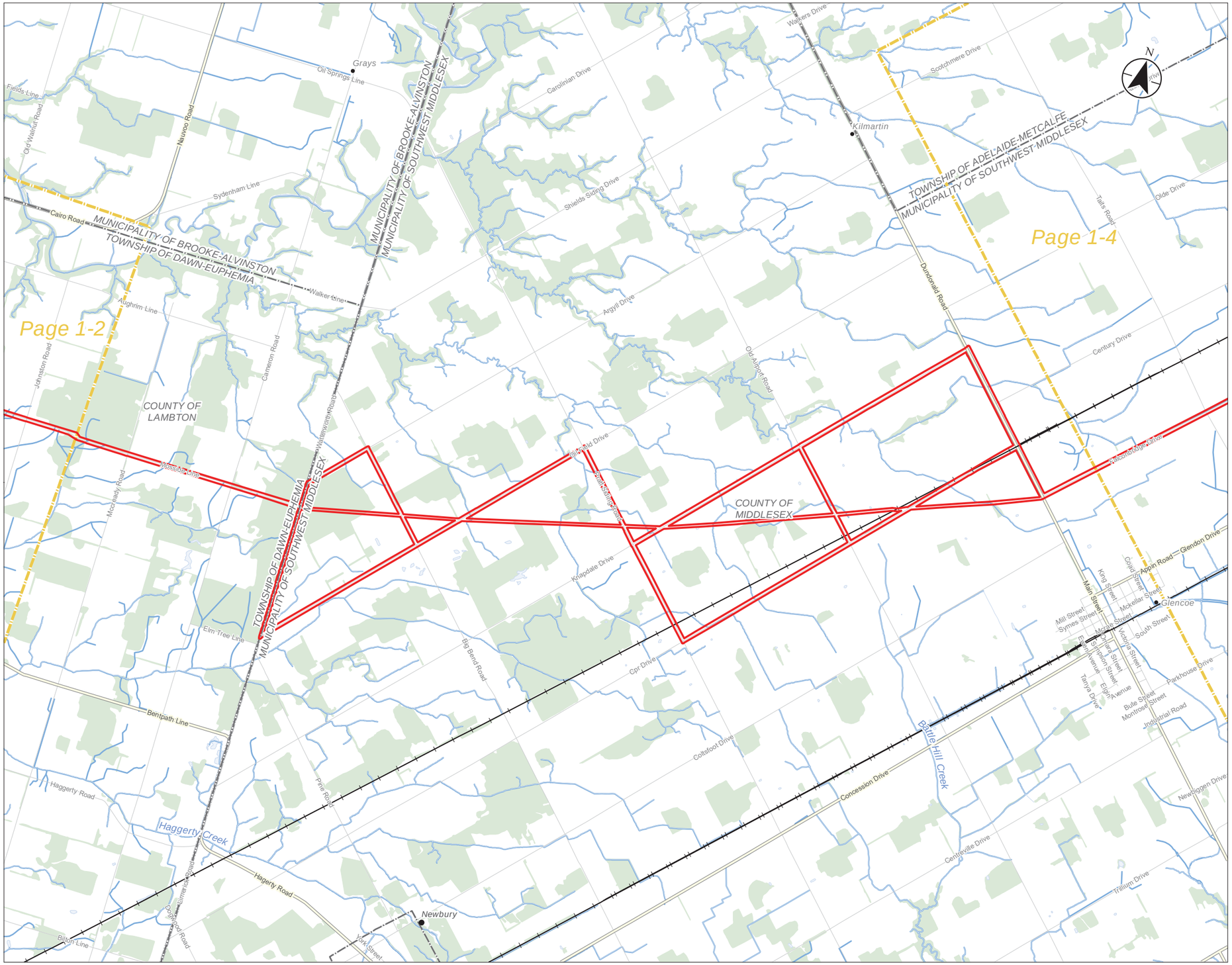
Project Location
Counties of Lambton and Middlesex

160951170
Prepared by SPE on 2020-07-09
Technical Review by BCC on 2020-07-02

Client/Project
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
1-2

Title
Project Location Details - Index



Stantec

Legend

- Study Area
- Constructed Drain
- Major Road
- Minor Road
- Railway - Operational
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody
- Wooded Area

0 1 2 Kilometers

1:50,000 (At original document size of 11x17)

Notes

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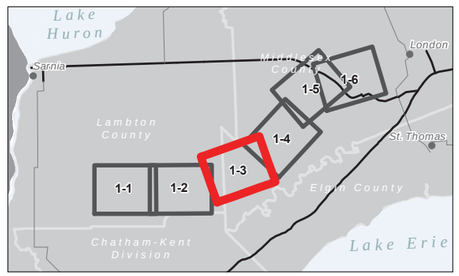


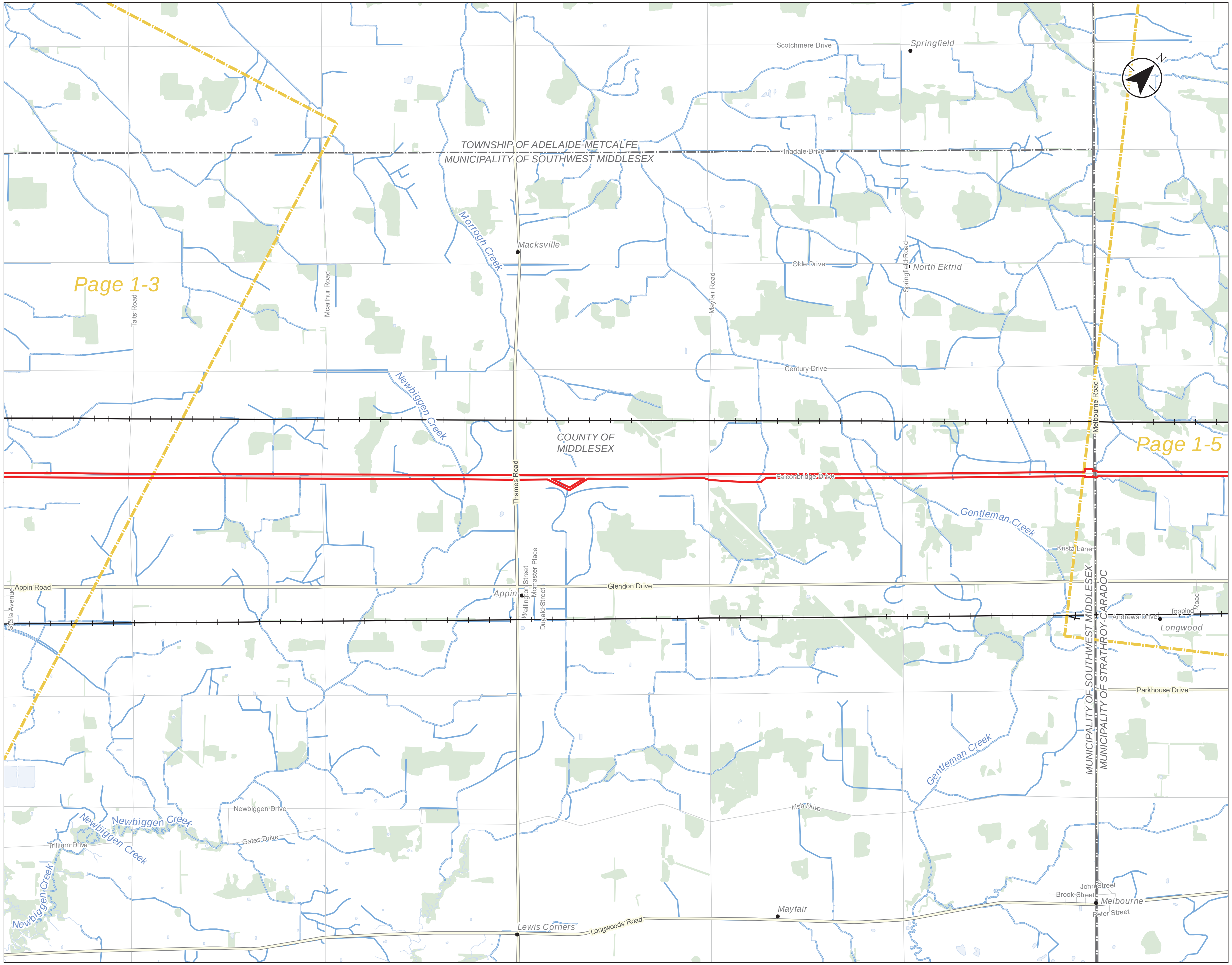
Project Location
Counties of Lambton and Middlesex

160951170
Prepared by SPE on 2020-07-09
Technical Review by BCC on 2020-07-02

Client/Project
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
1-3

Title
Project Location Details - Index



Legend

- Study Area
- Constructed Drain
- Major Road
- Minor Road
- Railway - Operational
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody
- Wooded Area

0 1 2 Kilometers

1:50,000 (At original document size of 11x17)

Notes

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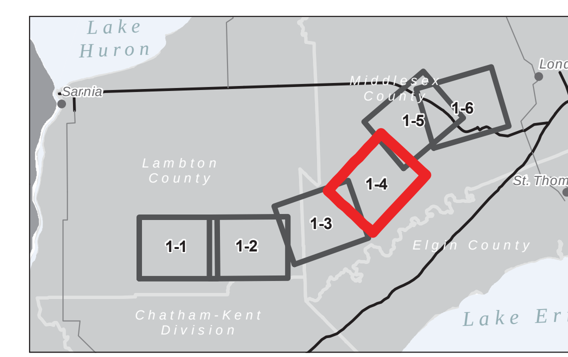

Project Location
Counties of Lambton and Middlesex

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Client/Project
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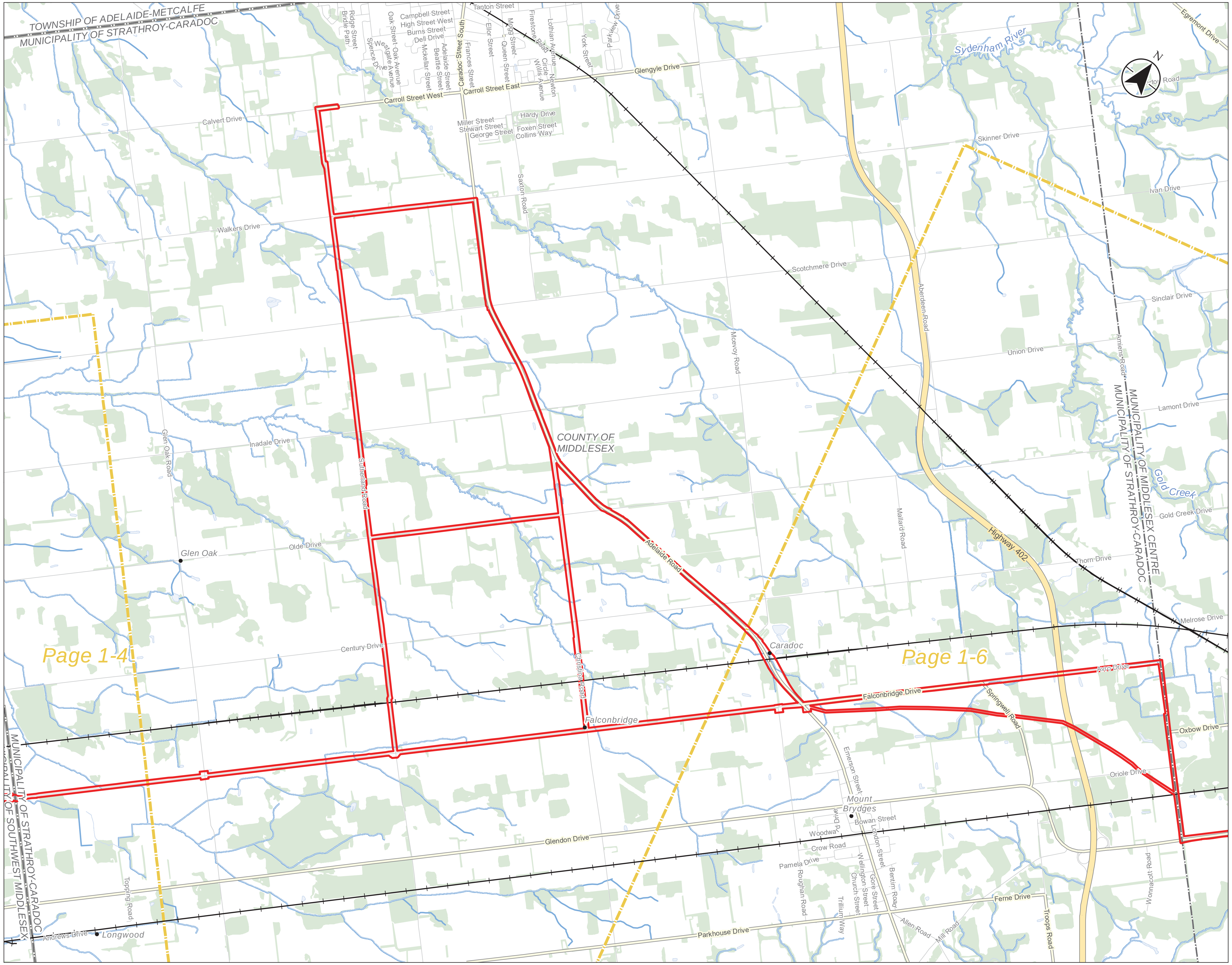
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
1-4

Title
Project Location Details - Index



Legend

- Study Area
- Constructed Drain
- Expressway / Highway
- Major Road
- Minor Road
- Railway - Operational
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody
- Wooded Area

0 1 2 Kilometers
1:50,000 (At original document size of 11x17)

Notes
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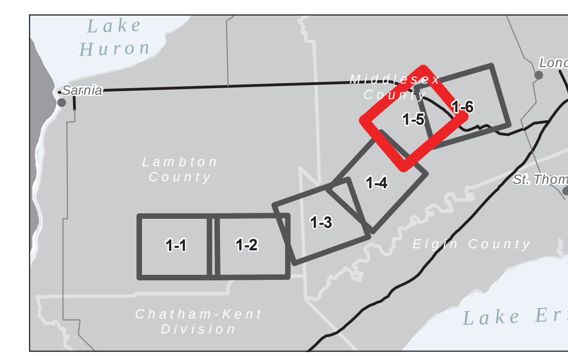

Project Location
Counties of Lambton and Middlesex

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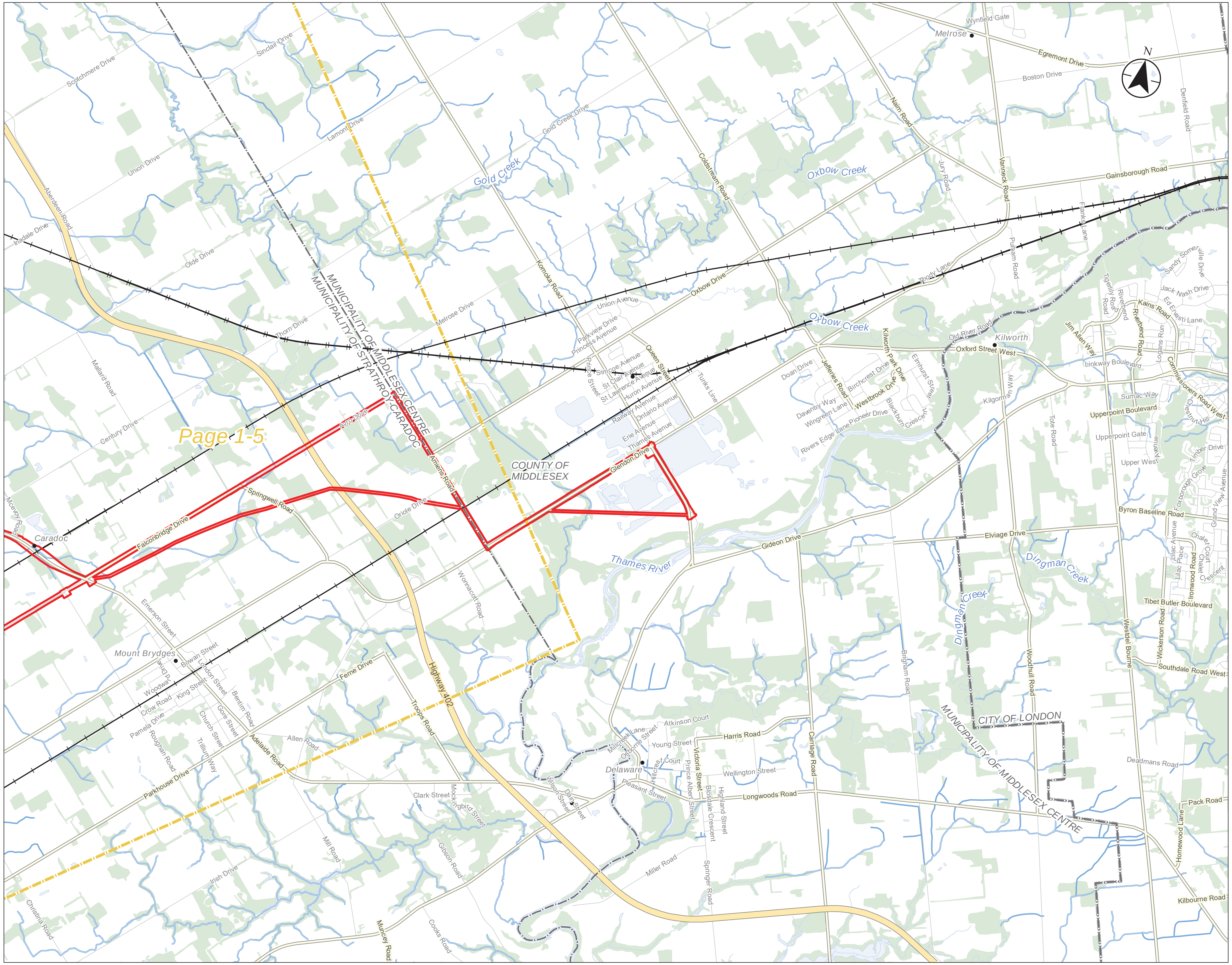
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
1-5

Title
Project Location Details - Index



Stantec

Legend

- Study Area
- Constructed Drain
- Expressway / Highway
- Major Road
- Minor Road
- Railway - Operational
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody
- Wooded Area

0 1 2 Kilometers

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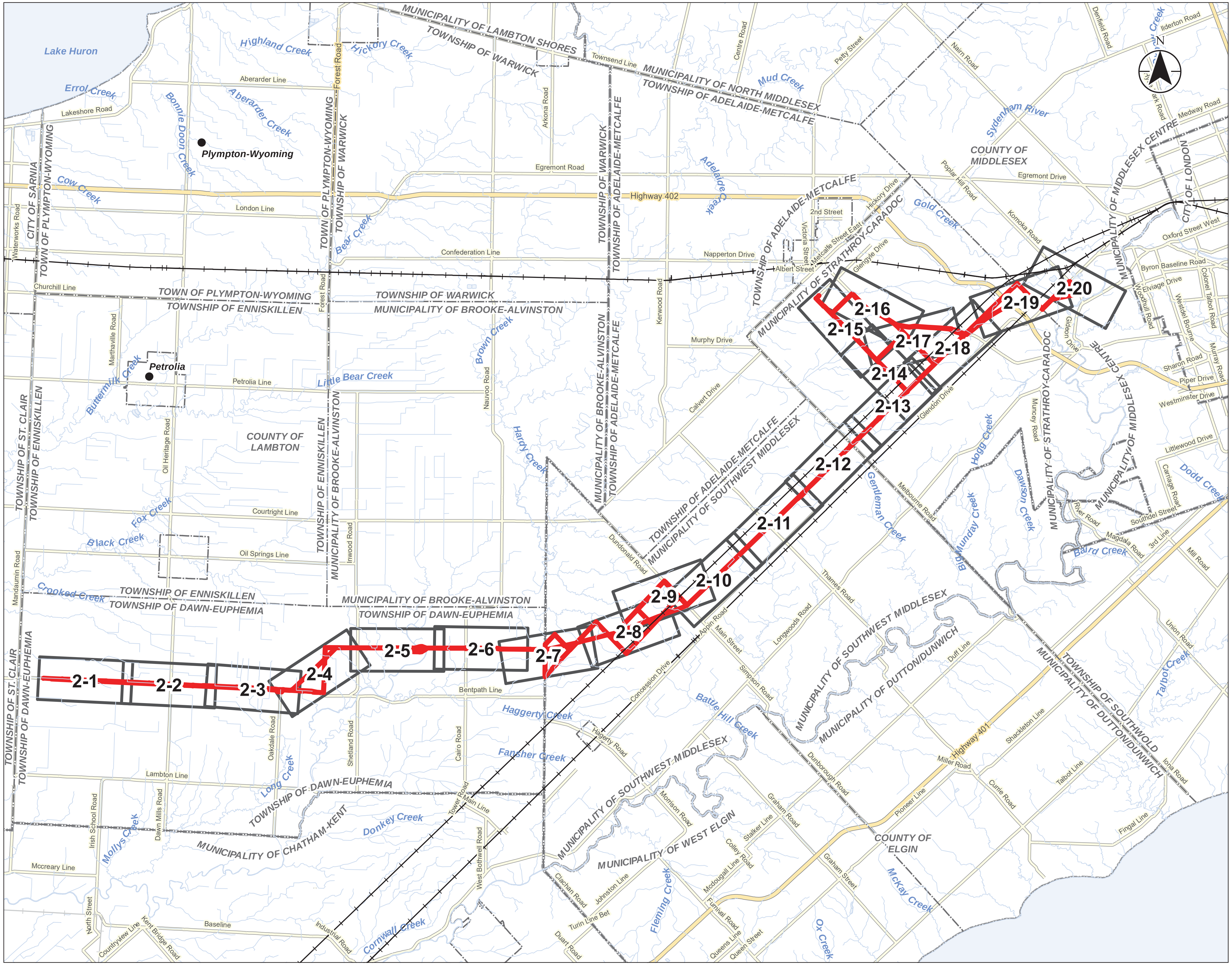
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
1-6

Title
Project Location Details - Index



Stantec

Legend

- Study Area
- Railway - Operational
- Railway - Discontinued
- Expressway / Highway
- Major Road
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Waterbody

0 4.5 9 Kilometers

1:250,000 (At original document size of 11x17)

Notes

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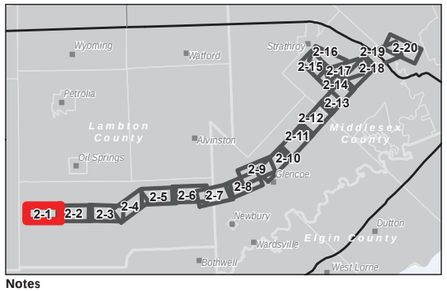
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENT

Figure No.
2-0

Title
Study Area Details - Overview



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Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
Counties of Lambton and Middlesex

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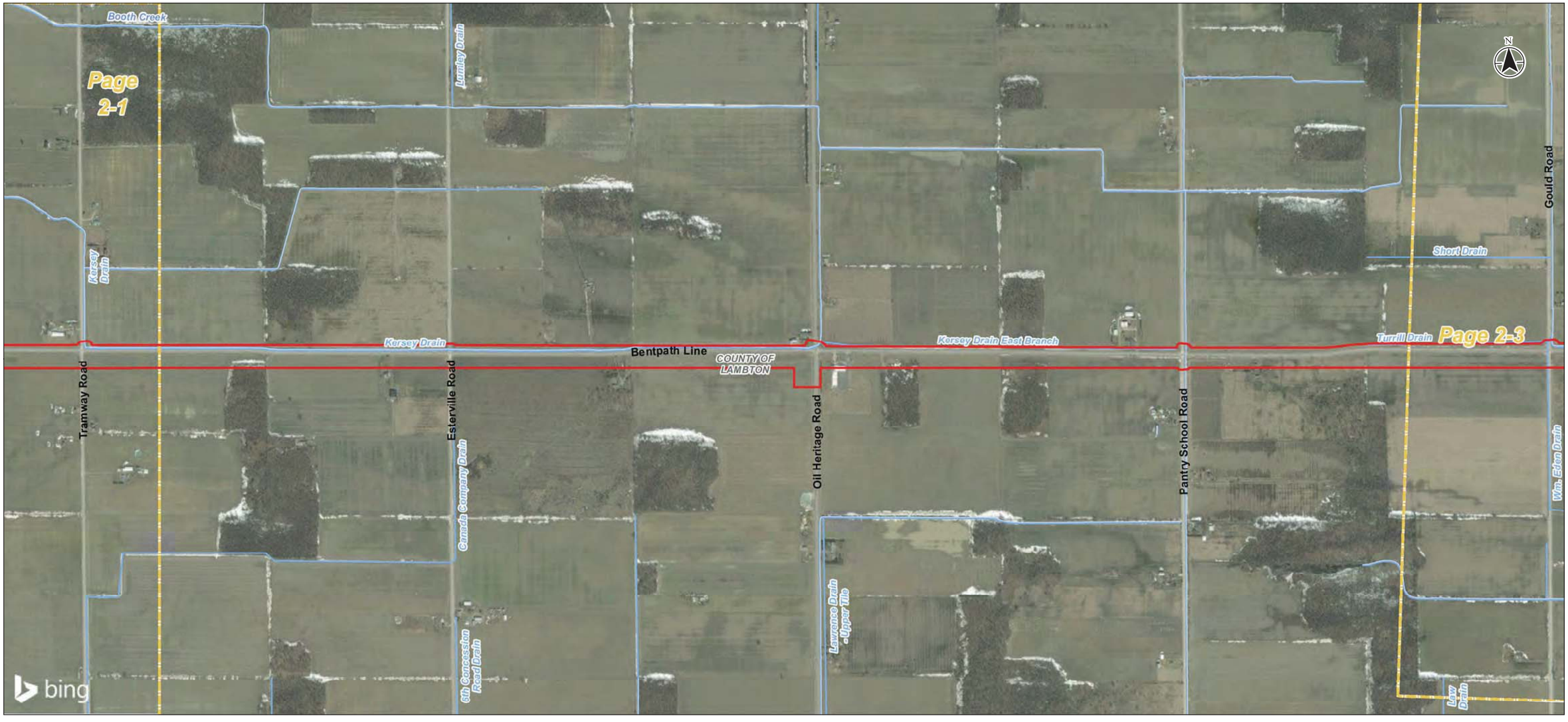
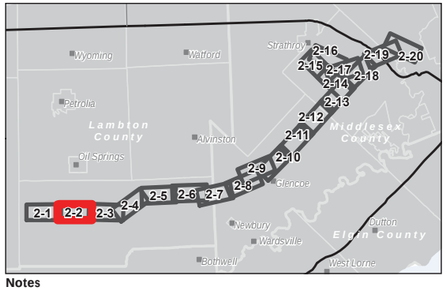
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-1

Title
Study Area Details - Index





Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier

0 300 600 metres

1:15,000 (At original document size of 11x17)

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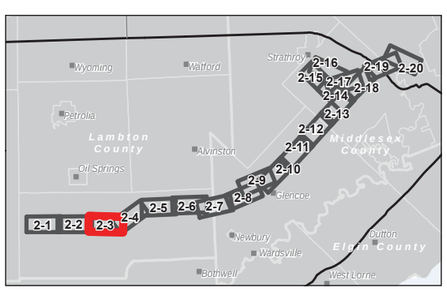
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-2

Title
Study Area Details - Index



Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier

0 300 600 metres

1:15,000 (At original document size of 11x17)

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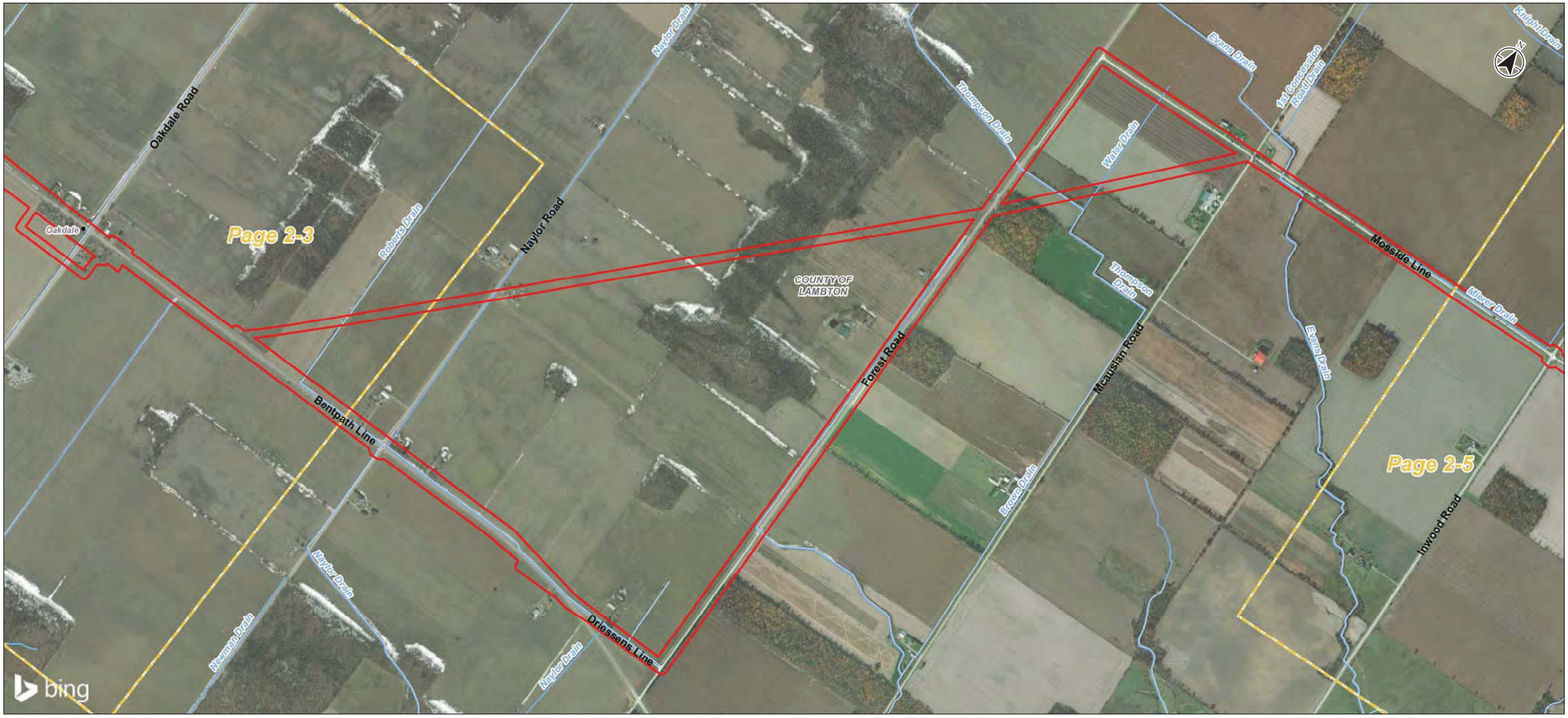
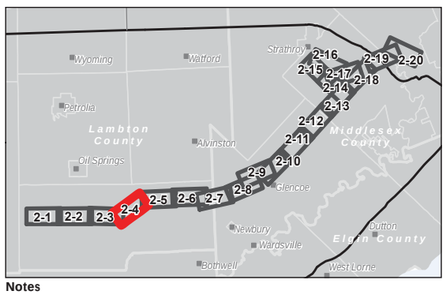
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-3

Title
Study Area Details - Index





Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
Counties of Lambton and Middlesex

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Technical Review by BCC on 2020-07-02

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LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-4

Title
Study Area Details - Index

Notes

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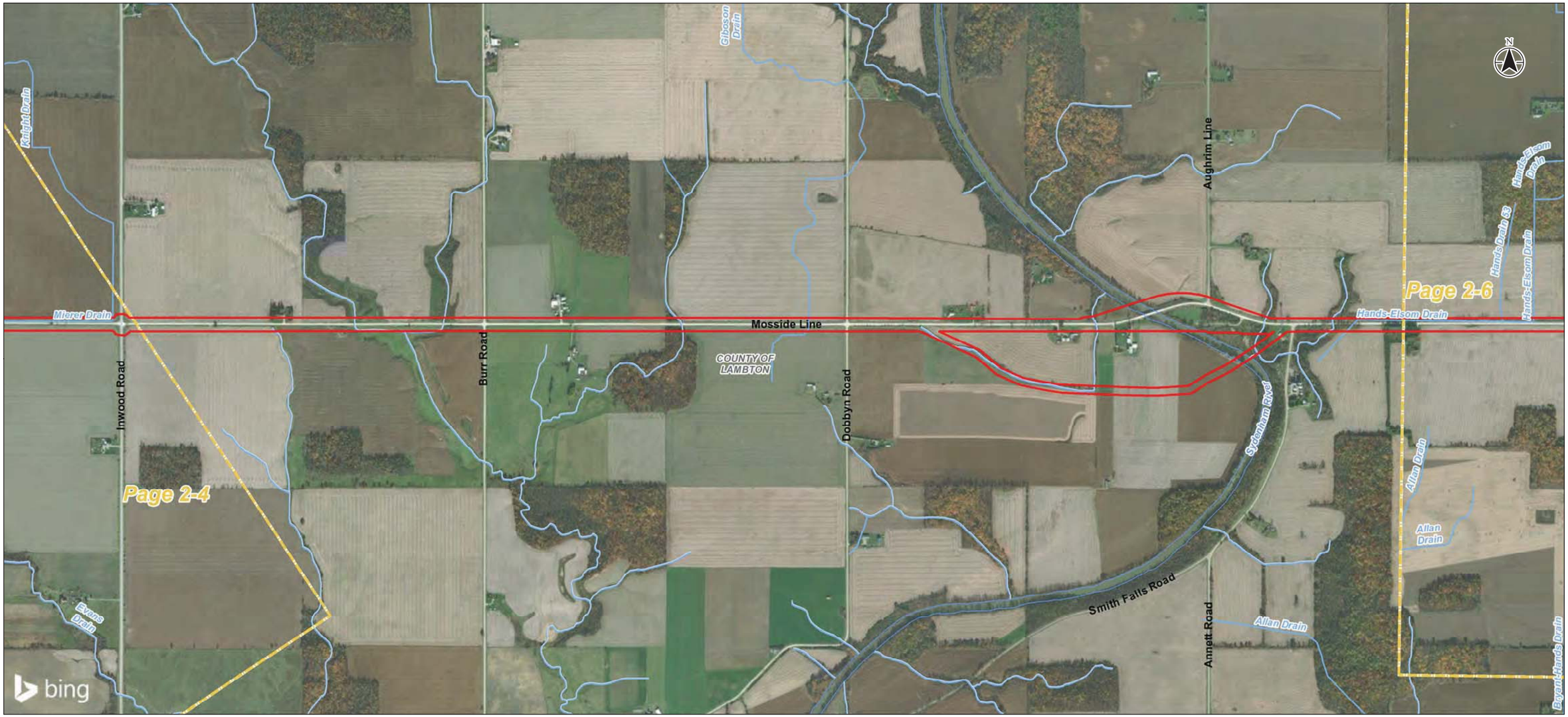

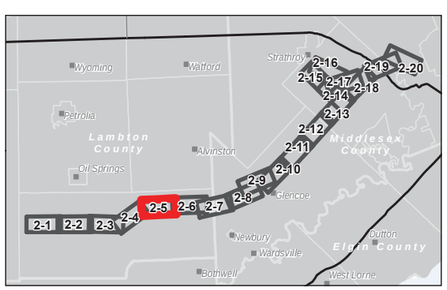

Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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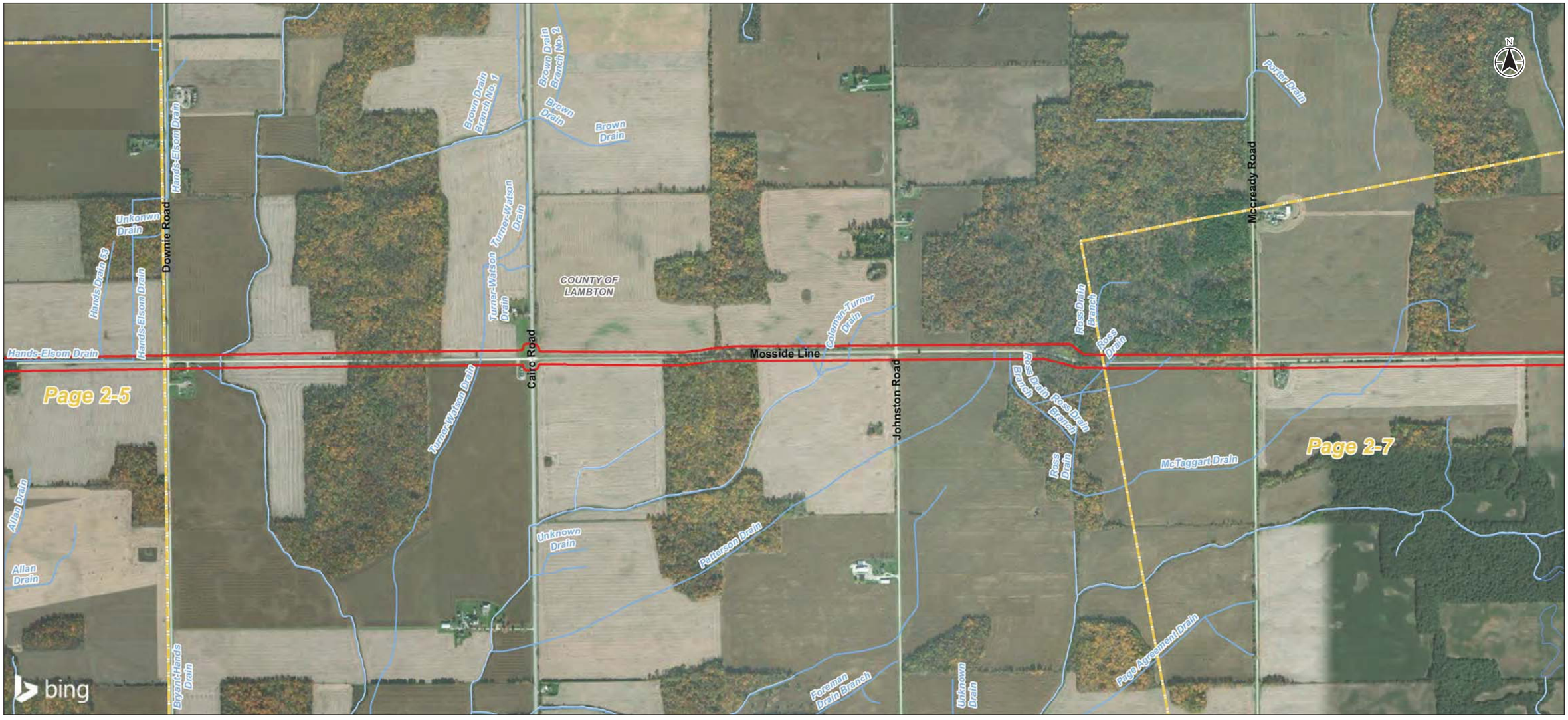
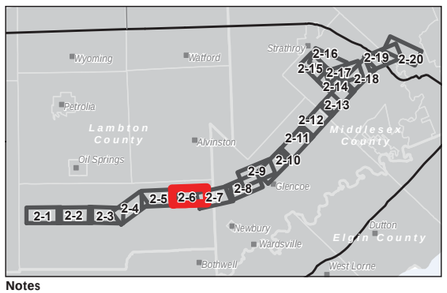
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-5

Title
Study Area Details - Index





Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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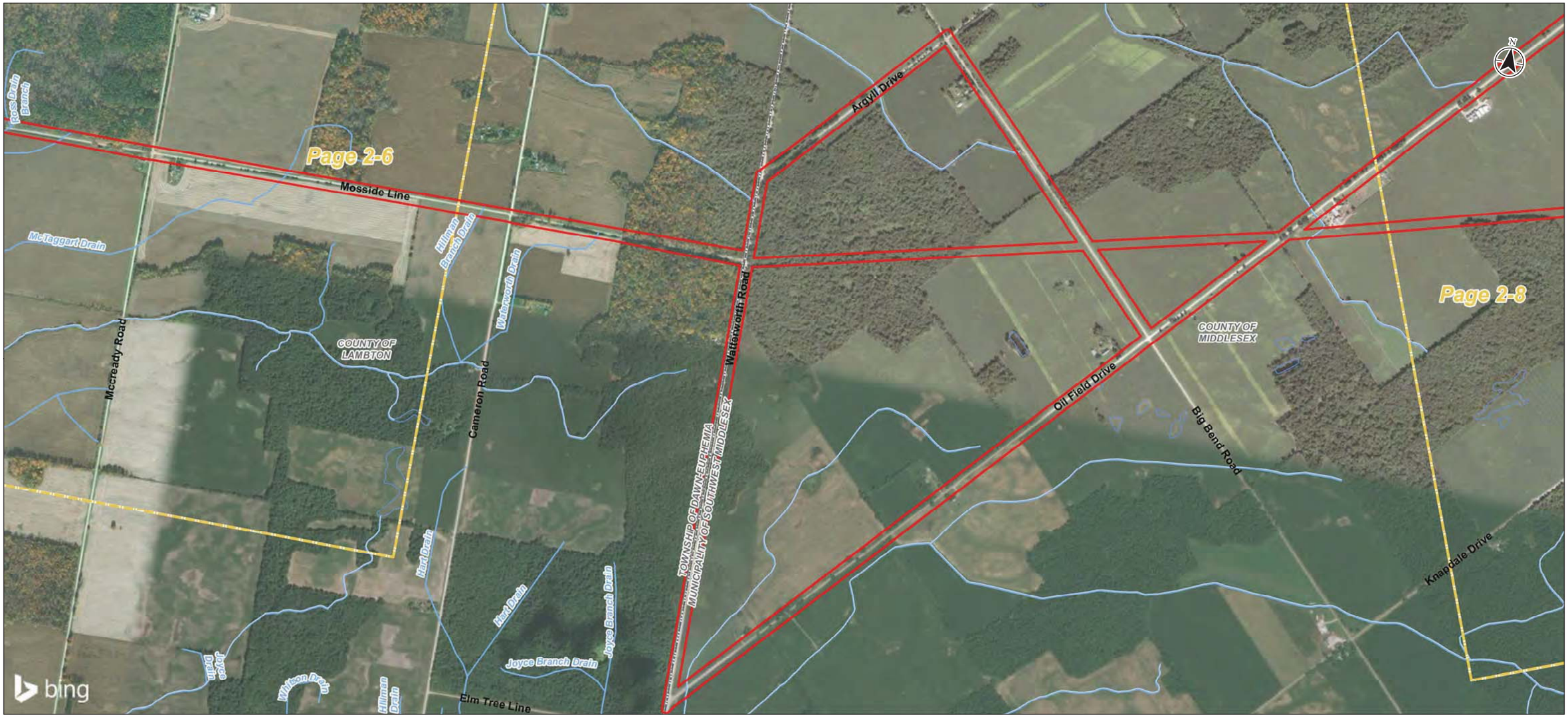
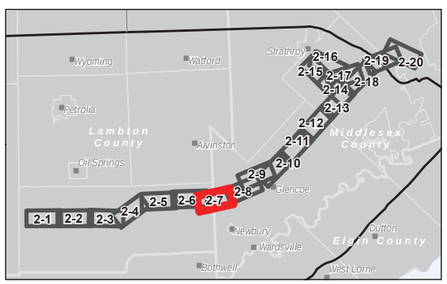
ENBRIDGE GAS INC.
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-6

Title
Study Area Details - Index





Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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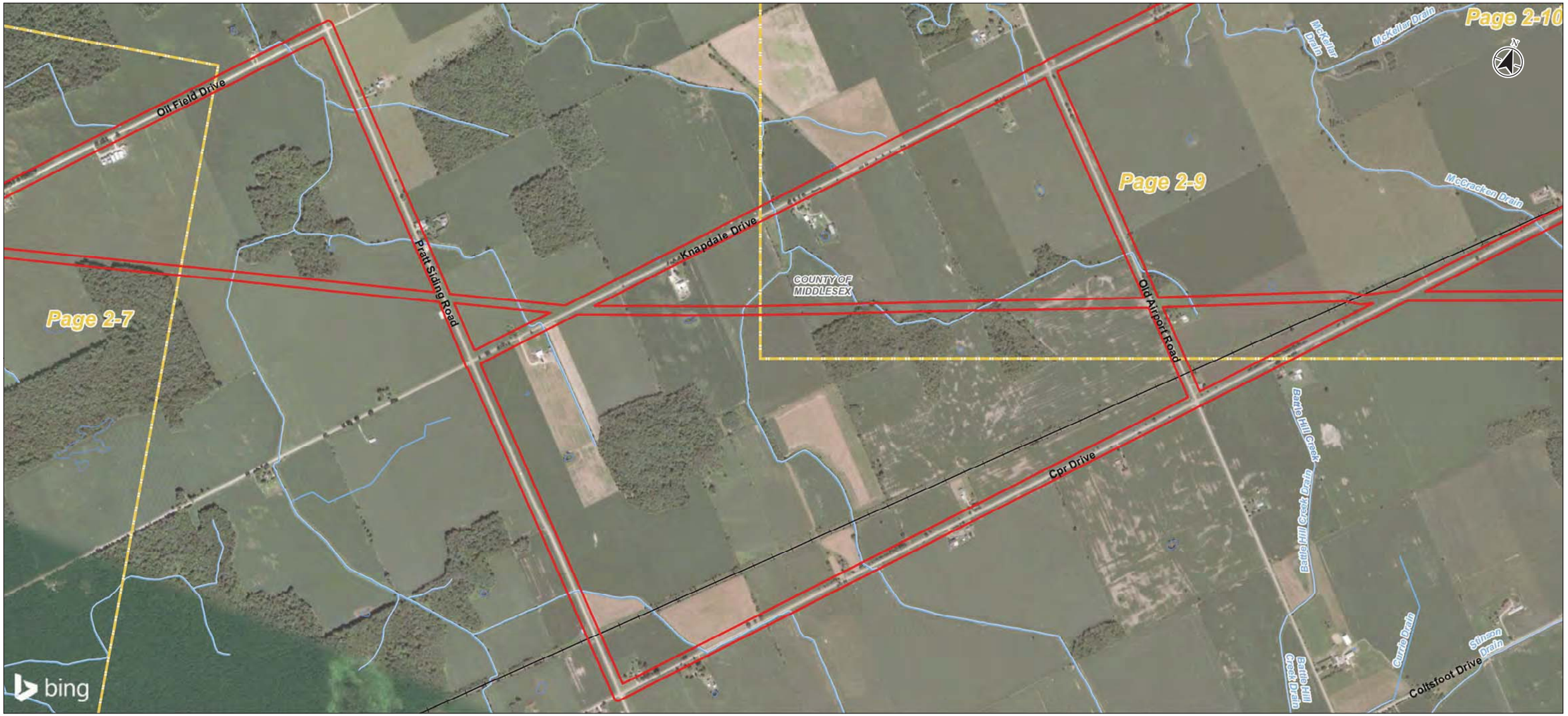
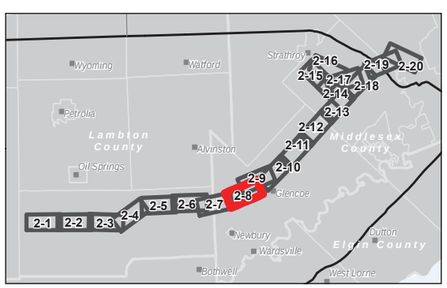
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-7

Title
Study Area Details - Index





Legend

- Study Area
- **Railways_lio**
- **STATUS**
- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-8

Title
Study Area Details - Index

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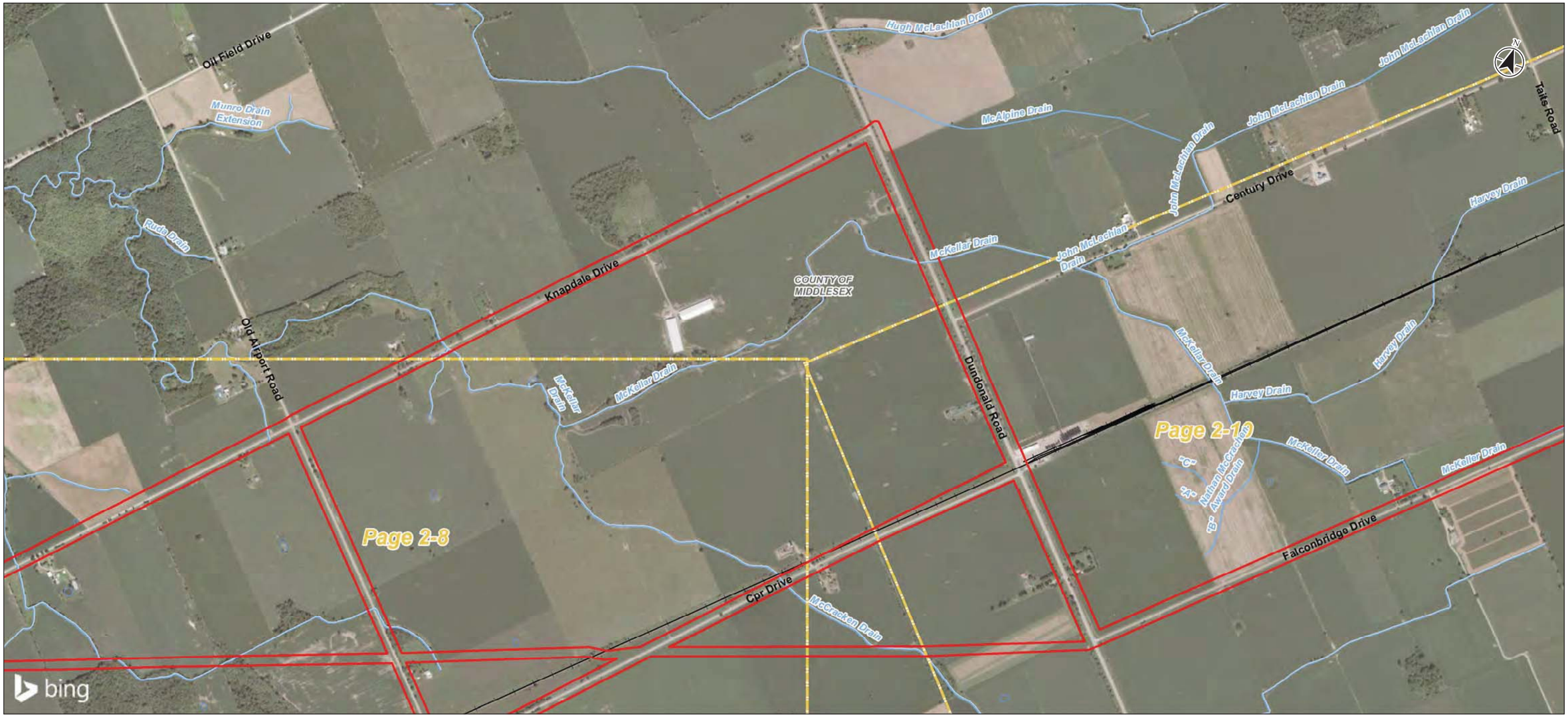

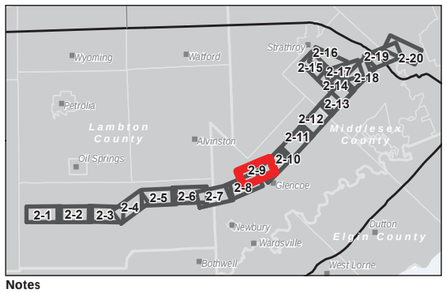

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Legend

- Study Area
- **Railways_lio**
- **STATUS**
- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
Counties of Lambton and Middlesex

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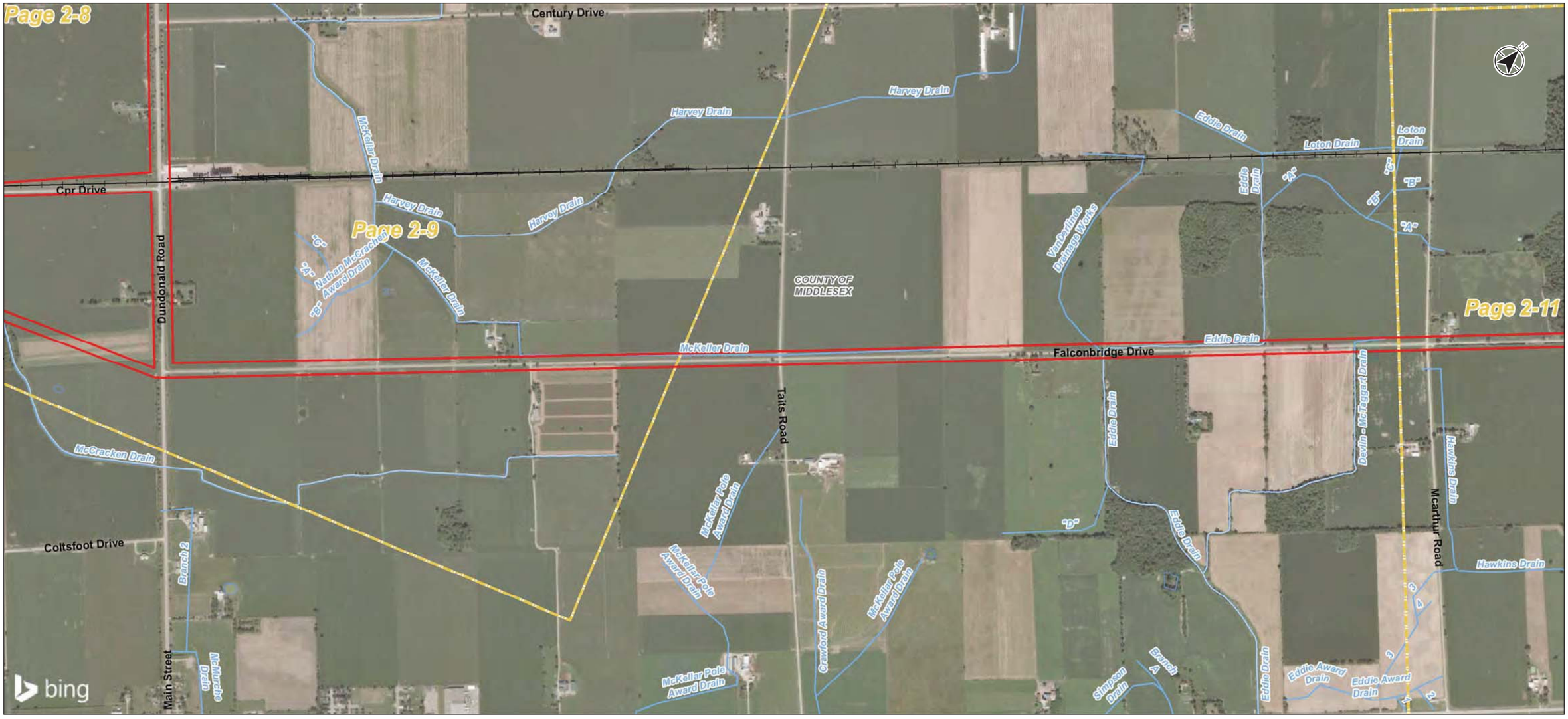
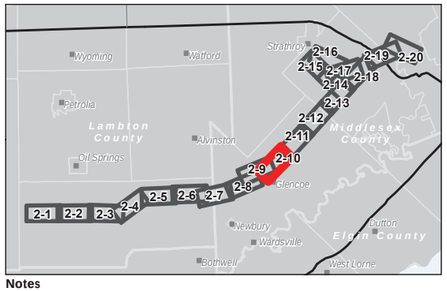
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-9

Title
Study Area Details - Index





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Legend

- Study Area
- **Railways_lio**
- **STATUS**
- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
Counties of Lambton and Middlesex

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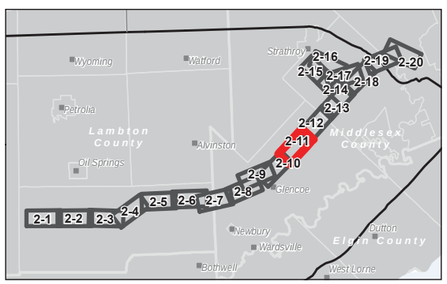
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-10

Title
Study Area Details - Index



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Legend

- Study Area
- **Railways_lio**
- **STATUS**
- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
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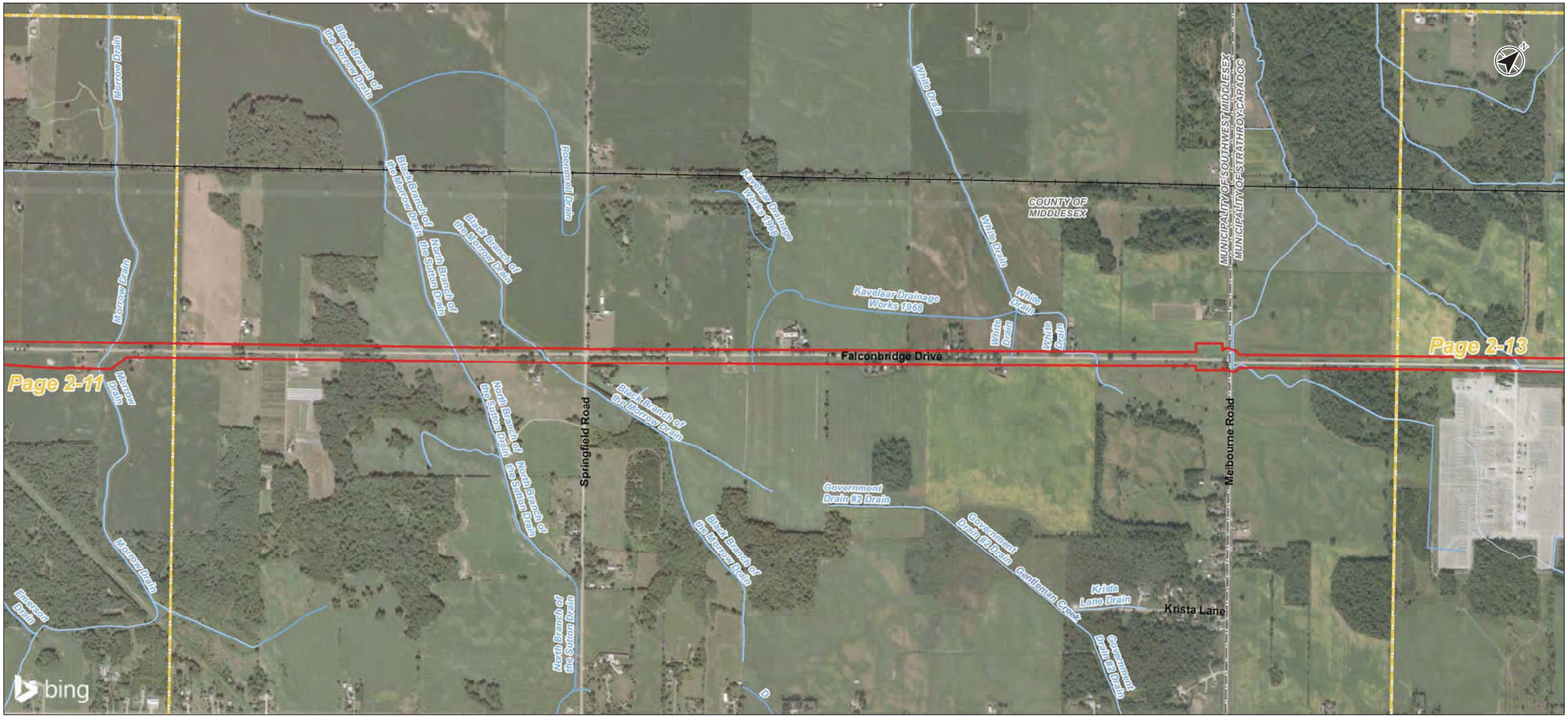
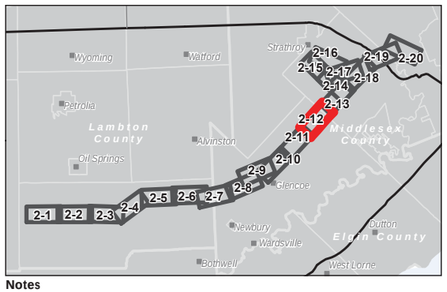
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-11

Title
Study Area Details - Index





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Legend

- Study Area
- **Railways_lio**
- **STATUS**
- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
Counties of Lambton and Middlesex

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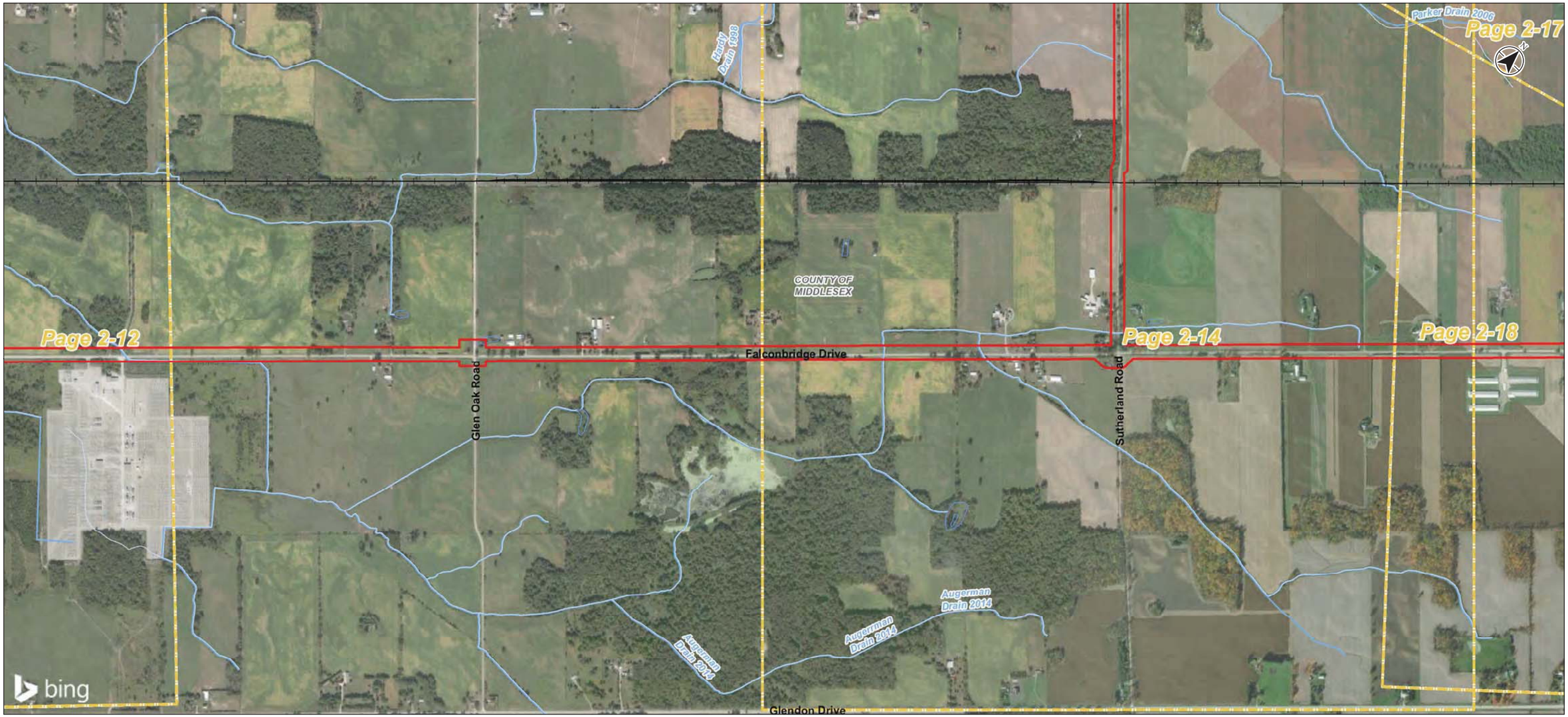
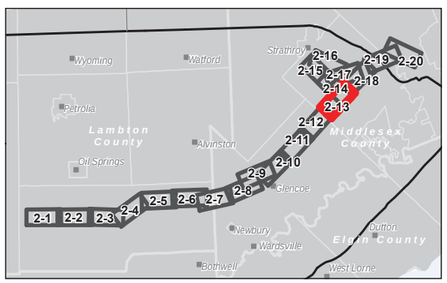
LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-12

Title
Study Area Details - Index





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Legend

- Study Area
- **Railways_lio**
- **STATUS**
- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Project Location
Counties of Lambton and Middlesex

160951170 REVA
Prepared by SPE on 2020-07-09
Technical Review by BCC on 2020-07-02

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LONDON LINES REPLACEMENT PROJECT
STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-13

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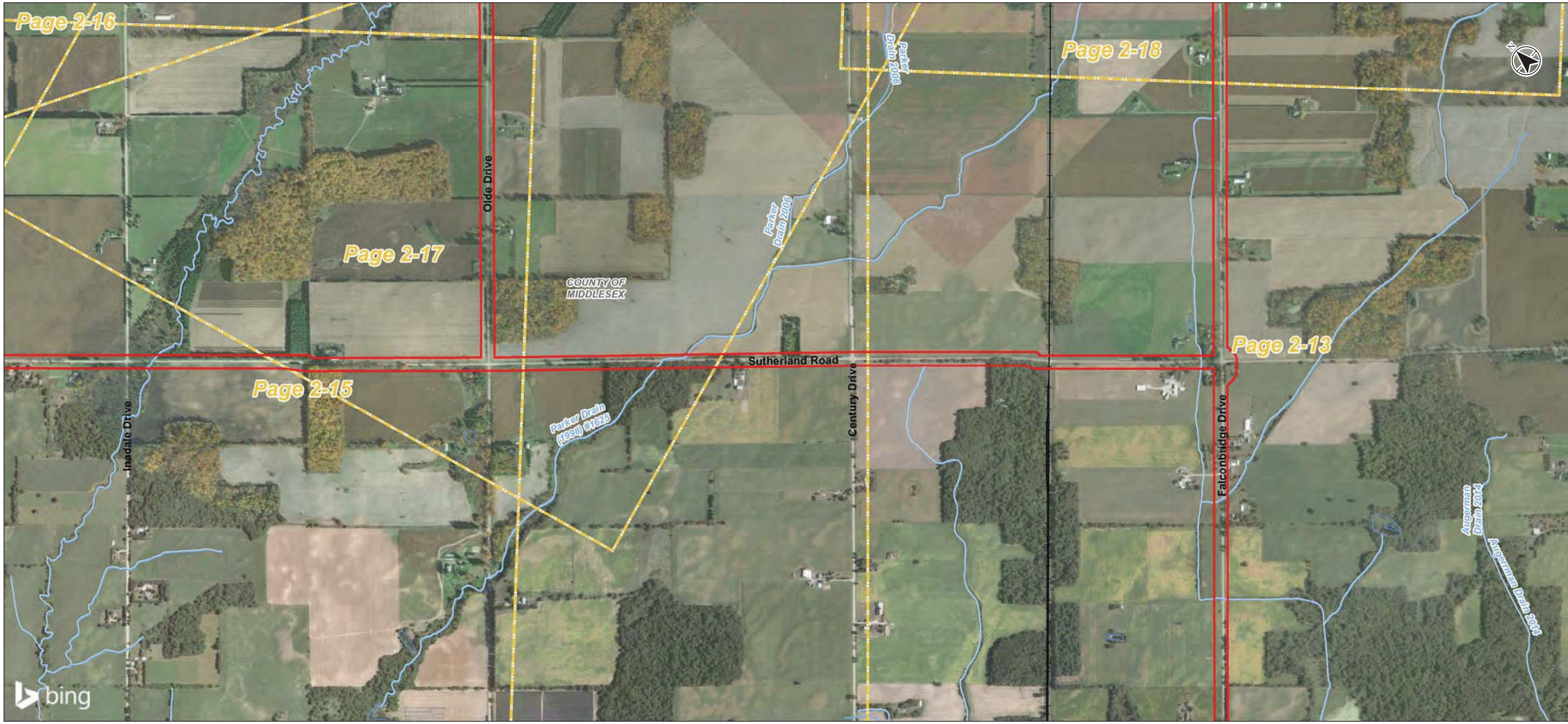
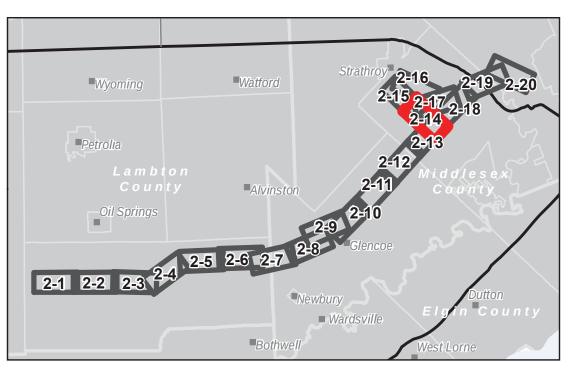
Study Area Details - Index





Legend

- Study Area

Railways_lio

STATUS

- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

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STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-14

Title
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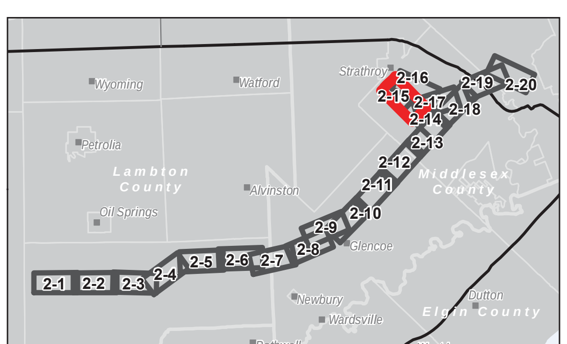

Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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Figure No.
2-15

Title
Study Area Details - Index

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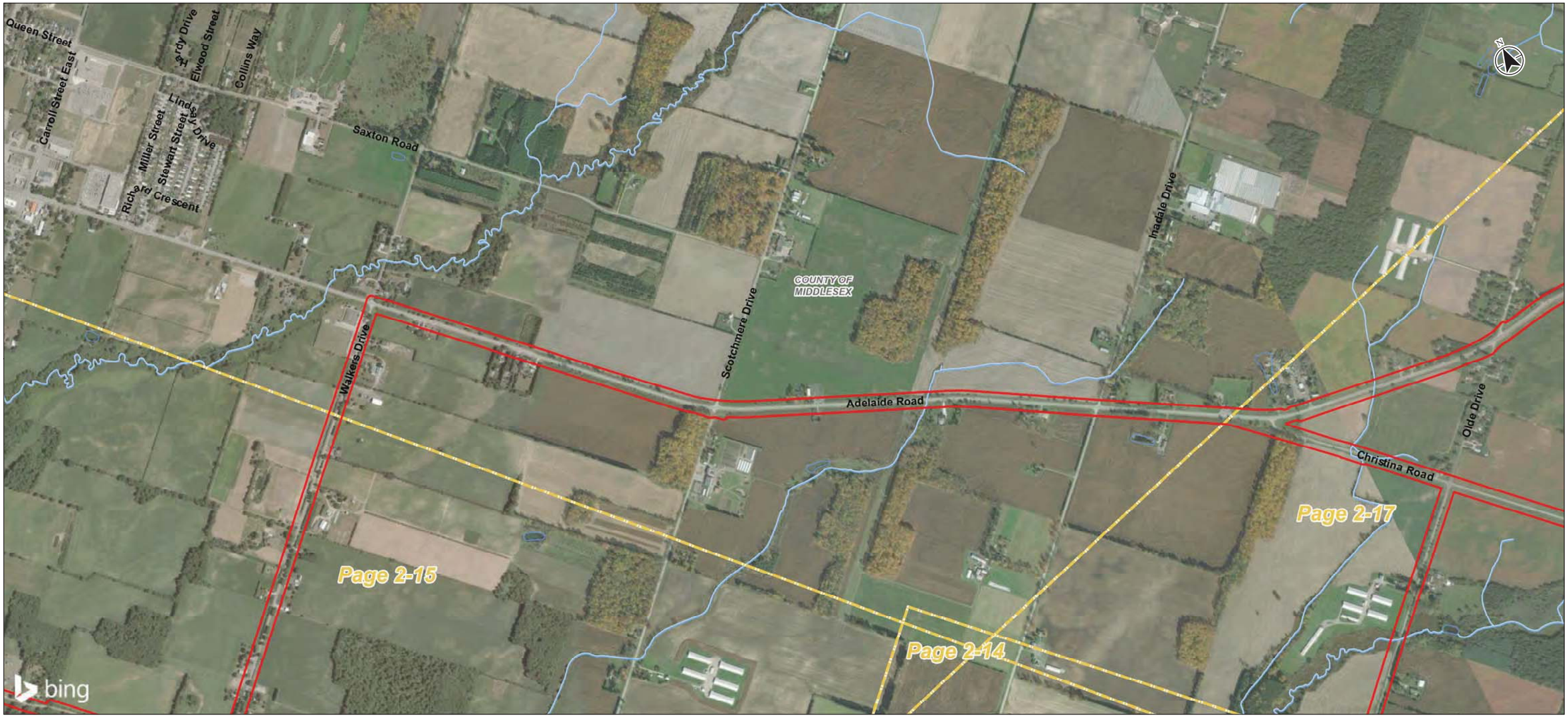

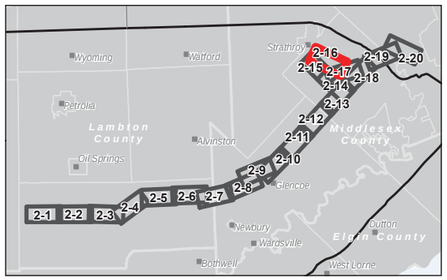

Legend

- Study Area
- Constructed Drain
- Watercourse
- Map Tile Index
- Municipal Boundary - Lower Tier
- Municipal Boundary - Upper Tier
- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
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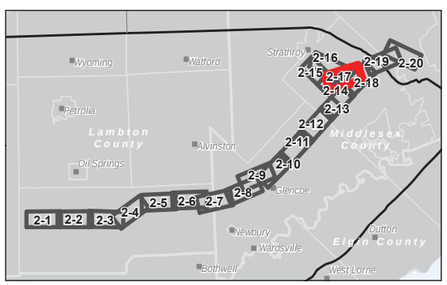
Study Area Details - Index



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Legend

- Study Area

Railways_lio

STATUS

- Railway - Operational
- Constructed Drain
- Watercourse
- Map Tile Index
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- Waterbody

0 300 600 metres

1:15,000 (At original document size of 11x17)

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STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
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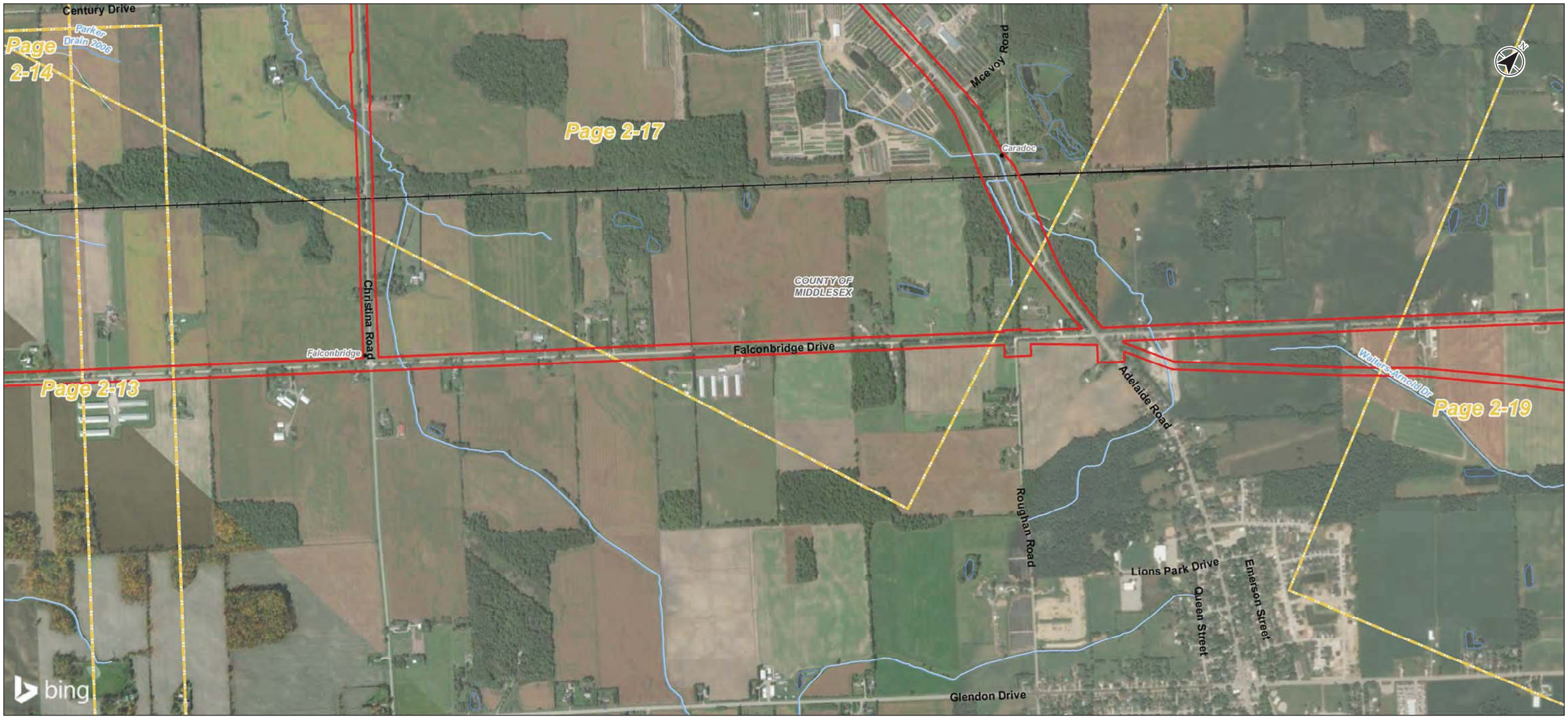
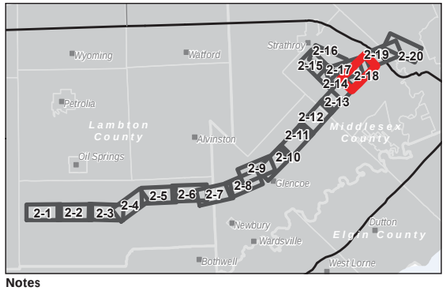
Title
Study Area Details - Index





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Legend

- Study Area
- **Railways_lio**
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0 300 600 metres

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Project Location
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STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
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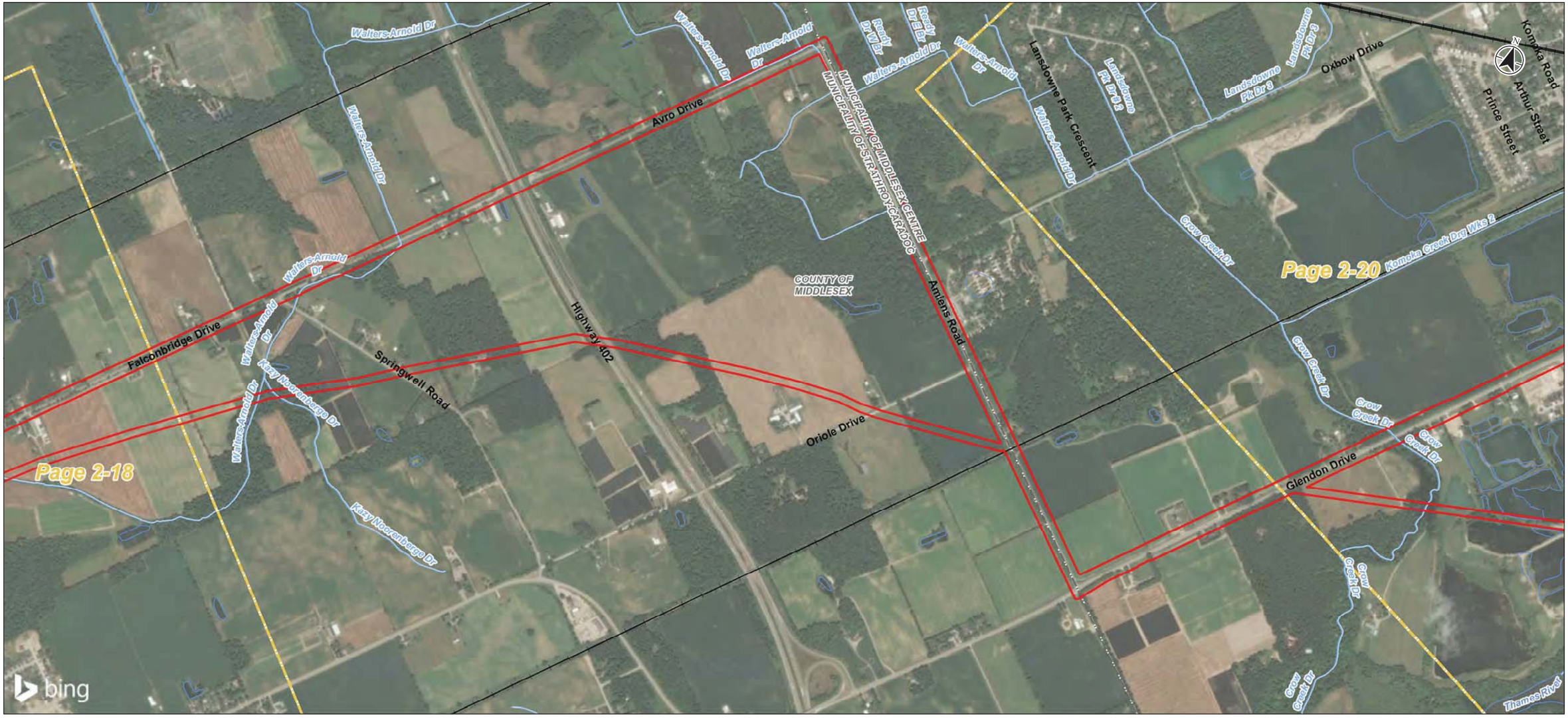
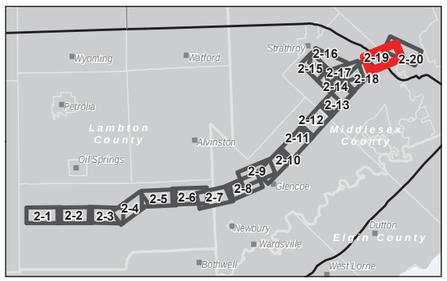
Study Area Details - Index





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Legend

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0 300 600 metres

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STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
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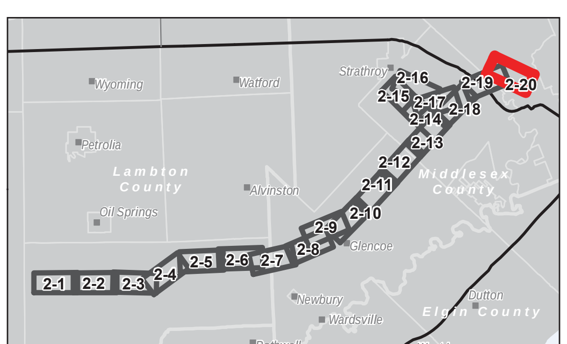
Study Area Details - Index



Legend

- Study Area

Railways_lio

STATUS

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0 300 600 metres

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STAGE 1 ARCHAEOLOGICAL ASSESSMENTT

Figure No.
2-20

Title
Study Area Details - Index

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