GOLDER
MEMBER OF WSP

FINAL REPORT

Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment

Schedule 'B' Municipal Class Environmental Assessment for the Oxford Street West and Gideon Drive Intersection Improvements, part of Lots C and D, Broken Front Concession, former Township of Delaware, County of Middlesex, now the City of London, Ontario

Submitted to:

Henry Huotari, PEng, Senior Project Manager
R.V. Anderson Associates Limited
557 Southdale Road East, Suite 200
London, Ontario,
N6E 1A2

Submitted by:

Golder Associates Ltd.
6925 Century Avenue, Suite #100, Mississauga, Ontario, L5N 7K2, Canada

20391051-3000-R01-Rev1

01 February 2022

Distribution List

1 e-copy: R.V. Anderson Associates Ltd.

1 e-copy: Golder Associates Ltd.

Personnel

Project Director	Mark Swallow, PE, PEng, Principal and Senior Practice Leader
Project Manager	Dan Babcock, PEng, Senior Geotechnical Engineer and CSME Supervisor
Archaeology Task Lead	Lafe Meicenheimer, MA, Archaeologist
Field Investigations	Rebecca Parry, MA, Cultural Heritage Specialist
Report Production	Alisha Mohamed, MA, Cultural Heritage Specialist
Mapping/ GIS	Bojan Radojevic, Geomatics Technician
Administrative Support	Courtney Adey, Administrator
Senior Review	Joel Konrad, PhD, CAHP
	Michael Teal, MA, Associate, Senior Archaeologist

Acknowledgements

R.V. Anderson Associates Ltd.	Henry Huotari, PEng, Senior Project Manager

Executive Summary

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

In February 2021, R.V. Anderson Associates Limited (Ltd.; the Client) retained Golder Associates Ltd. (Golder) to conduct a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (CHR) to support the Schedule 'B' Municipal Class Environmental Assessment (EA) for the Oxford Street West and Gideon Drive Intersection Improvements in the City of London, Ontario (the Project).

The Project footprint consists of approximately 4.2 hectares (ha) of the municipal rights-of-way (ROW) for Oxford Street West, Gideon Drive, and Kains Road, located on part of Lots C and D of the Broken Front Concession in the former Township of Delaware, County of Middlesex, now the City of London, Ontario. For the purposes of this CHR, the "study area" constitutes all property parcels within or crossed by the Project footprint as well as all adjacent properties.

Following guidance provided by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), the City of London, and Canada's Historic Places' (CHP) 2010 *Standards and Guidelines for the Conservation of Historic Places in Canada* (CHP *Standards and Guidelines*) this CHR summarizes the applicable heritage policies, details the study area's geography and history, identifies known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs), and assesses at a preliminary level the potential BHRs and CHLs for cultural heritage value or interest (CHVI). Based on this understanding of the study area and surrounding area, the potential impacts resulting from the Project are assessed and future actions recommended.

Historical research and field investigations conducted for this report identified three listed (not designated) properties, one designated CHL, and three properties with potential BHRs within the study area. These are listed in the table below in order from east to west (roughly) with recommendations for mitigation or alternatives to avoid or reduce negative effects from the Project. Note that these recommendations are based on Golder's current understanding of the Project and may need to be revisited if components are moved or altered.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **1976 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ As the property was previously evaluated (using Ontario Regulation 9/06 [O. Reg. 9/06]) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific Heritage Impact Assessment (HIA) during detailed design to determine the appropriate mitigation.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **2012 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As a potential indirect impact to 2012 Oxford Street West is predicted, it is recommended to: ▪ Conduct a pre-construction survey during detailed design to determine whether the BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property. ▪ If the survey determines the BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.
Potential BHR: **14 Gideon Drive**	■ As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As a potential indirect impact to 14 Gideon Drive is predicted, it is recommended to: ▪ Conduct a pre-construction survey during detailed design to determine whether the potential BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
	▪ If the survey determines the potential BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.
Potential BHR: **2085 Oxford Street West**	▪ As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. ▪ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ▪ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ▪ If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **2311 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.
Potential BHR: **80 Gideon Drive**	■ As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As a potential indirect impact to 80 Gideon Drive is predicted, it is recommended to: ▪ Conduct a pre-construction survey during detailed design to determine whether the potential BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property. ▪ If the survey determines the potential BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should determine if the property meets the criteria prescribed in O. Reg. 9/06. If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
Designated Canadian Heritage River: **Thames River**	■ As currently proposed, the Project will be directly adjacent to properties fronting on to the CHL but is not anticipated to directly or indirectly impact the CHL, nor adversely affect the CHL's potential CHVI and heritage attributes. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into a property fronting the CHL, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property fronting the CHL has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.

Consultation with City of London heritage planning staff has determined that additional recommendations for the EA team conducting the overall Project include:

- Avoid properties of recognized or potential cultural heritage value or interest in the Project design;
- Avoid the creation of staging and/ or laydown areas on any recognized or potential cultural heritage resources; and
- Review the impact assessment of this report during the Detailed Design phase and amend or revise as needed.

Study Limitations

Golder Associates Ltd. has prepared this report in a manner consistent with the guidelines developed by the Ontario Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), the City of London, and Canada's Historic Places' (CHP) 2010 *Standards and Guidelines for the Conservation of Historic Places* subject to the time limits and physical constraints applicable to this report. No other warranty, expressed or implied, is made.

This report has been prepared for the specific site, design objective, developments and purpose described to Golder Associates Ltd. by R.V. Anderson Associates Ltd. (the Client). The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without Golder Associates Ltd.'s express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the Client, Golder Associates Ltd. may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process. Any other use of this report by others is prohibited and is without responsibility to Golder Associates Ltd. The report, all plans, data, drawings and other documents as well as electronic media prepared by Golder Associates Ltd. are considered its professional work product and shall remain the copyright property of Golder Associates Ltd., who authorizes only the Client and Approved Users to make copies of the report, but only in such quantities as are reasonably necessary for the use of the report by those parties. The Client and Approved Users may not give, lend, sell, or otherwise make available the report or any portion thereof to any other party without the express written permission of Golder Associates Ltd. The Client acknowledges the electronic media is susceptible to unauthorized modification, deterioration and incompatibility and therefore the Client cannot rely upon the electronic media versions of Golder Associates Ltd.'s report or other work products.

Unless otherwise stated, the suggestions, recommendations and opinions given in this report are intended only for the guidance of the Client in the design of the specific project.

Table of Contents

TABLES

FIGURES

APPENDIX A
Project Preliminary Design Plan

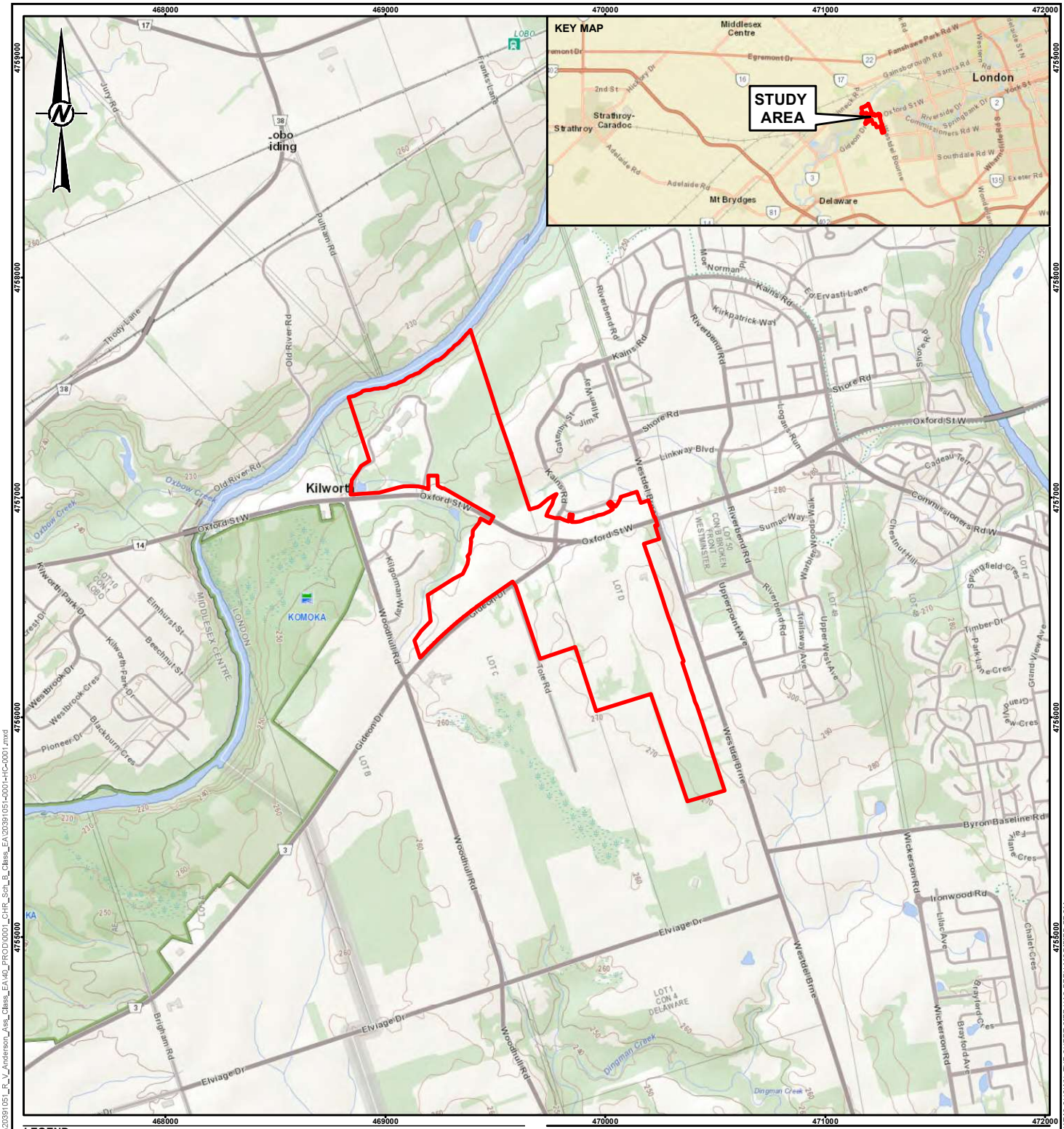
1.0 INTRODUCTION

In February 2021, R.V. Anderson Associates Limited (Ltd.; the Client) retained Golder Associates Ltd. (Golder) to conduct a Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment (CHR) to support the Schedule 'B' Municipal Class Environmental Assessment (EA) for the Oxford Street West and Gideon Drive Intersection Improvements in the City of London, Ontario (the Project).

The Project footprint consists of approximately 4.2 hectares (ha) of the municipal rights-of-way (ROW) for Oxford Street West, Gideon Drive, and Kains Road, located on part of Lots C and D of the Broken Front Concession in the former Township of Delaware, County of Middlesex, now the City of London, Ontario. For the purposes of this CHR, the "study area" constitutes all property parcels within or crossed by the Project footprint as well as all adjacent properties (Figure 1).

Following guidance provided by the Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI), municipal documents such as the City of London's official plan, known as *The London Plan*, and recognized conservation manuals such as Canada's Historic Places' (CHP) 2010 *Standards and Guidelines for the Conservation of Historic Places in Canada* (CHP *Standards and Guidelines*), this CHR includes:

- an overview of heritage legislation and policies in Ontario, and an outline of the methods that were used to investigate and assess built heritage resources (BHRs) and cultural heritage landscapes (CHLs) in the study area
- an overview of the study area's historical development and existing conditions
- an inventory of known and potential BHRs and CHLs in the study area
- a description of the proposed Project options and an assessment of their predicted impacts on known or newly identified BHRs and CHLs in the study area
- recommendations for cultural heritage mitigation or further studies where necessary



LEGEND

STUDY AREA

0 250 500 1,000

1:25,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
2. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83
COORDINATE SYSTEM:UTM ZONE 17 VERTICAL DATUM: CGVD28

CLIENT

R.V. ANDERSON ASSOCIATES LTD.

PROJECT

CHR: SCHEDULE 'B' CLASS EA OXFORD STREET WEST AND GIDEON DRIVE INTERSECTION IMPROVEMENTS

TITLE

LOCATION OF STUDY AREA

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-24
DESIGNED	AM
PREPARED	BR
REVIEWED	AM
APPROVED	MT

PROJECT NO.	CONTROL	REV.	FIGURE
20391051	0001	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
0

Path: S:\Clients\City_of_London\Oxford_St_West_Gideon_Dr_Intersection_London\09_PROJ\20391051_R_V_Anderson_Aes_Class_EA\40_PROD\0001_CHR_Sch_B_Class_EA\20391051-0001-HC-0001.mxd

2.0 SCOPE AND METHODS

The scope of this CHR was defined by guidance outlined in the MHSTCI's 2019 Sample Tables and Language for *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment*, 2016 *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (the MSTCI *Checklist*) and 2006 *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process* (MHSTCI 2006). The MHSTCI *Checklist* provides a screening tool to identify all known or recognized BHRs and CHLs in the study area, as well as commemorative plaques, cemeteries, Canadian Heritage River watersheds, properties with buildings or structures 40 or more years old, or potential cultural heritage landscapes.

The study area constitutes all property parcels within or crossed by the Project footprint as well as all adjacent properties. With this scope and study area, Golder completed the following tasks:

- researched archival and published sources relevant to the historical and geographic context of the study area
- reviewed federal, provincial, and municipal heritage registers, inventories, and databases to identify known built heritage resources and cultural heritage landscapes in the study area. Sources relevant to this study include:
  - *Canadian Register of Historic Places* (https://www.historicplaces.ca/en/pages/about-apropos.aspx)
  - *Parks Canada Directory of Federal Heritage Designations* (http://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx) and *Directory of Heritage Railway Stations* (https://www.pc.gc.ca/en/culture/clmhc-hsmbc/pat-her/gar-sta/on)
  - *Canadian Heritage Rivers System* list of designated heritage rivers (https://chrs.ca/en)
  - Ontario Heritage Trust (OHT) *Places of Worship Inventory* (https://www.heritagetrust.on.ca/en/places-of-worship/places-of-worship-database/search), *Plaque Database* (http://www.heritagetrust.on.ca/en/online-plaque-guide), web mapping application showing OHT Buildings and Easements (https://www.heritagetrust.on.ca/en/index.php/property-types/buildings), and *Ontario Heritage Act* (OHA) *Register* (https://www.heritagetrust.on.ca/en/oha/basic-search)
  - City of London *Register of Cultural Heritage Resources* (.pdf document and interactive map: https://london.ca/living-london/building-renovating/heritage-designations) and list of Heritage Conservation Districts (https://london.ca/heritage-conservation-districts)
- engaged with heritage planning staff at the City of London and OHT
- conducted a field investigation from the public right-of-way (ROW) to inventory and document all known and potential BHRs and CHLs within the study area and to understand the wider built and landscape context
- completed screening-level assessments of properties with buildings or structures 40 or more years old and assessed at a preliminary level their potential cultural heritage value or interest (CHVI)
- assessed the risk of impact to properties of known and potential CHVI
- where necessary, recommended mitigation and conservation measures using MHSTCI and other guidance

Primary and secondary sources, including historical maps, aerial imagery, photographs and genealogical histories were accessed from published and online sources such as the Ontario Council of University Libraries' *Historical Topographic Map Digitization Project*, the University of Toronto's Map and Data Library and *Ontario Historical County Maps Project*, the University of McGill's *Canadian County Atlas Project* and the Internet Archive's *Open Library*.

Cultural Heritage Specialist Rebecca Parry conducted the field investigation on 24 September 2021, which included recording and photographing from the public ROW all properties and roadscapes in the study area with a Samsung Galaxy S9 device camera.

Descriptions of architectural styles and elements used in this CHR employ terms provided in Blumenson (1990), Ricketts *et al.* (2004), Hubka (2013), and the *Canadian Inventory of Historic Buildings* (Parks Canada 1980). Landscape analysis and landform and vegetation description relies on terms and concepts presented in the *Historic Scotland Historic Landuse Assessment* (1999) and *Australian Soil and Land Survey Field Handbook, Third Edition* (2017).

The approach and terms for impact assessment and mitigation measures follow the MHSTCI's 2006 *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process* (MHSTCI 2006), supplemented with other recognized federal and international guidance such as the CHP *Standards and Guidelines* and the *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (Landscape Institute 2013).

2.1 Record of Engagement

Table 1 summarizes the results of engagement conducted this CHR.

Table 1: Results of Engagement

Contact	Date of Contact and Query	Response
Kyle Gonyou Heritage Planner City of London	Queries sent via email on 25 February 2021 and 02 December 2021 to confirm that the City's *Register of Cultural Heritage Resources* is up to date. Golder also provided a map of the study area, a list of the listed (not designated) properties Golder identified within the study area, and inquired if the City had any additional heritage concerns within the study area.	Responses received 25 February 2021 and 03 December 2021 indicating that the online register was the most recent published (08 December 2020) and that they were not aware of any changes to the register since that time. Golder was also provided a copy of a 2020 HIA previously completed for 14 Gideon Drive and 2012 Oxford Street West by Stantec Consulting Ltd. (Stantec) and a recommendation to consult a 2017 local historical resource written by Elizabeth A. Moyer.
Kevin DeMille Natural Heritage Coordinator Designated Contact for OHT Property and Easement Requests OHT	Query sent via email on 02 December 2021 to confirm that the OHT's *Places of Worship Inventory*, *Plaque Database*, web mapping application of OHT Buildings and Easements, and OHA *Register* were up to date. Golder also provided a map of the study area, a list of the listed (not designated) properties Golder identified within the study area, and inquired if the OHT had any additional heritage concerns within the study area.	Response received 07 December 2021 confirming the OHT databases were up to date and that they were not aware of other heritage concerns for the project.

2.2 Archaeology

Golder conducted a Stage 1 and 2 archaeological assessment for the Project under Project Information Form (PIF) P1013-0008-2021. The Stage 1 and 2 assessment was completed in 2021 and did not result in the identification of archaeological resources. The complete results of the Stage 1 and 2 assessment will be presented to the MHSTCI in a separate report for entry into the Ontario Public Register of Archaeological Reports.

3.0 POLICY FRAMEWORK

Management of cultural heritage is guided by provincial and municipal legislation and planning policy regimes, as well as advice developed at the federal and international levels. These policies have varying levels of authority at the local level, though generally are all considered when making decisions about heritage assets.

3.1 Federal and International Heritage Policies

No federal heritage policies apply to the study area, although many of the provincial and municipal policies detailed below align in approach to that of the CHP *Standards and Guidelines.* This document was drafted in response to international and national agreements such as the 1964 *International Charter for the Conservation and Restoration of Monuments and Sites* (*Venice Charter*), 1983 Canadian *Appleton Charter for the Protection and Enhancement of the Built Environment*, and Australia's International Council on Monuments and Sites (ICOMOS) *Charter for Places of Cultural Significance* (*Burra Charter*, updated 2013). The latter is important for pioneering "values based" evaluation and management, an approach central to Canadian federal, provincial and territorial legislation and policies for identifying and conserving cultural heritage. The CHP *Standards and Guidelines* define three conservation treatments —preservation, rehabilitation, and restoration— and outline the process and required and best practice actions relevant to each treatment.

The ICOMOS has also developed guidance on heritage impact assessments for world heritage properties, which also provide ''best practice'' approaches for all historic assets (ICOMOS 2011).

3.2 Provincial Heritage Policies

3.2.1 *Environmental Assessment Act*

The *Environmental Assessment Act* (EAA) was enacted to ensure that Ontario's environment is protected, conserved, and wisely managed. Under the EAA, "environment" includes not only natural elements such as air, land, water and plant and animal life, but also the "social, economic and cultural conditions that influence the life of humans or a community", and "any building, structure, machine or other device or thing made by humans". To determine the potential environmental effects of new development, the EA process was created to standardize decision-making.

For municipal road, water, and wastewater projects, this decision-making is streamlined in the "Class EA Process", which divides routine activities with predictable environmental effects into four "schedules". For this Project, the EA falls under the Schedule 'B' process as it includes "improvements and minor expansions to existing facilities" with "potential for some adverse environmental effects" (Government of Ontario 2014; Ontario Municipal Engineers Association [MEA] 2015).

The phases (up to five) and associated actions required for each of these schedules are outlines in the MEA Manual. A step within Phase 2 of a Class EA is to prepare a description and inventory of the "natural, social and economic environments", which includes built heritage resources and cultural heritage landscapes. This inventory is compiled through searching federal, provincial, and municipal registers or databases of previously identified built heritage resources and cultural heritage landscapes, but also through evaluation using criteria for significance established by the Province.

Avoidance of cultural heritage resources is the primary mitigation suggested in the manual, although other options are suggested including: "employing necessary steps to decrease harmful environmental impacts such as vibration, alterations of water table, etc." and "record or salvage of information on features to be lost" (Appendix 2 of MEA 2015). In all cases, the "effects should be minimized where possible, and every effort made to mitigate

adverse impacts, in accordance with provincial and municipal policies and procedures." Importantly, the Class EA provides the opportunity to integrate the requirements of the EAA with the Ontario *Planning Act* (see below), both of which must be met (MEA 2015).

3.2.2 *Planning Act* and Provincial Policy Statement

The Ontario *Planning Act* (1990) and associated *Provincial Policy Statement* 2020 (PPS 2020) mandate heritage conservation in land use planning. Under the *Planning Act*, conservation of "features of significant architectural, cultural, historical, archaeological or scientific interest" are a "matter of provincial interest" and integrates this at the provincial and municipal levels through the PPS 2020. Issued under Section 3 of the *Planning Act*, PPS 2020 recognizes that cultural heritage and archaeological resources "provide important environmental, economic, and social benefits", and that "encouraging a sense of place, by promoting well-designed built form and cultural planning, and by conserving features that help define character, including *built heritage resources* and *cultural heritage landscapes*" supports long-term economic prosperity (PPS 2020:6,22).

The importance of identifying and evaluating built heritage and cultural heritage landscapes is recognized in two policies of PPS 2020:

- Section 2.6.1 – *Significant built heritage resources* and *significant cultural heritage landscapes* shall be *conserved*
- Section 2.6.3 – Planning authorities shall not permit *development* and *site alteration* on *adjacent lands* to *protected heritage property* except where the proposed *development* and *site alteration* has been evaluated and it has been demonstrated that the *heritage attributes* of the *protected heritage property* will be *conserved*

Each of the italicised terms is defined in Section 6.0 of PPS 2020, with those relevant to this report provided below:

- ***Adjacent lands*****:** for the purposes of policy 2.6.3, those lands contiguous to a *protected heritage property* or as otherwise defined in the municipal official plan.
- ***Built heritage resource:*** means a building, structure, monument, installation or any manufactured or constructed part or remnant that contributes to a property's CHVI as identified by a community, including an Indigenous community. *Built heritage resources* are located on property that may be designated under Parts IV or V of the OHA, or that may be included on local, provincial, federal and/or international registers.
- ***Conserved*****:** means the identification, protection, management and use of built heritage resources, cultural heritage landscapes, and archaeological resources in a manner that ensures their CHVI is retained. This may be achieved by the implementation of recommendations set out in a conservation plan, archaeological assessment, and/or heritage impact assessment that has been approved, accepted, or adopted by the relevant planning authority and/or decision-maker. Mitigative measures and/or alternative development approaches can be included in these plans and assessments.
- ***Cultural heritage landscape:*** means a defined geographical area that may have been modified by human activity and is identified as having CHVI by a community, including an Indigenous community. The area may include features such as buildings, structures, spaces, views, archaeological sites or natural elements that are valued together for their interrelationship, meaning, or association. Cultural heritage landscapes may be properties that have been determined to have CHVI under the OHA; or have been included in federal and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms.

- ***Development*:** means the creation of a new lot, a change in land use, or the construction of buildings and structures requiring approval under the Ontario *Planning Act*.
- ***Heritage attributes:*** the principal features or elements that contribute to a protected heritage property's CHVI, and may include the property's built, constructed, or manufactured elements, as well as natural landforms, vegetation, water features, and its visual setting (e.g., significant views or vistas to or from a protected heritage property).
- ***Protected heritage property:*** property designated under Parts IV, V or VI of the OHA; property subject to a heritage conservation easement under Parts II or IV of the OHA; property identified by the Province and prescribed public bodies as provincial heritage property under the MHSTCI 2014 *Standards and Guidelines for the Conservation of Provincial Heritage Properties* (MHSTCI *Standards and Guidelines*); property protected under federal legislation, and UNESCO World Heritage Sites.
- ***Significant*:** means, in regard to cultural heritage and archaeology, resources that have been determined to have CHVI. Processes and criteria for determining CHVI are established by the Province under the authority of the OHA.

The definition for *significant* includes a caveat that "while some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation." The criteria for significance established by the Province as well as the need for evaluation is outlined in the following section. Municipalities implement PPS 2020 through an official plan, which may outline further heritage policies (see Section 3.3).

3.2.3 *Ontario Heritage Act* and Ontario Regulation 9/06

The OHA enables the Province and municipalities to conserve significant individual properties and areas. For municipalities, Part IV and Part V of the OHA enables council to "designate" individual properties (Part IV), or properties within a heritage conservation district (HCD) (Part V) as being of "cultural heritage value of interest" (CHVI). Evaluation for CHVI under the OHA (or *significance* under PPS 2020) is guided by Ontario Regulation 9/06 (O. Reg. 9/06), which prescribes the "criteria for determining cultural heritage value or interest". O. Reg. 9/06 has three categories of absolute or non-ranked criteria, each with three sub-criteria:

1) The property has ***design value or physical value*** because it:
    i) Is a rare, unique, representative or early example of a style, type, expression, material or construction method;
    ii) Displays a high degree of craftsmanship or artistic merit; or
    iii) Demonstrates a high degree of technical or scientific achievement.
2) The property has ***historic value or associative value*** because it:
    i) Has direct associations with a theme, event, belief, person, activity, organization, or institution that is significant to a community;
    ii) Yields, or has the potential to yield information that contributes to an understanding of a community or culture; or
    iii) Demonstrates or reflects the work or ideas of an architect, artist, builder, designer, or theorist who is significant to a community.

3) The property has ***contextual value*** because it:

   i) Is important in defining, maintaining or supporting the character of an area;

   ii) Is physically, functionally, visually or historically linked to its surroundings; or

   iii) Is a landmark.

A property needs to meet only one criterion of O. Reg. 9/06 to be considered for designation under Part IV of the OHA. If found to meet one or more criteria, the property's CHVI is then described with a Statement of Cultural Heritage Value or Interest (SCHVI) that includes a brief property description, a succinct statement of the property's cultural heritage significance, and a list of its heritage attributes. In the OHA, heritage attributes are defined slightly differently to the PPS 2020 and directly linked to real property[1]; therefore, in most cases a property's CHVI applies to the entire land parcel, not just individual buildings or structures.

Once a municipal council decides to designate a property, it is recognized through by-law and added to a ''Register'' maintained by the municipal clerk. A municipality may also ''list'' a property on the Register to indicate it as having potential CHVI.

3.2.4 Provincial Heritage Guidance

3.2.4.1 Ministry of Heritage, Sport, Tourism and Culture Industries

To advise municipalities, organizations, and individuals on heritage protection and conservation, the Province, through the MHSTCI, has developed a series of guidance products. One used primarily for EAs is the MHSTCI *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist* (2016; the MHSTCI *Checklist*). The MHSTCI *Checklist* provides a screening tool for a study area to identify all the known or recognized built heritage resources and cultural heritage landscapes, commemorative plaques, cemeteries, Canadian Heritage River watersheds, properties with structures 40 or more years old, or potential cultural heritage landscapes. If known or potential built heritage resources and cultural heritage landscapes are identified, the MHSTCI *Checklist* then advises whether further investigation as part of a Cultural Heritage Evaluation Report (CHER) or Heritage Impact Assessment (HIA) is necessary.

Further guidance on identifying, evaluating and assessing impacts to BHRs and CHLs is provided in the *Ontario Heritage Tool Kit* series. Of these, *Heritage Property Evaluation* (MHSTCI 2006a) describes in detail the O. Reg. 9/06 criteria and methods for researching and evaluating potential cultural resources, while the *Heritage Resources in the Land Use Planning Process* (MHSTCI 2006b) provides an outline for the contents of an HIA, which it defines as:

> "a study to determine if any cultural resources (including those previously identified and those found as part of the site assessment) are impacted by a specific proposed development or site alteration. It can also demonstrate how the cultural resource will be conserved in the context of redevelopment or site alteration. Mitigative or avoidance measures or alternative development or site alteration approaches may be recommended."

For large study areas, a CHR combines CHER and HIA studies at a preliminary level to identify and assess potential cultural heritage resources and assess the impacts of new development. The MHSTCI's 2019 Sample Tables and Language for *Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment*

[1] The OHA definition ''heritage attributes means, in relation to real property, and to the buildings and structures on the real property, the attributes of the property, buildings and structures that contribute to their cultural heritage value or interest.''

provides guidance to identify baseline cultural heritage conditions within a study area, identify preliminary potential project-specific impacts on known and potential BHRs and CHLs identified, and propose and recommend measures to avoid or mitigate negative impacts to known or potential cultural heritage resources.

For EAs, the *Ontario Heritage Tool Kit* partially, but not entirely, supersedes earlier MHSTCI advice. Criteria to identify cultural landscapes is detailed in the *Guidelines on the Man-Made Heritage Component of Environmental Assessments* (1980: 07) and recording and documentation procedures are outlined in the *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1992: 03-07). The latter document also stresses the importance of identifying and gauging the cumulative effects of a Class EA development (MHSTCI 1992: 08).

3.3 Municipal Heritage Policies

3.3.1 *The London Plan*

The City's official plan, entitled *The London Plan*, was approved with modifications by the Province in 2016. *The London Plan* was implemented to guide the growth, preservation, and evolution of the City over the next 20 years and includes policies to guide the identification and conservation of cultural heritage properties and landscapes. Cultural heritage is referenced in several sections of *The London Plan* and in two of the key directions:

- Direction #3 – Celebrate and support London as a culturally rich, creative and diverse city
  - 4. Recognize and celebrate the contributions of Indigenous communities in our shared cultural heritage; and,
  - 7. Protect our built and cultural heritage to promote our unique identity and develop links to arts and eco-tourism in the London Region.
- Direction #7 – Build strong, healthy and attractive neighbourhoods for everyone
  - 5. Protect what we cherish by recognizing and enhancing our cultural identity, cultural heritage resources, neighbourhood character, and environmental features.

The London Plan recognizes Central London, defined by Oxford Street, Adelaide Street and Thames River as having "some of London's most significant cultural heritage resources" (Section 93_), and for the Thames Valley Corridor there is a commitment to "Protect, enhance and restore the natural and cultural heritage of the corridor in all the planning we do" (Policy 123_4). "Main Streets" are identified as "some of London's most cherished historical business areas" and are specifically "protected from development that may undermine the character and cultural heritage value of these corridors" (Policy 131_).

Under "Urban Regeneration", the conservation, restoration and appropriate use of cultural heritage resources will be encouraged, and community improvement plans may be used to encourage heritage conservation (Policy 154_3 and 165_). Heritage conservation and promotion is also to be considered when designing public facilities and public spaces (Policy 429_ and 540_).

The "Cultural Heritage" section of *The London Plan* defines cultural heritage as:

> "the legacy of both tangible and intangible attributes that our community has inherited from past generations, including buildings, monuments, streetscapes, landscapes, books, artifacts and art, folklore, traditions, language and knowledge (Policy 551_)."

From this, the City's overall objectives for cultural heritage are to:

- Promote, celebrate and raise awareness and appreciation of London's cultural heritage resources.
- Conserve London's cultural heritage resources so they can be passed on to our future generations.
- Ensure that new development and public works are undertaken to enhance and be sensitive to our cultural heritage resources (Policy 554).

How these will be achieved are then focused on three areas of cultural heritage planning:

1) General policies for the protection and enhancement of cultural heritage resources.
2) Specific policies related to the identification of cultural heritage resources including individual heritage resources, heritage conservation districts, cultural heritage landscapes and archaeological resources.
3) Specific policies related to the protection and conservation of these cultural heritage resources (Policy 555_).

The general policies are then discussed through Policy 556_ to 571_, with Policy 572_ to 582_ outlining the identification of cultural heritage resources. Specific heritage conservation policies are discussed through Policy 583_ to Policy 622_.

3.3.2 2019-2023 Strategic Plan

The City of London's 2019-2023 *Strategic Plan* aims to "continue to conserve London's heritage properties and archaeological resources" and "conserve London's heritage through regulation and investment." The plan also strategizes to "maintain the heritage resources of Eldon Hose to foster an appreciation of London's community and cultural heritage." The Eldon House is a historic house and museum located approximately 9.5 km east of the study area. The goals of the *Strategic Plan* are largely implemented through other plans, studies, policies and documents.

4.0 GEOGRAPHICAL AND HISTORICAL CONTEXT

4.1 Geographic Context

The study area spans two physiographic regions: the northwest portion is located within the Caradoc Sand Plains and London Annex while the southeast portion is located within the Mount Elgin Ridges.

The Caradoc Sand Plains and London Annex physiographic region is described by Chapman and Putnam (1984) as:

> *Immediately surrounding the City and extending several miles eastward there is a basin lying between 850 and 900 feet a.s.l. Into this basin the earliest glacial spillways discharged muddy water, laying down beds of silt and fine sand. Later, when standing water had retired westward to lower levels, gravelly alluvium was spread over the lower parts of the basin.*
>
> Chapman and Putnam 1984:146

The Mount Elgin Ridges physiographic region is described by Chapman and Putnam (1984) as:

> *Between the Thames Valley and the Norfolk sand plain lies a succession of ridges and vales which are called the Mount Elgin Ridges….South of the Westminster and St. Thomas Moraines the country drains to Lake Erie by means of the tributaries of Kettle, Catfish and Otter Creeks….The two major landform components of this region provide obviously contrasting soils. The ridges are well drained while imperfect and even poor drainage characterize the hollows. The ridges are formed from clay till similar to that of the Wyoming Moraine and the Stratford plain.*
>
> Chapman and Putnam 1984:145

The localized topography of the study area gently slopes downward toward the Thames River from elevations around 280 m above sea level (a.s.l.) in the south portion of the study area to 230 a.s.l. in the north portion. Soils within the study area are mapped as Muriel soils, which are moderately well to imperfectly drained silt loam, loam, silty clay loam. These soils support agricultural activities with improved drainage (Hagerty and Kingston 1992).

The bedrock deposits in the vicinity date to the Middle Devonian Period and consist of the Hamilton Group and Dundee Formations (Hewitt 1972). Selkirk chert, a moderate quality raw material, outcrops from the Dundee formation from the embouchure of the Grand River along the north shore of Lake Erie, and as far west as the Chatham area (Eley and von Bitter 1989; Fox 2009).

The property lies within the Mixedwood Plains ecozone of Ontario (The Canadian Atlas Online 2014). Although largely altered by recent human activity, this ecozone once supported a wide variety of deciduous trees, such as various species of ash, birch, chestnut, hickory, oak, and walnut, as well as a variety of birds and small to large land mammals, such as raccoon, red fox, white tailed deer, and black bear. Smith (1850: 90) confirms that the timber present in the vicinity of London Township during the first half of the 19th century included oak, beech, maple and chestnut, among other varieties.

The study area is located within the Thames River watershed, which drains into Lake St. Clair at Lighthouse Cove, Lakeshore, Ontario to the southwest (UTRCA 2013). The Thames River itself flows along the north periphery of the study area and two tributaries of the river intersect the east and west edges of the study area. The Thames River is approximately 273 kilometres (km) long and drains an area of land approximately 5,825 km^2 in size, making it the second largest watershed in southwestern Ontario.

The study area encompasses Gideon Drive, Oxford Street West and Kains Road with the surrounding properties consisting of a mix of recreational land associated with Easter Seals Camp Woodeden to the north, agricultural land and estate lots to the south, and what appears to be recently cleared for the potential expansion of the residential subdivision developments to the east and west.

In reference to current and former political boundaries, the study area is located within the City of London and comprises part of Lots C and D of the Broken Front Concession, in the former Township of Delaware, County of Middlesex, in southwestern Ontario.

4.2 Historical Context

4.2.1 Indigenous Regional History

The earliest evidence of human activity in the Great Lakes area can be traced back approximately 11,000 years. These first arrivals, known as Paleo People, moved into Ontario as the last of the glaciers retreated northward (10,950 to 9,950 Before Present [BP]). The limited available evidence suggests that Paleo People were highly mobile hunters and gatherers relying on migratory caribou, small game, fish and wild plants found in the sub-arctic environment. Their sites have been located along the former shores of glacial lakes such as Lake Algonquin and along the north shore of present-day Lake Ontario. The end of the Paleo Period was heralded by numerous technological and cultural innovations that appeared throughout the subsequent Archaic Period. These innovations may be best explained in relation to the dynamic nature of the post-glacial environment and region-wide population increases.

During the succeeding Archaic Period (9,950 to 2,900 BP), the environment of southern Ontario became more temperate, yielding larger areas suitable for human inhabitation. Archaic groups were also hunter-gatherers, yet their tool kit was more varied, reflecting a greater reliance on local food resources instead of high mobility. In the Middle to Late Archaic Periods, extensive trade networks developed and included copper from the north shore of Lake Superior among other exotic items.

The appearance of cemeteries during the Late Archaic Period has been interpreted as a response to increased population densities and competition between local groups for access to resources. These cemeteries are often located on heights of well-drained sandy/gravel soils adjacent to major watercourses.

The Woodland Period (2,900 to 350 BP) is distinguished by the introduction of ceramics into southern Ontario. Extensive trade networks continued through the early part of this period and Early Woodland populations in Ontario appear to have been heavily influenced by groups to the south, particularly the Adena people of the Ohio Valley. The Late Woodland Period is widely accepted as the beginning of agricultural life ways in south-central Ontario. Researchers have suggested that a warming trend during this time may have encouraged the spread of maize into southern Ontario, providing a greater number of frost-free days (Stothers and Yarnell 1977). The first agricultural villages in southern Ontario date to the 10th century Common Era (CE) and, unlike the riverine base camps of previous periods, were located upland on well-drained sandy soils.

The post-contact Indigenous occupation of southern Ontario was heavily influenced by the dispersal of various Iroquoian-speaking peoples, such as the Huron and closely related Petun, by the New York State Iroquois and the subsequent return of Algonkian-speaking groups from northern Ontario at the end of the 17th century and beginning of the 18th century (Schmalz 1991).

The nature of Indigenous settlement size, population distribution, and material culture shifted as settlers began to colonize the land. Despite this shift, ”written accounts of material life and livelihood, the correlation of historically recovered villages to their archaeological manifestions, 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

Iroquoian systems of ideology and thought" (Ferris 2009:114). As a result, Indigenous peoples of southern Ontario have left behind archaeologically significant resources that show continuity with past peoples, even if this connection has not been recorded in historical Euro-Canadian documentation.

Portions of southwestern Ontario were also occupied by Algonkian-speaking groups both before and after European contact. Generally, the pre-contact Indigenous presence in much of southern Ontario reflects occupation by northern Iroquoian speakers. During and following the Iroquois Wars of the mid-17th century and the dispersal of the Iroquoian-speaking Huron-Petun and Neutral, a considerable reduction in the extent of territory occupied by Algonkian speakers occurred in southern Ontario. Beginning about 1690, northern Algonkian speakers from northern Ontario began to move southwards and southern Iroquoian speakers began to push southern Algonkian-speakers further west (Ferris 2009; Schmalz 1991).

Following the Toronto Purchase of 1787, today's southern Ontario was within the old Province of Quebec and divided into four political districts: Lunenburg, Mechlenburg, Nassau, and Hesse. These became part of the Province of Upper Canada in 1791, and renamed the Eastern, Midland, Home, and Western Districts, respectively. The study area is within the former Hesse District, then later the Western District, which originally included all lands lying to the west of a line running north from Long Point on Lake Erie to Georgian Bay. Each district was further subdivided into counties and townships, with the study area falling within Middlesex County and Delaware Township.

In 1790, Alexander McKee negotiated Treaty No. 2 with the chiefs of the Odawa, Chippewa, Pottawatomi and Huron for lands between the Detroit River and Catfish Creek south of the *Rivière à la Tranche* (Thames River), including what would become Delaware and Westminster Townships in Middlesex County. In part, the portion of the treaty pertaining to Delaware Township, witnessed 19 May 1790, read:

> "KNOWING ALL MEN BY THESE PRESENTS*, that we the principal Village and War Chiefs of Ottawa, Chippawa, Pottowatomy and Huron Indians Nations of Detroit for and in consideration of the Sum of Twelve Hundred Pounds Currency of the Province of Quebec at Five Shillings per Spanish Dollar for valuable Wares and Merchandise to us delivered by the hands of Alexander McKee, Esquire, Deputy Agent of Indian Affairs the receipt whereof we do hereby acknowledge, have by and with the consent of the whole of our said Nations, given, granted, enfeoffed, alienated, and confirmed, and by these presents do give, grant, enfeoff, alien, and confirm unto His Majesty George the Third, King of Great Britain, France and Ireland, Defender of the Faith, &c., &c., &c., a certain Tract of land beginning at the mouth of Catfish Creek, commonly called Rivière au Chaudière on the North Side of Lake Erie being the Western extremity of a Tract purchased by His said Majesty from the Messesagey Indians in the year One Thousand Seven Hundred and Eighty Four and from thence running Westward along the border of Lake Erie and up the Streight to the mouth of a river known by the name of Channail Ecarté to the first fork on the south side, then due east line until it intersects the Rivière à la Tranche, and up the said Rivière à la Tranche to the Thousand Seven Hundred and Eighty Four, then following the Western boundary of said tract being a due South direction until it strikes the mouth of said Catfish Creek or otherwise Rivière au Chaudière being the first offset.*"
>
> (Indigenous & Northern Affairs Canada 2016)

The *Indian Act* of 1876 framed the relationship between the Canadian government and Canada's Indigenous peoples as a paternalistic one where the government served as their guardian until their cultures were able to integrate into Canadian society (INAC 2011). The Department of Indian Affairs was granted the authority to make policy decisions such as determine who was classified as Indigenous, manage their lands, resources and money, and promote "civilization". The consequence was the further erosion of Indigenous rights to autonomy and self-governance. The implementation of residential schools and adoption of Indigenous children by non-Indigenous families in the mid-20th century reflected further discrimination and the disregard of rights (AOP n.d.).

4.2.2 Settler History

4.2.2.1 County of Middlesex

Official interest in the area dates to 1792 and 1793, when the Lieutenant-Governor for Upper Canada, John Graves Simcoe, and his wife Elizabeth visited the Forks of the Thames during an overland journey from Niagara to Detroit and back (Macleod 1972: 155). For Simcoe, the area was the natural strategic and administrative centre for the colony; equidistant from Detroit and Niagara and well inland from the hostile US border, it could support nearby naval bases on three of the Great Lakes and be easily defended in the event of American attack (Macleod 1972: 156). He subsequently ordered the lands of the Thames River basin be surveyed for European habitation. Two years later, London District was formed from parts of the Home and Western Districts, with the district town established at what is now Turkey Point.

In 1801, Simcoe's former private secretary Colonel Thomas Talbot sold his commission to promote British settlement of the area and hired surveyor Colonel Mahlon Burwell who began his work in 1810 (Brunger 2019; Gentilcore & Donkin 1973). Both the surveys and settlement would be disrupted by the War of 1812, which came to the London area in 1813. After advancing up the Thames, American forces faced a combined British regular, militia, and First Nation force at Moraviantown. In the ensuing Battle of the Thames, the widely respected First Nation leader Tecumseh was killed, and the British force was routed (Troughton & Quinlan 2009: 43-44). During the 1814 campaign season, the American force again met the British on the Thames, and the latter were again defeated at a skirmish on the Longwoods Road, also known as 'Battle Hill' (Troughton & Quinlan 2009:44).

After the war, settlers began arriving in Middlesex County in large numbers, concentrating first in the Township of Delaware, near the Thames River, then spreading to Westminster Township and London Township.

4.2.2.2 Delaware Township

Lieutenant-Governor John Graves Simcoe believed that the best way to defend the newly formed Province of Upper Canada from American expansion was to populate the area; therefore, in 1793, Simcoe ordered the lands of the Thames River basin to be surveyed for habitation. At this time, Simcoe granted 2,200 acres of the area that would later become Delaware Township, to Ebenezer Allen for his duty in the Indian department during the American Revolutionary War (Brock and Moon 1972). This grant was made with the condition that Allen would build a grist mill, sawmill, and church in the area, which he subsequently completed from 1797 to 1816.

In the years following Allen's initial settlement, several other settlers arrived in the area, including Gideon Tiffany, Daniel Springer, Thomas Sumner, McAlvan and Dudley Ladd, and Timothy and Aaron Kilbourn. By 1817, the population of Delaware Township was reportedly 80 inhabitants and one church, one school, one grist mill and two sawmills were operational in the area. By 1888, the population had reached 1,687 inhabitants, and only two notable villages, Delaware, located in the northwest portion of the Township, and Kilworth, located in the northeast portion of the Township, had appeared in the area (Brock and Moon 1972). The present study area is directly east of the village of Kilworth.

4.2.2.3 Kilworth Village

Formerly known as the Woodhull Settlement, the village that would become Kilworth was first settled in 1796 before the County of Middlesex was even formed. The Woodhull Settlement was named after the Woodhull family from Setauket, Long Island, New York, who migrated northward following the American Revolutionary War. Clemment and Hannah Woodhull, the daughters of Benjamin Woodhull, married Timothy and Aaron Kilbourn in Ontario County, New York, and in 1796 moved to Delaware Township (Moyer 2017:02). Their father Benjamin had worked in the area that would become Kilworth a year prior and applied for 200 acres of Crown Land before returning to the United States to accompany his family. Joseph Kilbourn, the father of Timothy and Aaron Kilbourn may have also worked in the area prior to his sons' arrival (Moyer 2017:02).

The Woodhull and Kilbourn (later spelled "Kilbourne") families became the founding families of Woodhull Settlement/ Kilworth Village. Other early pioneers include Loyalist and magistrate Daniel Springer who later served as a militia captain in the War of 1812 and Ebenezer Allan who established a mill in the area on Hough's Creek and with whom both Benjamin Woodhull and Joseph Kilbourn may have worked prior to their children's' arrival. Joseph Kilbourn would eventually become the settlement's first Town Clerk (Moyer 2017:02).

4.2.2.4 Study Area History

A review of county maps, topographic maps and aerial photographs chart the 19th and 20th century development of the study area. The earliest cartographic resource consulted was the 1862 *Tremaine's Map of The County of Middlesex* by G.M. and G.R. Tremaine which depicted the study area with a road system similar to what is today Oxford Street West (known as Commissioners Road West until 2003) and Gideon Drive (Figure 2). Furthermore, the 1862 map illustrated that Lots C and D, Broken Front Concession, were subdivided within the study area by this time. The map presents owners/ tenants Thomas Beveridge within the west portion of Lot C north of Gideon Drive, Thomas Bateman within the east portion of Lot C north of Gideon Drive, Thomas Roadknight within the east portion of Lot C south of Gideon Drive (within the study area despite skews caused by georeferencing historical maps), Robert Kilbourn within the west portion of Lot D north of Oxford Street West, Harvey Kilbourn within the west portion of Lot D south of Oxford Street West, Andrew Elson within the east portion of Lot D north of Oxford Street West and, finally, Timothy and Robert Kilbourn within the east portions of the Lot D south of Oxford Street West (Figure 2).

Several farmsteads are shown within the study area on the 1862 map, including one north of Gideon Drive within Bateman's property, one on either side of Oxford Street West within Robert and Harvey Kilbourn's properties, and one north of Oxford Street West within Andrew Elson's property. Labels within Harvey Kilbourn's properties indicate that they were also referred to as "Fair View" (southwest quarter of Lot D) and "Spruce Creek" (southeasternmost portion of Lot D). A label is also evident within Thomas Roadknight's property but is illegible.

The second map reviewed, the 1878 *Illustrated Historical Atlas of the County of Middlesex* by H.R. Page and Co., suggests that Beveridge's property was transferred to Robert Kilbourn (north of Oxford Street West) and B. Nichol (south of Oxford Street West) by this time while Thomas Roadknight's property was transferred to B. [Burley] Kilbourn and part of Timothy Kilbourn's property was transferred to William Mair (Figure 2). The remaining properties within the study area remained within the ownership of the families listed in 1862 with Bateman and Robert Kilbourn maintaining their properties, the "Heirs" of Andrew Elson and Timothy Kilbourn maintaining their properties (minus the part transferred to Mair), and Henry Kilbourn inheriting Harvey Kilbourn's property now labeled "Fair View Farm".

Similar to the 1862 map, structures are once again illustrated along the roads within the study area on the 1878 map. These include a church north of Oxford Street West in the property of Robert Kilbourn as well as farmsteads with associated orchards in the properties of Nichol and Bateman north of Gideon Drive, Robert Kilbourn and the Heirs of Elson north of Oxford Street West, B. [Burley] Kilbourn south of Oxford Street West and the Heirs of Timothy Kilbourn south of Oxford Street West (via a large setback). Finally, two structures are also visible within the property of Henry Kilbourn south of Oxford Street West: the easternmost appears to be a large indeterminate building while the westernmost appears to be another farmstead with associated orchard.

Local historical/ genealogical research (courtesy of heritage planning staff of the City of London) sheds light on some of the above mentioned residents of Kilworth. Thomas Beveridge migrated from Scotland and purchased 150 acres in Kilworth from Josiah Woodhull in 1860 (Moyer 2017:166). His farm eventually grew to 240 acres bordering the Bateman estate and included a storey-and-a-half frame house which according to the 1860 map would have been just west of the study area.

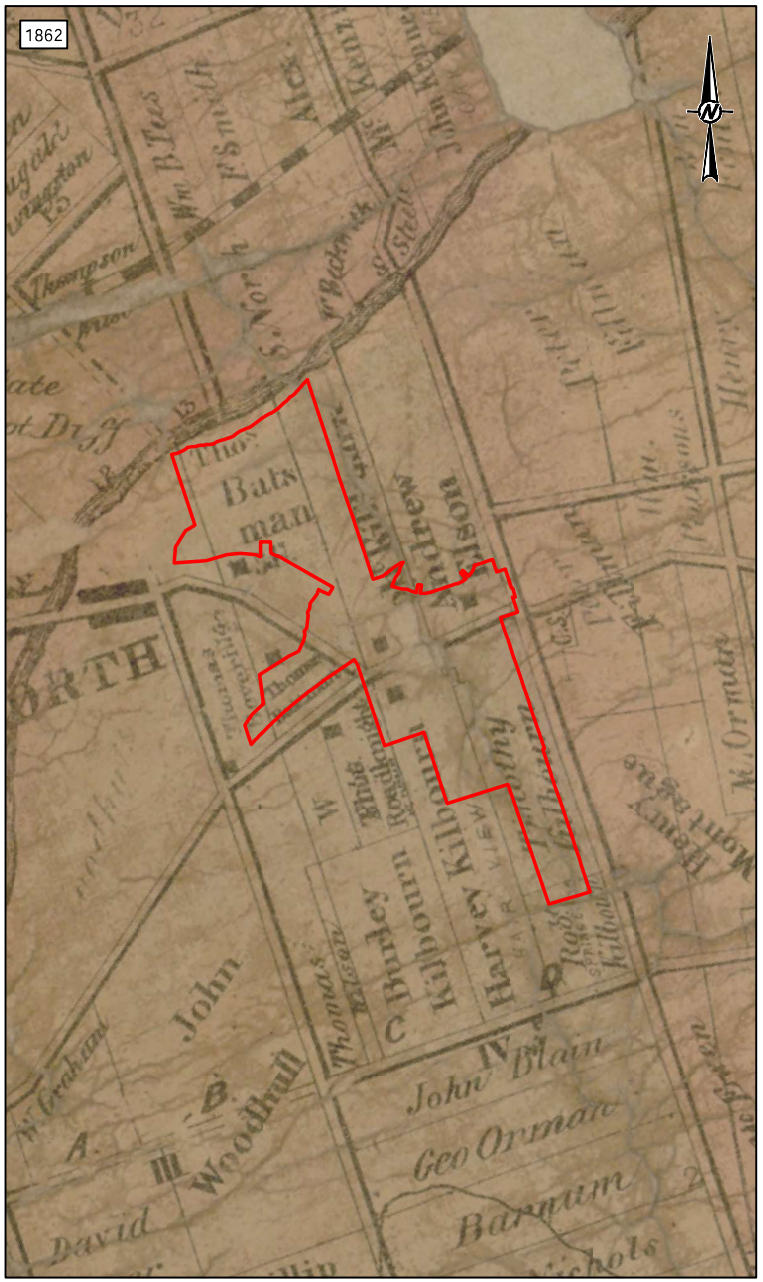
Thomas Bateman was a wealthy Englishman who built Kilworth Hall, a Georgian-styled manor, just west of the study area at present-day 1810 Woodhull Road (Moyer 2017:158). A descendent of Bateman, Thomas J. Bateman, sold 16 acres of the family's land to Samuel Frank Wood in 1910. Frank expanded his land by purchasing the adjacent property to the west from Charles Baker (Moyer 2017:190). In 1930 Wood constructed a Japanese style main house and tea house as well as a carriage house and garden on the property which would be known as the Woodholm Estate or "Woodeden" (Moyer 2017:188-189). Today these structures are repurposed and used for the Woodeden Easter Seals Camp at 2311 Oxford Street West in the north portion of the study area.

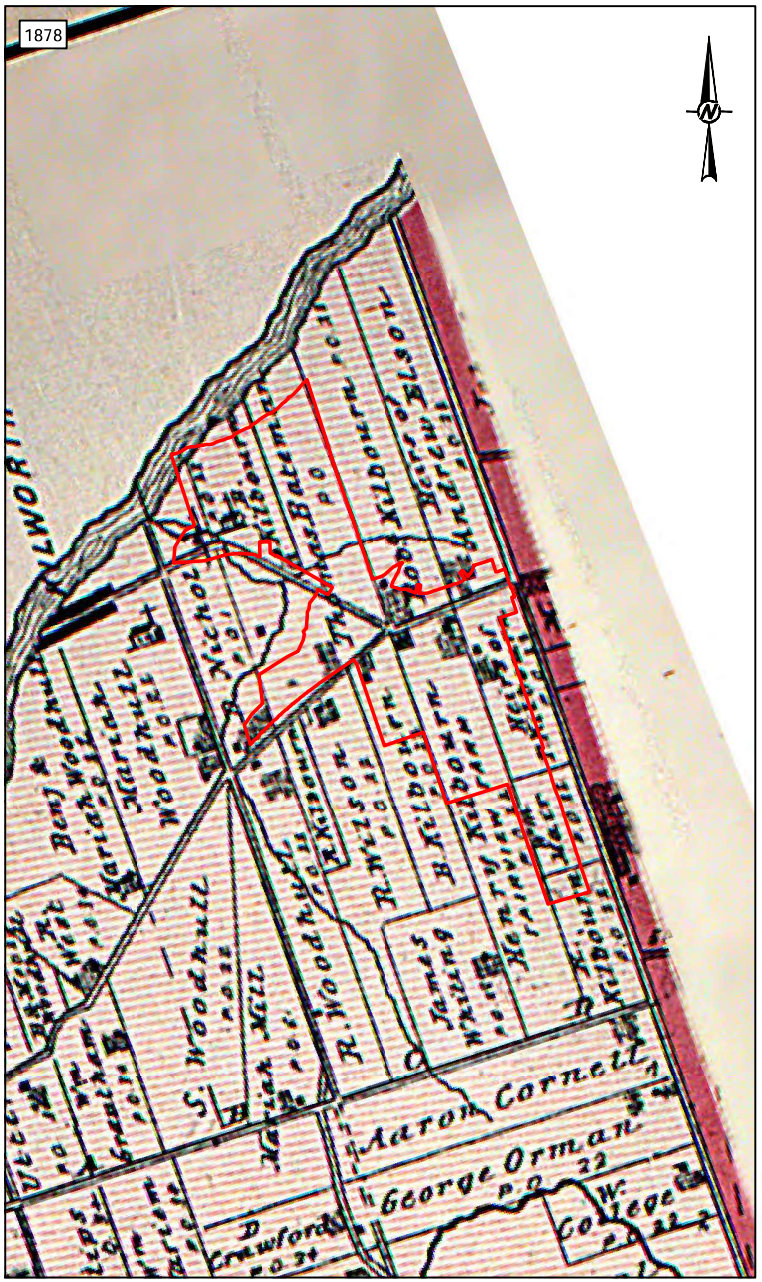
Timothy Kilbourn, the patriarch of the Kilbourn family, had five sons and three daughters with his wife Clemment (Moyer 2017:51). He owned Fairview Farm which in 1847 he sold to his fifth son Harvey (Moyer 2017:55). The farm originally housed a log cabin which circa (c.) 1865 (Moyer 2017:56) was replaced with the large brick Italianate house located at 2012 Oxford Street West in the south portion of the study area. Timothy also owned the adjacent property east of Fairview Farm which he passed on to his third son, Timothy II, and upon which the stone house at 1976 Oxford Street West (also in the south portion of the study area) was built c. 1845 (Moyer 2017:52). Timothy's fourth son Robert farmed north of Fairview Farm where a wood-sided house and a rear shed converted from the base of a windmill used to ground grain remain (Moyer 2017:53) in the central portion of the study area at 2085 Oxford Street West.

Burley Kilbourn, the eldest son of Harvey Kilbourn, resided two farms west of Fairview Farm (Moyer 2017:55) suggesting a location outside of the study area and finally James (Jim) H. Kilbourn, grandson of Harvey Kilbourn, resided at Mt. Pleasant farm at 80 Gideon Drive (in the south portion of the study area) which was previously owned by Robert Roadknight (Moyer 2017:58).

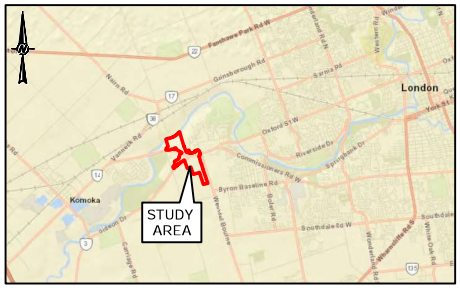
Twentieth century mapping and aerial images provide a more accurate view of the layout of the study area, showing the evolution of the Oxford Street West and Gideon Drive intersection. The 1913 to 1941 topographic maps published by the Department of Militia and Defence (later the Department of National Defence) illustrate the roadways for Oxford Street West and Gideon Drive as similar to those of the 19th century (Figure 3). A number of wood and brick structures are depicted within the study area in the topographic maps including five north of Oxford Street West, two south of Oxford Street West and two south of Gideon Drive. All nine structures appear to be extant from 1913 to 1941 (Figure 3).

Aerial photographs from 1946 and 1955 provided by the University of Western Ontario's Map Library document the realignment of the roadways in the study area as they became more identical to the present-day. At this time, Oxford Street West was transitioned into a long, sweeping curve, with Gideon Drive becoming the intersecting road (Figure 4). The 1963 and 1979 topographic maps published by National Resources Canada show the modern alignment of Oxford Street West and Gideon Drive (Figure 6) which remained unchanged until the addition of Kains Road in 2019. The name Oxford Street West was adopted in 2003 (previously known as Commissioners Road West). The maps also document the increase in structures within the study area, which by 1979 totalled 19 north of Oxford Road West, seven south of Oxford Street West and eight south of Gideon Drive (Figure 6). Ten of the structures at the north end of the study area were associated with the "Crippled Children's Camp" (present-day Easter Seals Camp Woodeden) established by 1979.





KEY MAP



SCALE 1:200,000

LEGEND

STUDY AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. TREMAINE, G.M. AND TREMAINE, GEO R., 1862, TREMAINE'S MAP OF THE COUNTY OF MIDDLESEX, CANADA WEST. GEO. R AND G.M. TREMAINE, TORONTO.
2. PAGE, H. R. AND CO., 1878, ILLUSTRATED HISTORICAL ATLAS OF THE COUNTY OF MIDDLESEX, ONTARIO. H. R. PAGE AND CO., TORONTO. [FACSIMILE EDITION, 1972, EDWARD PHELPS PUBLISHING, SARNIA.]
3. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 17, VERTICAL DATUM: CGVD28

0 200 400 800
1:20,000 METRES

CLIENT

R.V. ANDERSON ASSOCIATES LTD.

PROJECT

CHR: SCHEDULE 'B' CLASS EA OXFORD STREET WEST AND GIDEON DRIVE INTERSECTION IMPROVEMENTS

TITLE

STUDY AREA OVERLAID ON 19TH CENTURY HISTORICAL MAPS

CONSULTANT

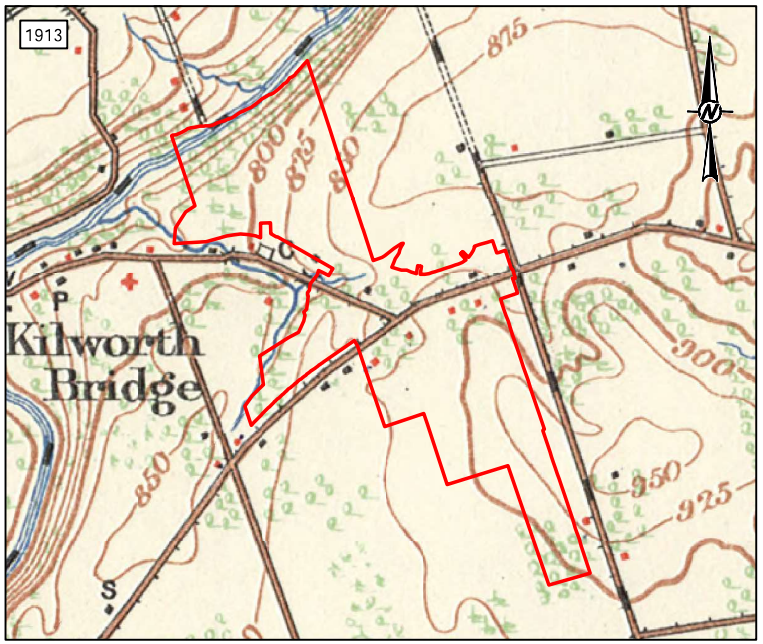
GOLDER
MEMBER OF WSP

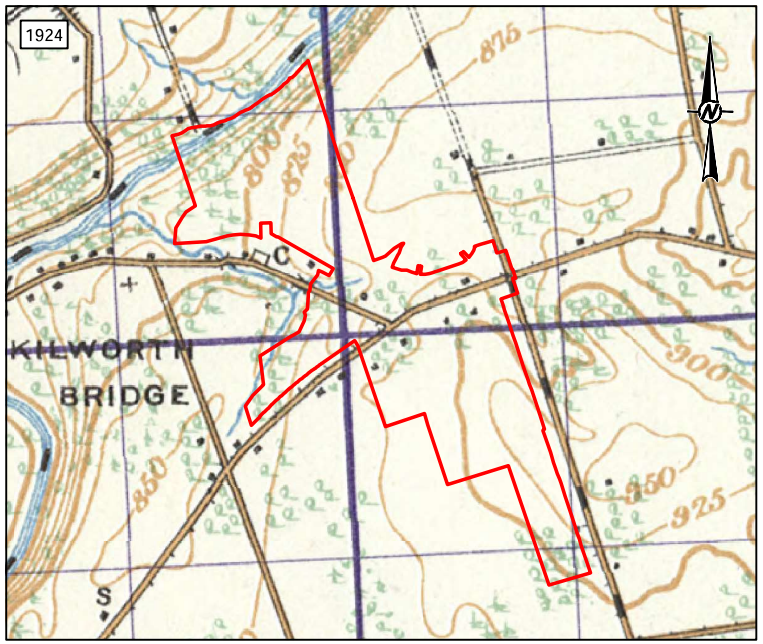
YYYY-MM-DD	2022-01-24
DESIGNED	AM
PREPARED	BR
REVIEWED	AM
APPROVED	MT

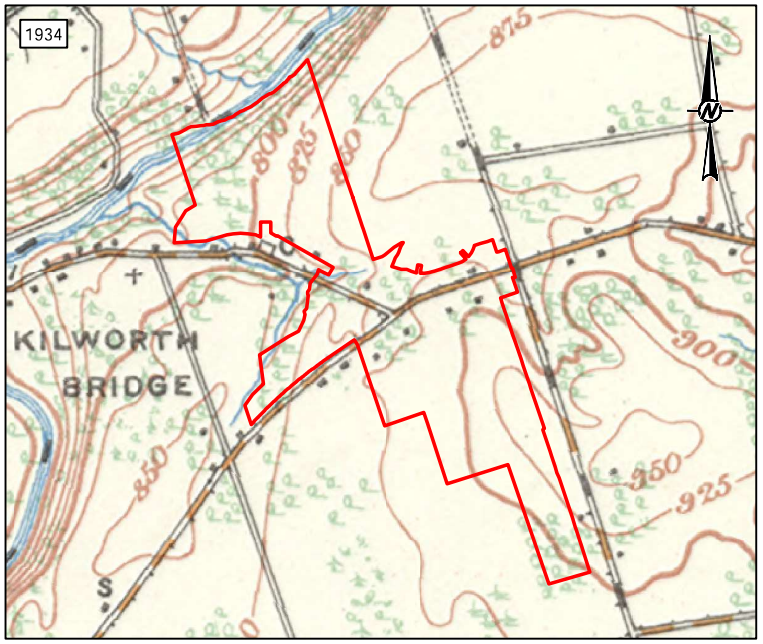
PROJECT NO.	CONTROL	REV.	FIGURE
20391051	0001	0	2

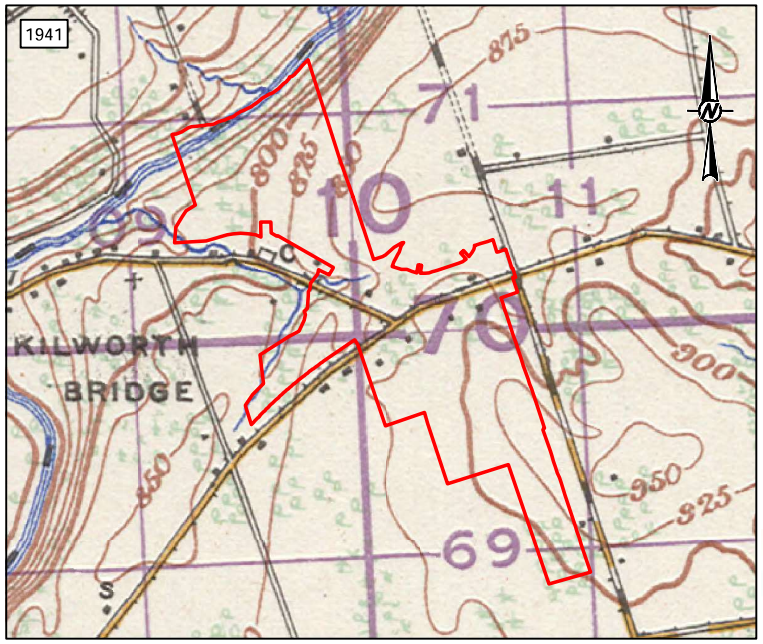
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM

Path: S:\Clients\City_of_London\Oxford_St_West_Gideon_Dr_Intersection_London\99_PRO\20391051_R_VJ_Anderson_Arc_Class_EA\MXD_PRO\20001_CHR_Sch_B_Class_EA\20391051-0001-HIS-0002.mxd

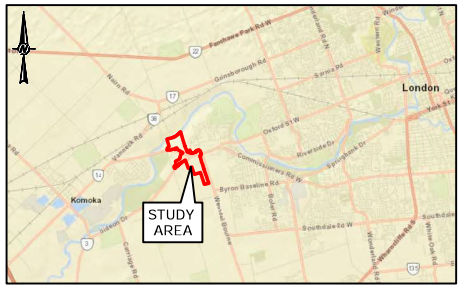








KEY MAP



SCALE 1:200,000

LEGEND

STUDY AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. ST THOMAS, ONTARIO. 1:63,360. MAP SHEET 040I14, [ED. 1]. 1913
2. ST THOMAS, ONTARIO. 1:63,360. MAP SHEET 040I14, [ED. 3]. 1924
3. ST THOMAS, ONTARIO. 1:63,360. MAP SHEET 040I14, [ED. 5]. 1934
4. ST THOMAS, ONTARIO. 1:63,360. MAP SHEET 040I14, [ED. 7]. GRIDDED. 1941
5. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
6. PROJECTION: TRANSVERSE MERCATOR. DATUM: NAD 83.
COORDINATE SYSTEM: UTM ZONE 17. VERTICAL DATUM: CGVD28

0 200 400 800
1:20,000 METRES

CLIENT
R.V. ANDERSON ASSOCIATES LTD.

PROJECT
CHR: SCHEDULE 'B' CLASS EA OXFORD STREET WEST AND GIDEON DRIVE INTERSECTION IMPROVEMENTS

TITLE
STUDY AREA OVERLAID ON EARLY 20TH CENTURY TOPOGRAPHIC MAPS

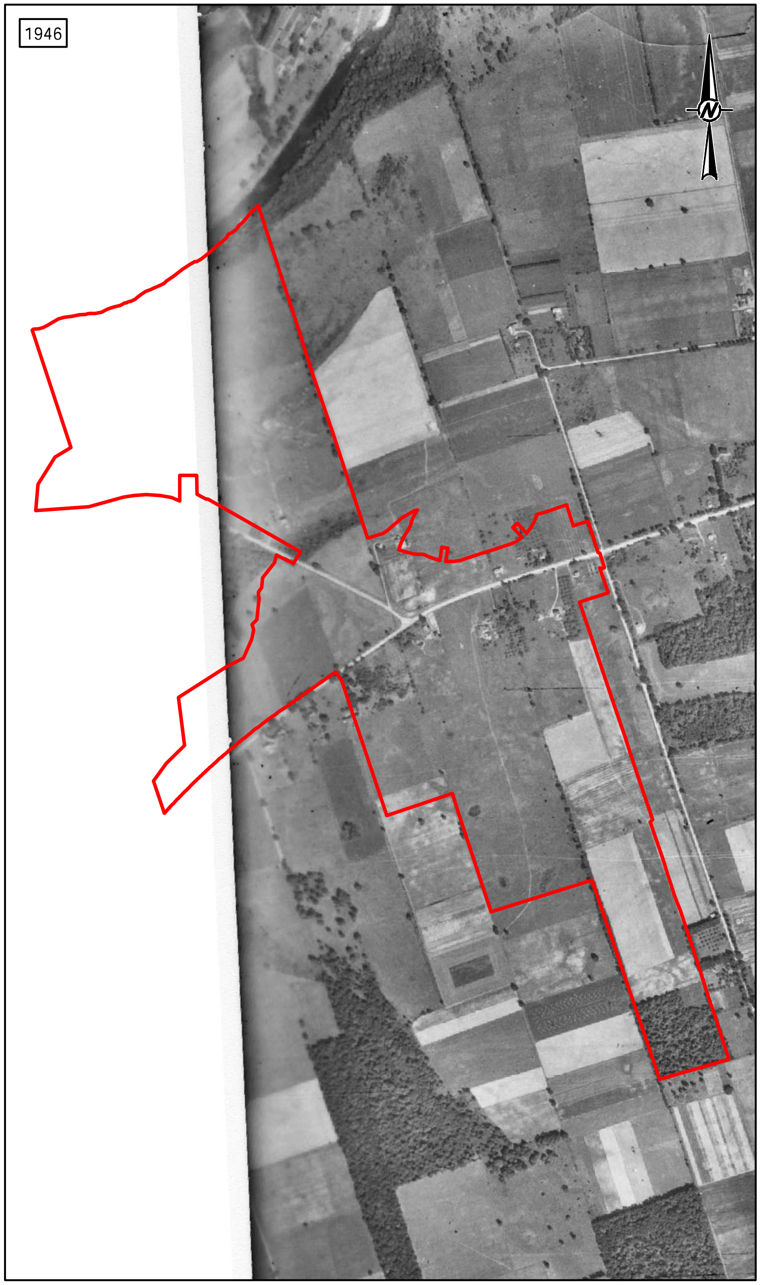
CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-24
DESIGNED	AM
PREPARED	BR
REVIEWED	AM
APPROVED	MT

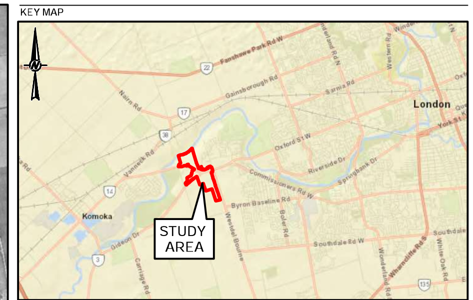
PROJECT NO.	CONTROL	REV.	FIGURE
20391051	0001	0	3

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM
25mm
0

Path: S:\Clients\City_of_London\Oxford_St_West_Gideon_Dr_Intersection_London\99_PRO\20391051_R_V_Anderson_Area_Class_EA\40_PRO\20391051-0001-HIC-0003.mxd



KEY MAP



SCALE 1:200,000

LEGEND

STUDY AREA

NOTE(S)
1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)
1. 1946 AIR PHOTO, NAPL, A9199.97
2. 1955 AIR PHOTO, NAPL, 55-4244
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 17, VERTICAL DATUM: CGVD28

0 120 240 480
1:12,000 METRES

CLIENT
R.V. ANDERSON ASSOCIATES LTD.

PROJECT
CHR: SCHEDULE 'B' CLASS EA OXFORD STREET WEST AND GIDEON DRIVE INTERSECTION IMPROVEMENTS

TITLE
STUDY AREA OVERLAID ON MID-20TH CENTURY AERIAL PHOTOGRAPHS

CONSULTANT

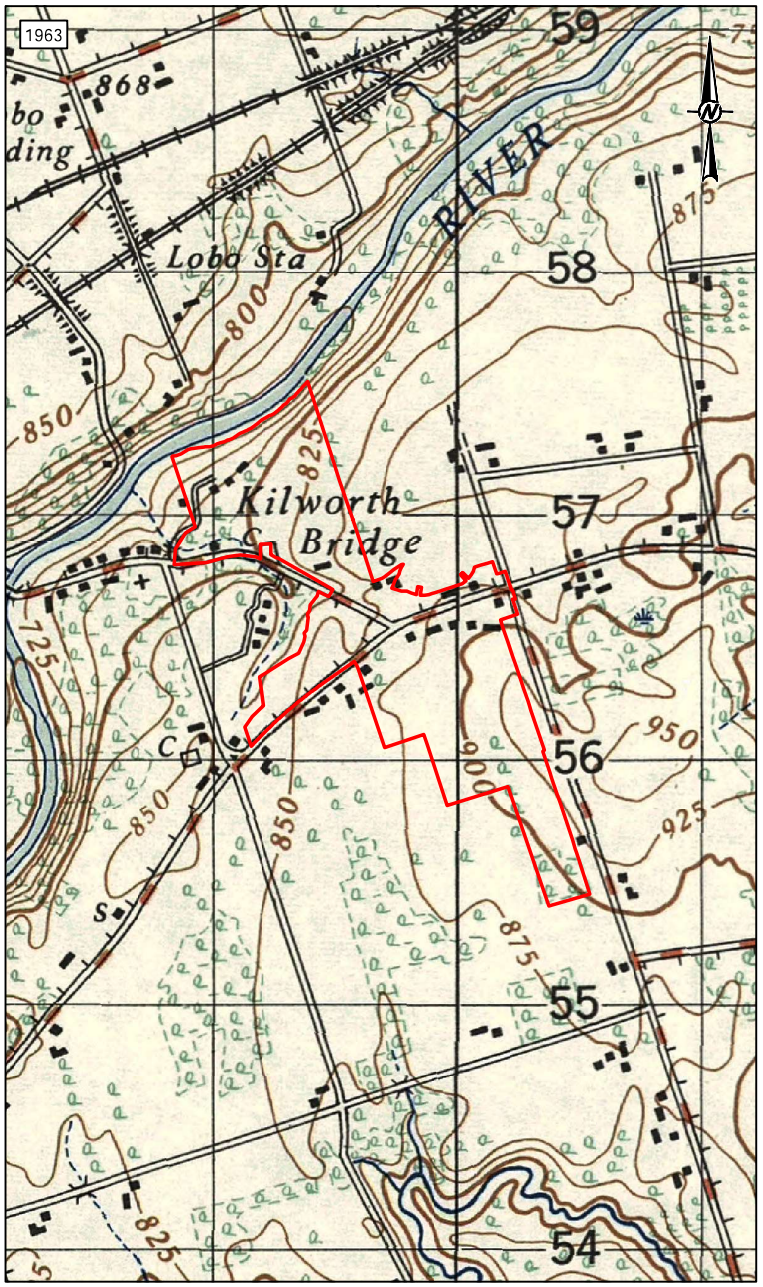
GOLDER MEMBER OF WSP

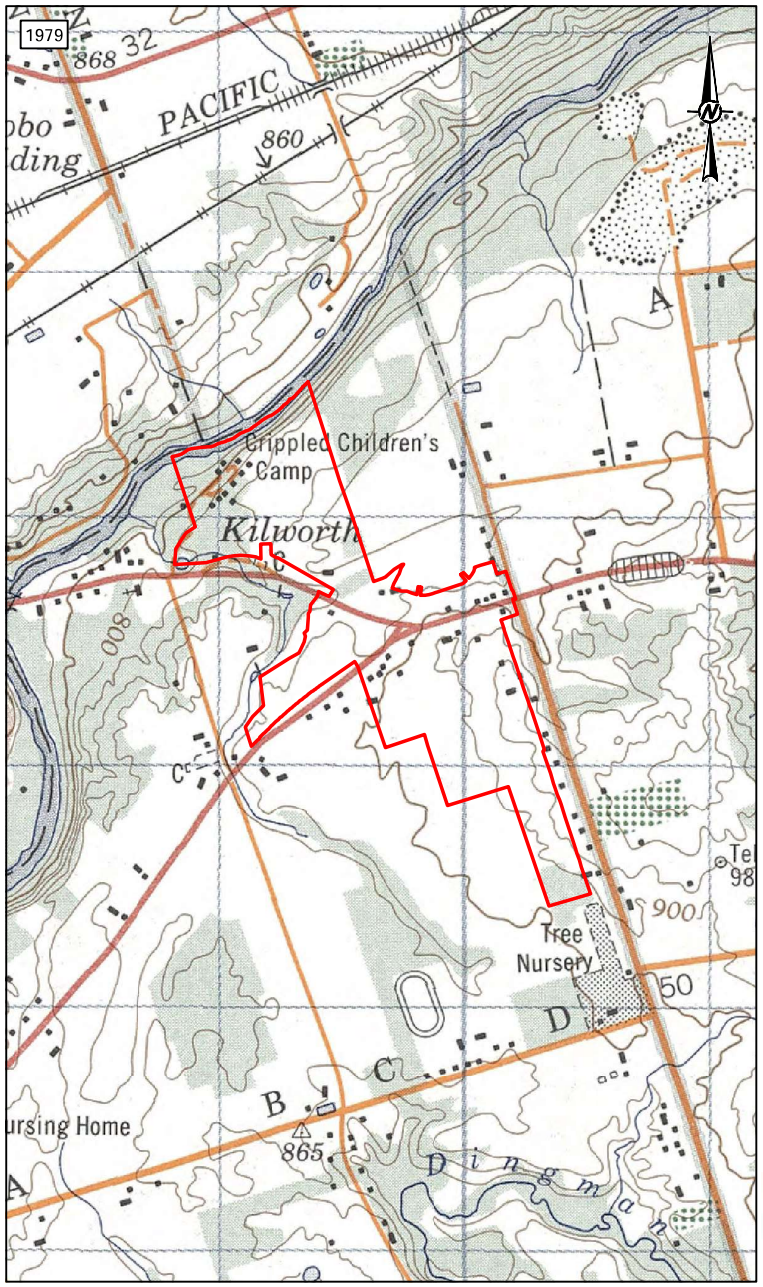
YYYY-MM-DD	2022-01-24
DESIGNED	AM
PREPARED	BR
REVIEWED	AM
APPROVED	MT

PROJECT NO.	CONTROL	REV.	FIGURE
20391051	0001	0	4

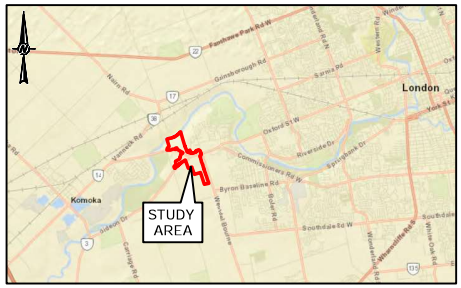
IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm

Path: S:\Clients\City_of_London\Oxford_St_West_Gideon_Dr_Intersection_London\99_PROJ\20391051_R_V_Anderson_Ass_Class_EA\40_PROD\0001_CHR_Sch_B_Class_EA\20391051-0001-HC-0004.mxd





KEY MAP



SCALE 1:200,000

LEGEND

STUDY AREA

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. ST THOMAS, ONTARIO. 1:50,000. MAP SHEET 040I14W, [ED. 3], GRIDDED, 1963
2. ST THOMAS, ONTARIO. 1:50,000. MAP SHEET 040I14W, [ED. 5], GRIDDED, 1979
3. SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 17, VERTICAL DATUM: CGVD28

0 200 400 800
1:20,000 METRES

CLIENT

R.V. ANDERSON ASSOCIATES LTD.

PROJECT

CHR: SCHEDULE 'B' CLASS EA OXFORD STREET WEST AND GIDEON DRIVE INTERSECTION IMPROVEMENTS

TITLE

STUDY AREA OVERLAID ON LATE 20TH CENTURY TOPOGRAPHIC MAPS

CONSULTANT

GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-24
DESIGNED	AM
PREPARED	BR
REVIEWED	AM
APPROVED	MT

PROJECT NO.	CONTROL	REV.	FIGURE
20391051	0001	0	5

IF THIS MEASUREMENT DOESN'T MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI D

Path: S:\Clients\City_of_London\Oxford_St_West_Gideon_Dr_Intersection_London\99_PRO\20391051_R_AJ_Anderson_Area_Class_EA\40_PRO\2001_CHR_Sch_B_Class_EA\20391051-0001-HIC-0005.mxd

5.0 EXISTING CONDITIONS

Oxford Street West, Gideon Drive and Kains Road are paved asphalt, two-lane roadways with wide to narrow gravelled shoulders within the study area (Figure 6 Figure 7). The properties flanking the roadways within the study area consist of a mix of recreational land associated with Easter Seals Camp Woodeden to the north, agricultural land and estate lots to the south, and what appears to be recently cleared for the potential expansion of the residential subdivision developments to the east and west.

While some of the driveways for the properties within the study area are paved, the majority are a mix of dirt and gravel, especially for the agricultural properties. The majority of the agricultural properties contain mature deciduous and coniferous trees while the majority of the estate lots within the study area contain maintained/ landscaped lawns. In addition to the ongoing farming activity and industry, characteristics of the rural landscape in the study area include the large ploughed fields often delineated by hedgerows or treelines and rural roads with soft shoulders and ditches.

The Thames River flows along the north periphery of the study area and two tributaries of the river intersect the east and west edges of the study area.

Figure 6: View of roadscape along Oxford Street, exhibiting two-lane roadway and gravel shoulders, facing west.

Figure 7: View of roadscape along Gideon Drive, exhibiting two-lane roadway with short gravel shoulders, facing northeast.

5.1 Identified Built Heritage Resources and Cultural Heritage Landscapes

As described in Section 2.0, known and potential BHRs and cultural heritage landscapes were identified based on the MHSTCI checklist, which was supplemented by historical research and field investigations. Properties with a date of construction 40 or more years old were field documented and then assessed for potential CHVI.

The study area for this CHR constitutes all property parcels within or crossed by the Project footprint as well as all adjacent properties. Field investigations and historical research for this CHR identified that within the study area there are:

- Three (3) properties listed (not designated) in the City of London's *Register of Cultural Heritage Resources*
  - 1976 Oxford Street West
  - 2012 Oxford Street West
  - 2311 Oxford Street West
- One (1) CHL registered as a Canadian Heritage River
  - Thames River
- Three (3) properties with potential BHRs
  - 2085 Oxford Street West
  - 14 Gideon Drive
  - 80 Gideon Drive

These are listed (east to west) in detail in the inventory presented in Table 2 and are mapped in Figure 8.

Available mid-19th to late 20th century maps and photographs, as well as early 21st century satellite imagery, were consulted to assist with determining the age of buildings or structures within the study area. The above properties were either previously evaluated using O. Reg 9/06 in a 2020 HIA completed by Stantec Consulting Ltd. (Stantec), or assessed at a preliminary level in this CHR and determined to have potential CHVI since they demonstrate:

- Design or physical value
  - The structures were potentially built in an architectural style or form uncommon in their respective areas and period of construction or are executed with a high level of craftsmanship. Additionally, there is potential for rare, unique, or representative property features to be associated with the buildings or structures. This potential design/ physical value would need to be confirmed through the completion of a CHER.
- Historical or associative value
  - Based on background historical research, the properties were found to be directly associated with significant themes, events, beliefs, persons, organizations, or institutions, or had potential to contribute to the understanding of the community or culture. This potential historical/ associative value would need to be confirmed through the completion of a CHER.

- Contextual value
  - The properties define or support the character of their respective areas, or are physically, functionally, visually or historically linked to their surroundings, or considered landmarks of cultural heritage significance. This potential contextual value would need to be confirmed through the completion of a CHER.

As none of the properties identified in this CHR have been designated under Part IV or V of the OHA, they are considered to have potential CHVI and heritage attributes in the following Table 2.

Table 2: Built heritage resources and cultural heritage landscapes within the study area

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes

1976 Oxford Street West	Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*	 (Golder Photograph 2021)  (Golder Photograph 2021)	*Known BHR*:
			
			Described on City of London's *Register of Cultural Heritage Resources* as an 1850 house in the "vernacular" architectural style.
			
			Additional characteristics include that it is a single-detached, single-storey, stone structure with a four-bay (north/ front façade) main block, T-shaped plan and low pitch hip roof.
			
			The house is set back approximately 82 m from Oxford Street West and is accessed by a dirt/ gravel driveway to the east of the house.
			
			To the rear (south) of the house is a large ploughed agricultural tract delineated by a hedgerow/ treeline to the west.
			
			In 2020, an HIA was conducted for 1976 Oxford Street West and determined that the property met two (2) of nine (9) criteria for CHVI defined by O. Reg 9/06 (Stantec 2020). As such, the following SCHVI was presented for the property:
			
			"*The property at 1976 Oxford Street West is located in the City of London. It is bound by Oxford Street West to the north, to the east by 1962 Oxford Street West, to the south by 9070 Elviage Drive, and the west by 2012 Oxford Street West.*
			
			The property contains a representative 19th century Ontario vernacular cottage. The residence is a stone structure, which is rare in the City of London. However, this part of the city, formerly associated with the hamlet of Kilworth contains two other 19th century stone structures within one kilometre of the Study Area. The property is historically associated with the Kilbourne family, who were prominent and early settlers in the Township of Delaware. The Kilbourne family immigrated from New York State in 1796 and operated a sawmill in the area. Timothy Kilbourne purchased Lot D from Andrew Westbrook in 1805. Timothy served as a Middlesex County Commissioner and Road Assessor and farmed the property. In 1847, Timothy divided Lot D between his sons Harvey, Horace, Robert, and Timothy Junior. The property at present-day 1976 Oxford Street West was inherited by Timothy Kilbourne Junior. The farm was passed down to his descendants until 1985, when Albert Kilbourne died" (Stantec 2020: 5.9).
				As outlined in Stantec 2020:
				
				Potential design or physical value:
				■ The residence at 1976 Oxford Street West meets the criteria of Section 1i of O. Reg 9/06 as a representative Ontario vernacular structure and rare example of a stone structure in the City of London.
				
				Potential historical or associative value:
				■ The property at 1976 Oxford Street West meets the criteria of Section 2i of O. Reg 9/06 for its direct historical association with the Kilbourne family.
				
				Potential contextual value:
				■ The property at 1976 Oxford Street West does not meet the criteria of Section 3 of O. Reg 9/06.
					As outlined in Stantec 2020:
					
					■ Property
					  ▪ Historical association with the Kilbourne family
					■ Residence
					  ▪ One-storey structure
					  ▪ Stone exterior

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
		 Timothy Kilbourne III and family at 1976 Oxford Street West c. 1912 (Moyer 2017:52)			
2012 Oxford Street West	Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*	 (Golder Photograph 2021)	*Known BHR*: Described on City of London's *Register of Cultural Heritage Resources* as the "Fairview Farm" property consisting of a c. 1865 house in the "Georgian" architectural style. Additional characteristics include that it is a single-detached, two-storey, brick clad structure with a three-bay (north/ front façade) main block, rectangular plan and low pitch hip roof. The house is set back approximately 45 m from Oxford Street West and is accessed by a paved asphalt driveway to the west of the house. To the west of the house and driveway is a gable roof board and batten barn (50 m from Oxford Street West) and to the rear (south) of the house and barn is a large ploughed agricultural tract delineated by a hedgerow/ treeline to the east.	**As outlined in Stantec 2020:** **Potential design or physical value:** ■ The residence and outbuilding at 2012 Oxford Street West meet the criteria of Section 1i of the O. Reg 9/06 as a representative Ontario Vernacular Italianate residence and representative Ontario Vernacular gable roof outbuilding.	**As outlined in Stantec 2020:** ■ Property ▪ Backyard landscaped with mature trees and black walnut grove ▪ Historical association with the Kilbourne family as part of Fairview Farm ■ Residence ▪ Two-storey structure ▪ Low pitched hip roof

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
		 (Golder Photograph 2021)  (Golder Photograph 2021)  Samuel Kilbourn (son of Harvey) and family at Fairview Farm c. 1912 (Moyer 2017:57)	In 2020, an HIA was conducted for 2012 Oxford Street West and determined that the property met two (2) of nine (9) criteria for CHVI defined by O. Reg 9/06 (Stantec 2020). As such, the following SCHVI was presented for the property: "*The property at 2012 Oxford Street West is located in the City of London. It is bounded by Oxford Street West to the north, 14 Gideon Drive to the west, 1976 Oxford Street West to the east, and 9150 Elviage Drive to the south. The property contains a residence, outbuilding, grove of mature walnut trees, and agricultural fields.* *The residence at 2012 Oxford Street West is a representative Ontario Vernacular Italianate farmhouse influenced by Georgian style. The residence is a symmetrical two storey structure with a low-pitched hip roof, buff brick exterior, and stone foundation. It contains decorative brick scalloping, brick banding, segmental arch window openings, brick voussoirs, and brick keystones. The outbuilding is a representative 19th century gable roof structure with a timber frame, stone foundation, and hand-hewn beams.* *The property is historically associated with the Kilbourne family, who were prominent and early settlers in the Township of Delaware. The Kilbourne family immigrated from New York State in 1796 and operated a sawmill in the area. Timothy Kilbourne purchased Lot D from Andrew Westbrook in 1805. Timothy served as a Middlesex County Commissioner and Road Assessor and farmed the property. In 1847, Timothy divided Lot D between his sons Harvey, Horace, Robert, and Timothy Junior. The property at present-day 2012 Oxford Street West was inherited by Harvey Kilbourne, who built the present-day residence at 2012 Oxford Street West. The property retains direct historical association with the Kilbourne family through the residence constructed by Harvey and the Black Walnut Grove in the backyard planted by the Kilbourne family. Descendants of the Kilbourne family lived on the property until 1973 and called the property "Fairview Farm"* (Stantec 2020: 5.3).	**Potential historical or associative value:** ■ The property at 2012 Oxford Street West meets the criteria of Section 2i of O. Reg 9/06 for its direct historical association with the Kilbourne family. **Potential contextual value:** ■ The property at 2012 Oxford Street West does not meet the criteria of Section 3 of O. Reg 9/06.	▪ Symmetrical front façade with three bays ▪ Buff brick exterior ▪ Stone foundation ▪ Brick scalloping below roofline ▪ Brick banding between first and second storey ▪ Segmental arch window openings ▪ Buff brick voussoirs and keystones ■ Outbuilding ▪ Gable roof ▪ Timber frame ▪ Hand hewn beams ▪ Stone foundation

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
14 Gideon Drive	Property of Potential CHVI	 (Golder Photograph 2021)  (Golder Photograph 2021)	*Potential BHR*: A single-detached, single-storey, horizontal siding clad structure with a stone foundation main block. The main block also has a T-shaped plan and medium pitch gable roof. To the east and west of the main block are identical horizontal siding clad single-storey extensions but with poured concrete foundations. The house is set back approximately 35 m from Gideon Drive and is accessed by a gravel driveway to the west of the house which leads to a detached horizontal cladding garage. Farmstead at approximate location visible as early as 1862 county map. Brick house at location visible as early as 1913 topographic map. In 2020, an HIA was conducted for 14 Gideon Drive and determined that the property met two (2) of nine (9) criteria for CHVI defined by O. Reg 9/06 (Stantec 2020). As such, the following SCHVI was presented for the property: "*The residence at 14 Gideon Drive is located in the City of London. The property is bound to the north by Gideon Drive, to the west by 36 Gideon Drive, and the east and south by 2012 Oxford Street West.* *The property is historically associated with the Kilbourne family, who were prominent and early settlers in the Township of Delaware. The Kilbourne family immigrated from New York State in 1796 and operated a sawmill in the area. Timothy Kilbourne purchased Lot D from Andrew Westbrook in 1805. Timothy served as a Middlesex County Commissioner and Road Assessor and farmed the property. In 1847, Timothy divided Lot D between his sons Harvey, Horace, Robert, and Timothy Junior. The property at present-day 14 Gideon Drive was inherited by Harvey Kilbourne who lived and farmed on the lands known as "Fairview Farm", including the adjacent present-day 2012 Oxford Street West. The property was severed from Fairview Farm sometime before 1954.* *The property contains a highly modified single storey residence that dates to the mid-19th century as well as modern outbuildings. The residence is clad in modern siding and numerous modern additions are evident. At the centre of the north façade a stone foundation was identified, although its extent is not known. Given the presence of stone residences in close vicinity, the original construction methods of the residence are unknown. As such, the residence has the potential to yield information that contributes to an understanding of mid-19th century construction techniques in the former Deleware Township*" (Stantec 2020: 5.6-5.7).	**As outlined in Stantec 2020:** **Potential design or physical value:** ■ The residence at 14 Gideon Drive does not meet the criteria of Section 1 of O. Reg 9/06. **Potential historical or associative value:** ■ The property at 14 Gideon Drive meets the criteria of Section 2i and 2ii of O. Reg 9/06 for its direct historical association with the Kilbourne family and potential to contribute to an understanding of the community. **Potential contextual value:** ■ The property at 14 Gideon Drive does not meet the criteria of Section 3 of O. Reg 9/06.	**As outlined in Stantec 2020:** ■ Property ▪ Historical association with the Kilbourne family as part of Fairview Farm ■ Residence ▪ Structure with stone foundation

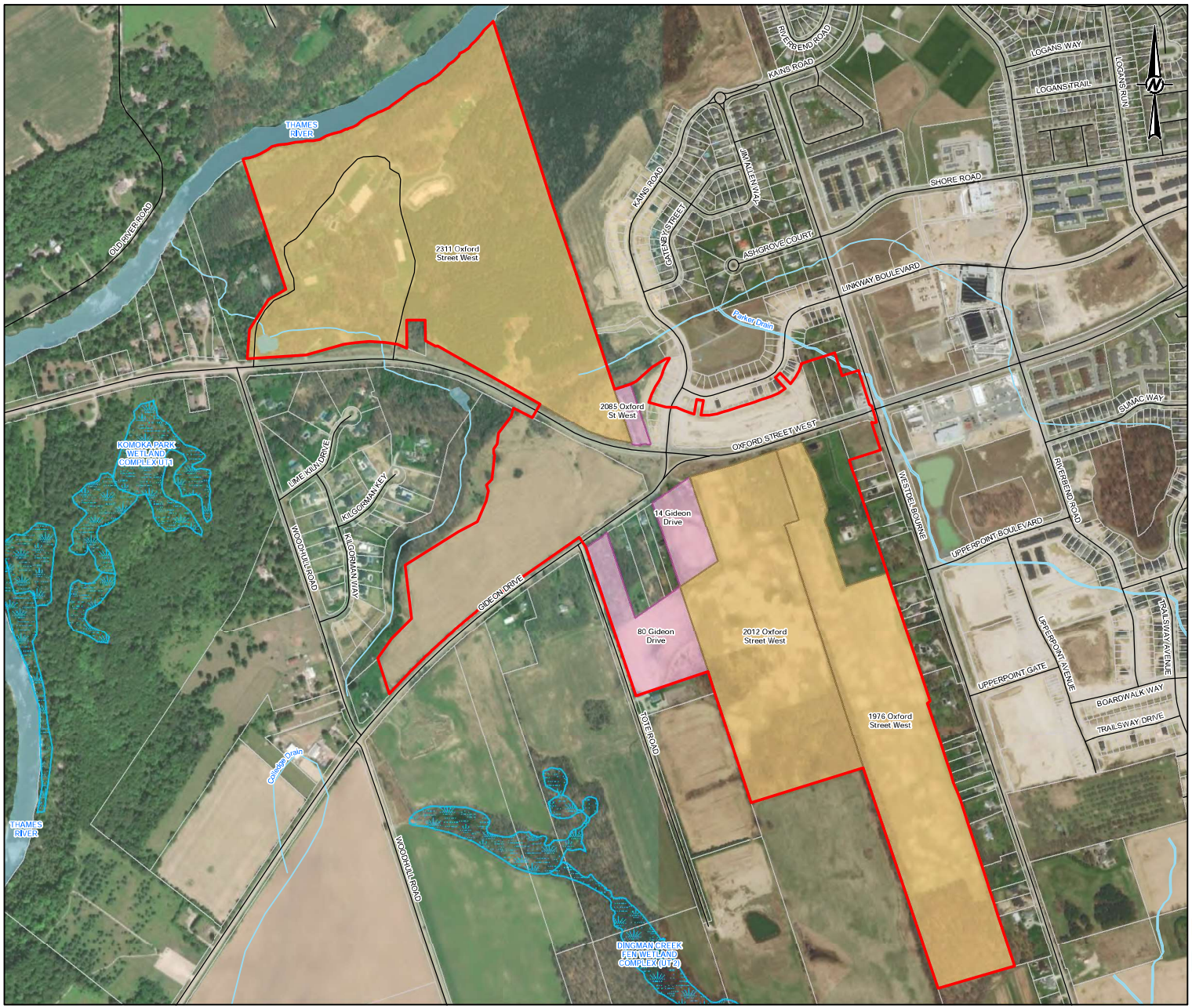
Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
2085 Oxford Street West	Property of Potential CHVI	 (Golder Photograph 2021)  (Golder Photograph 2021)	*Potential BHR*: Satellite imagery suggests a single-detached structure with a rectangular plan. The house is set back approximately 100 m from Oxford Street West and is accessed by a dirt/ gravel driveway to the west of the house. Wood constructed garage/ driveshed partially visible from ROW. Farmstead at approximate location visible as early as 1862 county map. Wood house at location visible as early as 1913 topographic map. Timothy Kilbourn, the patriarch of the Kilbourn family and early pioneer of Kilworth Village, had five sons and three daughters with his wife Clemment (Moyer 2017:51). His fourth son Robert farmed north of Fairview Farm where a wood-sided house and rear shed converted from the base of a windmill used to ground grain remain (Moyer 2017:53) at 2085 Oxford Street West.	**To be confirmed by CHER (potential CHVI):** **Potential design or physical value:** ■ 19th to early 20th century wood-sided house and shed converted from the remains of a windmill base **Potential historical or associative value:** ■ Historical association with the Kilbourne family **Potential contextual value:** ■ None identified	**To be confirmed by CHER (potential heritage attributes):** ■ Property ▪ Historical association with the Kilbourne family ■ Residence ▪ Wood-sided house ■ Outbuilding ▪ Remains of base of windmill

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
		 2017 photograph of 2085 Oxford Street West, Robert Kilbourn's farmstead, later occupied by Albert and Dorothy Kilbourn (Moyer 2017:66)			

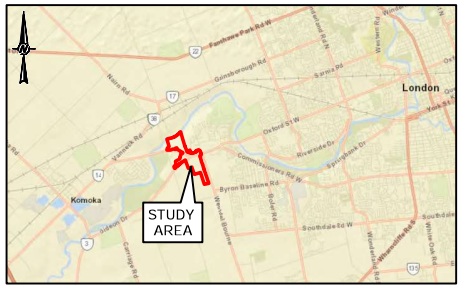
2311 Oxford Street West	Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*	
		(Golder Photograph 2021)
			Known BHR:
			
			Described on City of London's *Register of Cultural Heritage Resources* as the 1925 "Woodeden Estate".
			
			Additional characteristics include that it is set back approximately 325 m from Oxford Street West and is accessed by a paved asphalt driveway to the west of the estate building.
			
			To the east and south of the estate is a large woodlot and to the west of the estate are smaller structures associated with Easter Seals Camp Woodeden.
			
			Thomas J. Bateman, a descendent of Thomas Bateman the wealthy Englishman who built Kilworth Hall (Moyer 2017:158), sold 16 acres of the family's land to Samuel Frank Wood in 1910. Frank expanded his land by purchasing the adjacent property to the west from Charles Baker (Moyer 2017:190). In 1930 Wood constructed a Japanese style main house and tea house as well as a carriage house and garden on the property which would be known as the Woodholm Estate or "Woodeden" (Moyer 2017:188-189). Today these structures are repurposed and used for the Woodeden Easter Seals Camp at 2311 Oxford Street West.
				To be confirmed by CHER (potential CHVI):
				
				Potential design or physical value:
				■ 1930 Japanese-style house and associated structures (potential CHL)
				
				Potential historical or associative value:
				■ None identified
				
				Potential contextual value:
				■ Functionally and visually linked/ connected to surrounding estate structures
					To be confirmed by CHER (potential heritage attributes):
					
					■ Property
					  ■ Functional and visual connection between estate structures
					■ Residence
					  ■ Japanese-style architecture

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
		 (Golder Photograph 2021)			
80 Gideon Drive	Property of Potential CHVI	 (Golder Photograph 2021)  (Golder Photograph 2021)	*Potential BHR*: A single-detached, storey-and-a-half, brick clad structure in the vernacular Gothic Revival style with a stone foundation main block. The main block also has an L-shaped plan (i.e., "Gothic L" style) and medium pitch gable roof with decorative vergeboard. The roof appears to have been redone with synthetic shingles but a brick chimney remains. To the west of the main block is a vertical siding clad single-storey extension but with poured concrete foundation. The house is set back approximately 32 m from Gideon Drive and is accessed by a dirt/ gravel driveway to the west of the house. To the rear (south) of the house is barn (appears to be board and batten) and a small ploughed agricultural field. Farmstead at approximate location visible as early as 1862 county map. Brick house at location visible as early as 1913 topographic map. Timothy Kilbourn, the patriarch of the Kilbourn family and early pioneer of Kilworth Village, had five sons and three daughters with his wife Clemment (Moyer 2017:51). James (Jim) H. Kilbourn, grandson of Timothy's fifth son Harvey Kilbourn, resided at Mt. Pleasant farm at 80 Gideon Drive which was previously owned by Robert Roadknight (Moyer 2017:58).	**To be confirmed by CHER (potential CHVI):** **Potential design or physical value:** ■ 19th to early 20th century brick house in the vernacular Gothic Revival style **Potential historical or associative value:** ■ Historical association with the Kilbourne family **Potential contextual value:** ■ None identified	**To be confirmed by CHER (potential heritage attributes):** ■ Property ▪ Historical association with the Kilbourne family ■ Residence ▪ Storey-and-a-half brick structure ▪ Stone foundation ▪ Gable with decorative vergeboard

Address or Location (roughly east to west)	Cultural Heritage Status	Photograph	Description	CHVI	Heritage Attributes
Thames River	Designated Canadian Heritage River	 (Canadian Heritage River Systems n.d.)	*Known CHL*: Described on *Canadian Heritage River Systems* inventory as: "*The outstanding cultural heritage of this river includes more than 11,000 years of continuous occupancy by Canada's Aboriginal Peoples and a rich history of European exploration and settlement.* *Beginning with the Paleo Indians and continuing to the present day, the river has been consistently used for both sustenance and settlement. Four distinct First Nations continue to reside along the Thames: Chippewa of the Thames, Moraviantown, Munsee-Delaware Nation and Oneida Nation of the Thames.* *The Thames River was one of the major theatres of the War of 1812 where the legendary Shawnee Chief Tecumseh died at the Battle of Moraviantown. A peace treaty later defined the Canadian-American border in what is now southwestern Ontario.* *The Thames was the terminus for the Underground Railway for fugitive American slaves prior to the American Civil War. Recognized as the birthplace for Canadian agriculture, it remains the agricultural heartland of eastern Canada to this day*" (https://chrs.ca/en/rivers/thames-river) Additional characteristics include that the river is located approximately 650 m from Oxford Street West.	**To be confirmed by CHER (potential CHVI):** **Potential design or physical value:** ■ None identified **Potential historical or associative value:** ■ More than 11,000 years of continuous occupancy by Indigenous and European populations. ■ Significance during War of 1812 where Tecumseh died at the Battle of Moraviantown. ■ Terminus for the Underground Railway for fugitive American slaves prior to the American Civil War. **Potential contextual value:** ■ Maintenance and support of natural landscape of area (treelined banks)	**To be confirmed by CHER (potential heritage attributes):** ■ Views of natural landscape with mix of mature coniferous and deciduous trees



KEY MAP



SCALE 1:200,000

LEGEND

- STUDY AREA
- LISTED (NOT DESIGNATED) ON LONDON REGISTER OF CULTURAL HERITAGE RESOURCES
- POTENTIAL BUILT HERITAGE RESOURCE
- ROADWAY
- WATERCOURSE
- WETLAND
- WATERBODY
- PROPERTY PARCEL

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. LAND INFORMATION ONTARIO (LIO) DATA PRODUCED BY GOLDER ASSOCIATES LTD, UNDER LICENCE FROM ONTARIO MINISTRY OF NATURAL RESOURCES, © QUEENS PRINTER 2021
3. SERVICE LAYER CREDITS: SOURCE: ESRI, MAXAR, GEOEYE, EARTHSTAR GEOGRAPHICS, CNES/AIRBUS DS, USDA, USGS, AEROGRID, IGN, AND THE GIS USER COMMUNITY SOURCES: ESRI, HERE, GARMIN, USGS, INTERMAP, INCREMENT P, NRCAN, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), ESRI KOREA, ESRI (THAILAND), NGCC, (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
4. PROJECTION: TRANSVERSE MERCATOR, DATUM: NAD 83, COORDINATE SYSTEM: UTM ZONE 17, VERTICAL DATUM: CGVD28

0 85 170 340
1:8,500 METRES

CLIENT
R.V. ANDERSON ASSOCIATES LTD.

PROJECT
CHR: SCHEDULE 'B' CLASS EA OXFORD STREET WEST AND GIDEON DRIVE INTERSECTION IMPROVEMENTS

TITLE
IDENTIFIED BUILT HERITAGE RESOURCES AND CULTURAL HERITAGE LANDSCAPES WITHIN STUDY AREA

CONSULTANT
GOLDER
MEMBER OF WSP

YYYY-MM-DD	2022-01-24
DESIGNED	AM
PREPARED	BR
REVIEWED	AM
APPROVED	MT

PROJECT NO.	CONTROL	REV.	FIGURE
20391051	0001	0	8

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM

6.0 PRELIMINARY ASSESSMENT OF IMPACTS

6.1 Development Description

6.1.1 Project Justification and Preferred Alternative

The need and justification for the Project is outlined in the Problem/ Opportunity Statement which establishes the general parameters or scope for the study. The Problem/ Opportunity Statement was developed by the City of London and presented during their Online Public Information session 17 November 2021. Key elements of the Problem/ Opportunity Statement include:

- The fact that the intersection at Oxford Street West and Gideon Drive does not balance the full range of potential users within the community, including users of all ages and abilities. Pedestrians, cyclists, transit vehicles and motorists.
- The fact that the existing Oxford Street West and Gideon Drive intersection does not accommodate projected traffic volumes.
- The need to ensure that existing watermains and sewers in the vicinity of the intersection are positioned to provide opportunities for future connection to designated development lands.

As part of the Municipal Class EA process, four alternatives were considered for the Project. These included:

- Alternative 1 – Do Nothing: This option would maintain the existing condition of the Oxford Street West and Gideon Drive Intersection
- Alternative 2 – Signalized Intersection: This option would implement improvements consisting of the installation of traffic signals, crosswalks and cycling facilities.
- Alternative 3 – Single-Lane Roundabout: This option would implement a single land roundabout, crosswalks and cycling facilities.
- Alternative 4 – Multi-Lane Roundabout: This option would implement a multi-lane roundabout with additional lanes to accommodate heavier traffic movements as well as install crosswalks and cycling facilities.

Following an evaluation of the options, Alternative 4 was determined to be the recommended solution for the Project as it presented the least concern to the following five evaluation criteria inspired from the EAA: traffic operations and safety, socio-economic environment, natural environment and climate change, cultural heritage resources and, finally, costs. All four options scored the same in the category of cultural heritage resources which the Project described as the affects on archaeological resources, cultural heritage resources and Indigenous communities.

6.1.2 Proposed Construction Activities

As currently planned, construction for Project will consist of the approximate Project footprint comprising approximately 4.2 ha of the municipal ROW for Oxford Street West, Gideon Drive, and Kains Road in the City of London, Ontario.

APPENDIX A provides a preliminary design plan for the Project. In addition to the additional lanes, crosswalks and cycling facilities planned for the multi-lane roundabout, the preliminary design plan proposes a pathway entrance feature to the west of Kains Road, a future sidewalk connection to the southeast of the roundabout, and a potential future development to the south of the roundabout where 14 Gideon Drive is currently located. The proposed construction activities will primarily be confined to the existing road allowance which based on satellite imagery ranges in width from approximately 12 to 17 m.

While the design plans for the intersection improvements are still in the preliminary phase, the proposed construction activities are anticipated to include:

- Excavation
- Soil grading
- Asphalt paving
- Relocation of utilities such as hydro
- Landscaping
- Street lighting
- Use of heavy machinery

Though not yet confirmed during the preliminary design phase of the Project, temporary working spaces and laydown areas may also be required adjacent to the road allowances to facilitate the movement and storage of equipment necessary for construction. The exact locations of these areas, if required, are not yet determined. Furthermore, potential construction activities may require the use of dump trucks and heavy traffic as well as require some vegetation removal, though these details have not yet been confirmed.

6.2 Assessment Methodology

When determining the impact a development or site alteration may have on known or identified built heritage resources or cultural heritage landscapes, the MHSTCI *Heritage Resources in the Land Use Planning Process* advises that the following "negative impacts" be considered:

- *Destruction* of any, or part of any, significant heritage attributes, or features[2]
- *Alteration* that is not sympathetic or is incompatible, with the historic fabric and appearance[3]
- *Shadows* created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden[4]
- *Isolation* of a heritage attribute from its surrounding environment, context or a significant relationship[5]
- *Direct or indirect obstruction* of significant views or vistas within, from, or of built and natural features[6]
- *A change in land use* such as rezoning a battlefield from open space to residential use, allowing new development or site alteration to fill in the formerly open spaces[7]
- *Land disturbances* such as a change in grade that alters soils, and drainage patterns that adversely affect a cultural heritage resource[8]

[2] This is used as an example of a *direct* impact in the MHSCTI *Info Bulletin 3.*

[3] A *direct* impact in the MHSCTI *Info Bulletin 3.*

[4] An *indirect* impact in the MHSCTI *Info Bulletin 3.*

[5] An *indirect* impact in the MHSCTI *Info Bulletin 3.*

[6] An example of a *direct* and *indirect* impact in the MHSCTI *Info Bulletin 3*. It is a direct impact when significant views or vistas within, from or of built and natural features are obstructed, and an indirect impact when "a significant view of or from the property from a key vantage point is obstructed".

[7] A *direct* impact in the MHSCTI *Info Bulletin 3.*

[8] In the MHSTCI *Heritage Resources in the Land Use Planning Process* this refers only to archaeological resources but in the MHSCTI *Info Bulletin 3* this is an example of a *direct* impact to "provincial heritage property, including archaeological resources".

Other potential impacts may also be considered such as encroachment or construction vibration (Figure 9) particularly for heritage attributes within 60 m of proposed construction (Carmen et al. 2012: 31). Historic structures, particularly those built-in masonry, are susceptible to damage from vibration caused by pavement breakers, plate compactors, utility excavations, and increased heavy vehicle travel in the immediate vicinity. Like any structure, they are also threatened by collisions with heavy machinery or subsidence from utility line failures (Randl 2001: 03-06).

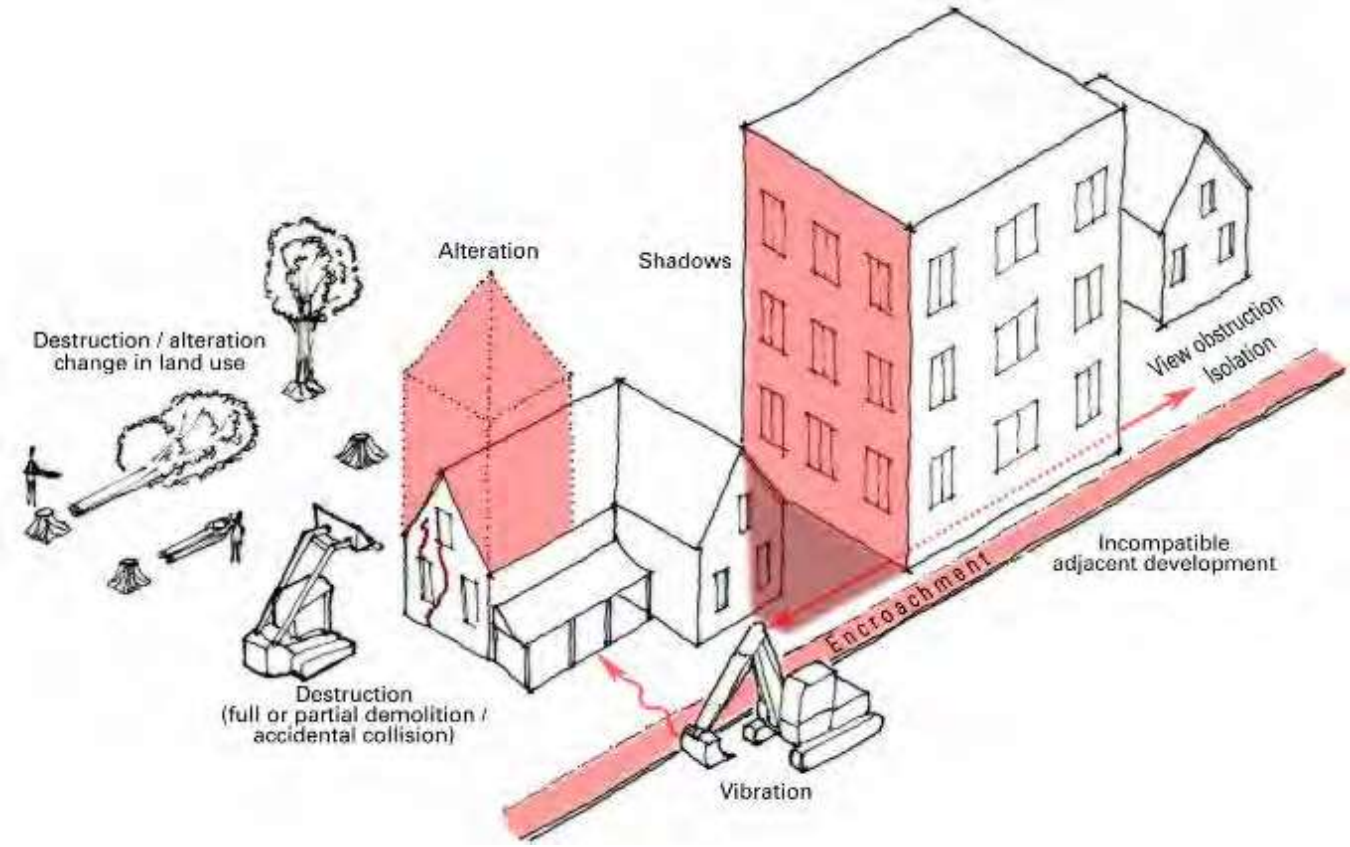


Figure 9: Examples of negative impacts

Although the MHSTCI *Heritage Resources in the Land Use Planning Process* identifies types of impact, it does not advise on how to describe its nature or extent. For this, the MHSTCI *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1990:8) provides criteria of:

- Magnitude (amount of physical alteration or destruction that can be expected)
- Severity (the irreversibility or reversibility of an impact)
- Duration (the length of time an adverse impact persists)
- Frequency (the number of times an impact can be expected)
- Range (the spatial distribution, widespread or site specific, of an adverse impact)
- Diversity (the number of different kinds of activities to affect a heritage resource)

Since advice to describe magnitude is not included in the MHSTCI *Guideline* or any other Canadian guidance, the ranking provided in the ICOMOS *Guidance on Heritage Impact Assessments for Cultural World Heritage Properties* (ICOMOS 2011: Appendix 3B) is adapted here. While developed specifically for World Heritage Sites, it is based on a general methodology for measuring the nature and extent of impact to cultural resources in urban and rural contexts developed for the UK Highways Agency *Design Manual for Roads and Bridges* [DMRB]*: Volume 11*, HA 208/07 (2007: A6/11) (Bond & Worthing 2016:166-167) and aligns with approaches developed by other national agencies such as the Irish Environmental Protection Agency (reproduced in Kalman & Létourneau 2020:390) and New Zealand Transport Agency (2015).

The ICOMOS impact assessment ranking is:

- **Major**
  - Change to key historic building elements, such that the resource is totally altered. Comprehensive changes to the setting.
- **Moderate**
  - Change to many key historic building elements, such that the resource is significantly modified.
  - Changes to the setting of an historic building, such that it is significantly modified.
- **Minor**
  - Change to key historic building elements, such that the asset is slightly different.
  - Change to the setting of an historic building, such that it is noticeably changed.
- **Negligible**
  - Slight changes to historic building elements or setting that hardly affect it.
- **No impact**
  - No change to fabric or setting.

The analysis of impacts includes a summary of each impacted property's cultural heritage significance, and terms provided under conservation or mitigation recommendations are defined as follows:

- **Avoid**: A recommendation to avoid means to move project components to locations a distance from the identified built heritage resources or cultural heritage landscapes. In all cases avoidance is the preferred approach, although it is recognized that other factors may preclude selecting this option.
- **Monitor for construction vibration**: Although direct impact to built heritage resources and cultural heritage landscapes may be avoided, indirect impacts from construction vibration may still present a risk. If a vibration risk is identified, the following measures are usually recommended:
  - *Site control and communication*: The property and specifically the footprint of the building should be clearly marked on project mapping and communicated to all project personnel for avoidance during design, construction, and subsequent operation.

- *Create a physical buffer*: Temporary fencing should be erected at the nearest property line or lines to ensure that all excavation, installation, and associated vehicle traffic during construction will not accidentally impact the property.
- *Monitor for vibration impact*: Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients.

- **Fugitive dust emissions management plan:** Fugitive dust refers to small particles that become airborne from open sources such as construction sites. In addition to health concerns, these particles may pose a risk to built heritage resources or cultural heritage landscapes if determined to impede or damage heritage attributes. If a fugitive dust emissions risk is identified, the following measure is usually recommended:
  - This plan will follow practices outlined in the *Ontario Standards Development Branch Technical Bulletin: Management Approaches for Industrial Fugitive Dust Sources* (2017).
- **Conduct a Cultural Heritage Evaluation Report (CHER) or Heritage Impact Assessment (HIA)**
  - If a potential built heritage resource or cultural heritage landscape cannot be avoided and will be directly impacted by the project, a cultural heritage evaluation report (CHER) is recommended to determine if the potential resource meets the criteria for CHVI as prescribed in O. Reg. 9/06. If the CHER determines the property has CHVI, a Heritage Impact Assessment (HIA) will be required to determine the impact of the proposed detailed design on the property's heritage attributes.
  - For recognized built heritage resources and cultural heritage landscapes, and those evaluated to have CHVI, an HIA is recommended to determine the impact of the proposed detailed design on the property's heritage attributes and recommend mitigation and conservation measures to reduce or avoid adverse effects. The HIA should follow guidance provided by the MHSTCI and any municipal terms of reference or official plan policies.

The impacts of the proposed Project on the known and potential BHRs and known CHL (east to west) are assessed in Table 3 below.

6.2.1 Impact Assessment

Table 3: Impact Assessment and Conservation Recommendations for Municipally Listed Properties and potential Cultural Heritage Landscape

Resource Type and Location	Analysis of Impact to Identified Cultural Heritage Resources	Conservation/ Mitigation Measures	Consideration of Alternatives
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **1976 Oxford Street West**	As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting and use of heavy machinery, is approximately 82 m from the property's potential heritage attributes associated with the one-storey stone structure and is not anticipated to negatively impact the heritage attribute associated with the historical link to the Kilbourne family. Vibration during construction is not anticipated to impact the property's potential CHVI and heritage attributes because it is not within the 60-m zone suggested for vibration monitoring (Carmen et al. 2012: 31). Furthermore, fugitive dust emissions during construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 82 m from the proposed works. Shadows from the proposed construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 82 m away and there are no upstanding features proposed. Isolation of the property's potential heritage attributes is also not expected as they are 82 m away from the proposed works and will not disrupt the connection between the property's BHR and the other Kilbourn family properties in the surrounding area. Finally, direct or indirect obstruction of significant views or vistas is not expected as no significant views or vista were identified.	■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.	■ As no impacts to known BHRs are anticipated, no alternatives have been considered.
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **2012 Oxford Street West**	As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting and use of heavy machinery, is approximately 45 m from the property's potential heritage attributes associated with the Italianate farmhouse and 50 m from the potential heritage attributes associated with the timber frame barn. As such, vibration during construction is anticipated to potentially impact the property's potential CHVI and heritage attributes because it is within the 60-m zone suggested for vibration monitoring (Carmen et al. 2012: 31). Overall, any potential vibration impacts would be indirect, temporary and site specific to the property's potential physical heritage attributes as the property parcel is directly adjacent to the proposed works but the identified BHR is located approximately 45 m from the Project footprint. Vibration impacts are not anticipated to adversely affect the property's potential heritage attributes associated with the vegetation in the rear yard or the historical link with the Kilbourne family. Furthermore, fugitive dust emissions during construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 45 m from the proposed works. Shadows from the proposed construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 45 m away and there are no upstanding features proposed. Isolation of the property's potential heritage attributes is also not expected as they are 45 m away from the proposed works and will not disrupt the connection between the property's BHR and the other Kilbourn family properties in the surrounding area. Finally, direct or indirect obstruction of significant views or vistas is not expected as no significant views or vista were identified.	■ As a potential indirect impact to 2012 Oxford Street West is predicted, it is recommended to: ▪ Conduct a pre-construction survey during detailed design to determine whether the BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property. ▪ If the survey determines the BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.	■ As the impacts to known BHRs can be mitigated, no alternatives have been considered.

Resource Type and Location	Analysis of Impact to Identified Cultural Heritage Resources	Conservation/ Mitigation Measures	Consideration of Alternatives

Potential BHR:
14 Gideon Drive
	As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR.
	
	The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting and use of heavy machinery, is approximately 35 m from the property's potential heritage attributes associated with the stone foundation structure. As such, vibration during construction is anticipated to impact the property's potential CHVI and heritage attributes because it is within the 60-m zone suggested for vibration monitoring (Carmen et al. 2012: 31).
	
	Overall, any potential vibration impacts would be indirect, temporary and site specific to the property's potential physical heritage attributes as the property parcel is directly adjacent to the proposed works but the identified BHR is located approximately 35 m from the Project footprint. Vibration impacts are not anticipated to adversely affect the property's potential heritage attributes associated with the historical link with the Kilbourne family.
	
	Furthermore, fugitive dust emissions during construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 35 m from the proposed works.
	
	Shadows from the proposed construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 35 m away and there are no upstanding features proposed.
	
	Isolation of the property's potential heritage attributes is also not expected as they are 35 m away from the proposed works and will not disrupt the connection between the property's BHR and the other Kilbourne family properties in the surrounding area.
	
	Finally, direct or indirect obstruction of significant views or vistas is not expected as no significant views or vista were identified.
		■ As a potential indirect impact to 14 Gideon Drive is predicted, it is recommended to:
		  ■ Conduct a pre-construction survey during detailed design to determine whether the potential BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property.
		  ■ If the survey determines the potential BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients.
		  ■ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.
			■ As the impacts to potential BHRs can be mitigated, no alternatives have been considered.

Potential BHR: **2085 Oxford Street West**	As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting, and use of heavy machinery is approximately 100 m from the property's potential heritage attributes associated with the wood-sided house and rear shed converted from the remains of a windmill base, and is also not anticipated to negatively impact the potential heritage attribute associated with the historical link to the Kilbourne family. Vibration during construction is not anticipated to impact the property's potential CHVI and heritage attributes because it is not within the 60-m zone suggested for vibration monitoring (Carmen et al. 2012: 31). Furthermore, fugitive dust emissions during construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 100 m from the proposed works. Shadows from the proposed construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 100 m away and there are no upstanding features proposed. Isolation of the property's potential heritage attributes is also not expected as they are 100 m away from the proposed works and will not disrupt the connection between the property's BHR and the other Kilbourne family properties in the surrounding area. Finally, direct or indirect obstruction of significant views or vistas is not expected as no significant views or vista were identified.	■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.	■ As no impacts to potential BHRs are anticipated, no alternatives have been considered.

Resource Type and Location	Analysis of Impact to Identified Cultural Heritage Resources	Conservation/ Mitigation Measures	Consideration of Alternatives
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **2311 Oxford Street West**	As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting and use of heavy machinery, is approximately 325 m from the property's potential heritage attributes associated with the Japanese-style architecture and is not anticipated to negatively impact the potential heritage attribute associated with the function and visual link between the estate structures. Vibration during construction is not anticipated to impact the property's potential CHVI and heritage attributes because it is not within the 60-m zone suggested for vibration monitoring (Carmen et al. 2012: 31). Furthermore, fugitive dust emissions during construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 325 m from the proposed works. Shadows from the proposed construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 325 m away and there are no upstanding features proposed. Isolation of the property's potential heritage attributes is also not expected as they are 325 m away from the proposed works and will not disrupt the connection between the property's BHR and the surrounding estate structures. Finally, direct or indirect obstruction of significant views or vistas is not expected as no significant views or vista were identified.	■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.	■ As no impacts to known BHRs are anticipated, no alternatives have been considered.

Potential BHR: **80 Gideon Drive**	As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR.
	
	The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting and use of heavy machinery, is approximately 32 m from the property's potential heritage attributes associated with the storey-and-a-half brick structure. As such, vibration during construction is anticipated to impact the property's potential CHVI and heritage attributes because it is within the 60-m zone suggested for vibration monitoring (Carmen et al. 2012: 31).
	
	Overall, any potential vibration impacts would be indirect, temporary and site specific to the property's potential physical heritage attributes as the property parcel is directly adjacent to the proposed works but the identified BHR is located approximately 32 m from the Project footprint. Vibration impacts are not anticipated to adversely affect the property's potential heritage attributes associated with the historical link with the Kilbourne family.
	
	Furthermore, fugitive dust emissions during construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 32 m from the proposed works.
	
	Shadows from the proposed construction are not anticipated to impact the property's potential CHVI and heritage attributes because they are 32 m away and there are no upstanding features proposed.
	
	Isolation of the property's potential heritage attributes is also not expected as they are 32 m away from the proposed works and will not disrupt the connection between the property's BHR and the other Kilbourne family properties in the surrounding area.
	
	Finally, direct or indirect obstruction of significant views or vistas is not expected as no significant views or vista were identified.
		■ As a potential indirect impact to 80 Gideon Drive is predicted, it is recommended to:
		  ■ Conduct a pre-construction survey during detailed design to determine whether the potential BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property:
		  ■ If the survey determines the potential BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients.
		  ■ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should determine if the property meets the criteria prescribed in O. Reg. 9/06. If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.
			■ As the impacts to potential BHRs can be mitigated, no alternatives have been considered.

Resource Type and Location	Analysis of Impact to Identified Cultural Heritage Resources	Conservation/ Mitigation Measures	Consideration of Alternatives
Designated Canadian Heritage River: **Thames River**	As currently proposed, the Project will be directly adjacent to properties fronting on to the CHL but is not anticipated to directly or indirectly impact the CHL, nor adversely affect the CHL's potential CHVI and heritage attributes. The proposed Project footprint, of which the proposed works include excavation, soil grading, asphalt paving, utilities relocation, landscaping, street lighting and use of heavy machinery, is approximately 650 m from the CHL and its potential heritage attributes associated with the views of the natural landscape and vegetation. Shadows from the proposed construction are not anticipated to impact the CHL's potential CHVI and heritage attributes because they are 650 m away and there are no upstanding features proposed. Isolation of the CHL's potential heritage attributes is also not expected as they are 650 m away from the proposed works. Finally, direct or indirect obstruction of significant views or vistas of the CHL is not expected.	■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into a property fronting the CHL, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property fronting the CHL has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.	■ As no impacts to known CHLs are anticipated, no alternatives have been considered.

7.0 SUMMARY STATEMENT AND RECOMMENDATIONS

In February 2021, R.V. Anderson Associates Limited (Ltd.; the Client) retained Golder Associates Ltd. (Golder) to conduct a CHR to support the Schedule 'B' Municipal Class EA for the Oxford Street West and Gideon Drive Intersection Improvements in the City of London, Ontario (the Project).

The Project footprint consists of approximately 4.2 ha of the municipal ROW for Oxford Street West, Gideon Drive, and Kains Road, located on part of Lots C and D of the Broken Front Concession in the former Township of Delaware, County of Middlesex, now the City of London, Ontario. For the purposes of this CHR, the "study area" constitutes all property parcels within or crossed by the Project footprint as well as all adjacent properties.

Following guidance provided by the MHSTCI, the City of London, and CHP's 2010 *Standards and Guidelines for the Conservation of Historic Places in Canada* (CHP *Standards and Guidelines*) this CHR summarizes the applicable heritage policies, details the study area's geography and history, identifies known and potential BHRs and CHLs, and assesses at a preliminary level the potential BHRs and CHLs for CHVI. Based on this understanding of the study area and surrounding area, the potential impacts resulting from the Project are assessed and future actions recommended.

Historical research and field investigations conducted for this report identified three listed (not designated) properties, one designated CHL, and three properties with potential BHRs within the study area. These are listed in the table below in order from east to west (roughly) with recommendations for mitigation or alternatives to avoid or reduce negative effects from the Project. Note that these recommendations are based on Golder's current understanding of the Project and may need to be revisited if components are moved or altered.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **1976 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **2012 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As a potential indirect impact to 2012 Oxford Street West is predicted, it is recommended to: ▪ Conduct a pre-construction survey during detailed design to determine whether the BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property. ▪ If the survey determines the BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
	provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.
Potential BHR: **14 Gideon Drive**	■ As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As a potential indirect impact to 14 Gideon Drive is predicted, it is recommended to. ▪ Conduct a pre-construction survey during detailed design to determine whether the potential BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property. ▪ If the survey determines the potential BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ As the property was previously evaluated (using O. Reg. 9/06) to have CHVI (Stantec 2020), if design alterations or conditions require adjacent excavation or construction to extend into the property, conduct a project specific HIA during detailed design to determine the appropriate mitigation.
Potential BHR: **2085 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.

Identified BHR or CHL	Summary of Impact and Mitigation Recommendations
Listed (not designated) in the City of London's *Register of Cultural Heritage Resources*: **2311 Oxford Street West**	■ As currently proposed, the Project will be directly adjacent to the property but is not anticipated to directly or indirectly impact the property, nor adversely affect the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.
Potential BHR: **80 Gideon Drive**	■ As currently proposed, the Project will be directly adjacent to the property and is anticipated to indirectly impact the property, potentially adversely affecting the property's potential CHVI and heritage attributes, which are linked to its BHR. ■ As a potential indirect impact to 80 Gideon Drive is predicted, it is recommended to: ▪ Conduct a pre-construction survey during detailed design to determine whether the potential BHR will be vulnerable to vibration impacts during adjacent excavation and construction, as well as whether construction activities will require extending into the property. ▪ If the survey determines the potential BHR will be vulnerable, monitor for vibration impacts during adjacent excavation and construction and immediately cease work if vibration thresholds are exceeded. Continuous ground vibration monitoring should be carried out near the foundations of the building using a digital seismograph capable of measuring and recording ground vibration intensities in digital format in each of three orthogonal directions. The instrument should also be equipped with a wireless cellular modem for remote access and transmission of data. The installed instrument should be programmed to record continuously, providing peak ground vibration levels at a specified time interval (e.g., 5 minutes) as well as waveform signatures of any ground vibrations exceeding a threshold level that would be determined during monitoring. The instrument should also be programmed to provide a warning should the peak ground vibration level exceed the guideline limits specified (such as 8.0 mm/s). In the event of either a threshold trigger or exceedance warning, data would be retrieved remotely and forwarded to designated recipients. ▪ If design alterations or conditions require adjacent excavation or construction to extend into the property, a CHER is required. If required, the CHER should determine if the property meets the criteria prescribed in O. Reg. 9/06. If the CHER determines the property has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.
Designated Canadian Heritage River: **Thames River**	■ As currently proposed, the Project will be directly adjacent to properties fronting on to the CHL but is not anticipated to directly or indirectly impact the CHL, nor adversely affect the CHL's potential CHVI and heritage attributes. ■ As no direct or indirect impacts are anticipated, no further cultural heritage study or mitigation is recommended. ■ If design alterations or conditions require adjacent excavation or construction to extend into a property fronting the CHL, a CHER is required. If required, the CHER should confirm if the property meets the criteria prescribed in O. Reg. 9/06. ■ If the CHER determines the property fronting the CHL has CHVI, conduct an HIA during detailed design to determine the appropriate mitigation.

Consultation with City of London heritage planning staff has determined that additional recommendations for the EA team conducting the overall Project include:

- Avoid properties of recognized or potential cultural heritage value or interest in the Project design;
- Avoid the creation of staging and/ or laydown areas on any recognized or potential cultural heritage resources; and
- Review the impact assessment of this report during the Detailed Design phase and amend or revise as needed.

8.0 REFERENCES

Algonquins of Pikwàkanagàn First Nations (AOP). 2012 *History*. [online] Accessed at: http://www.algonquinsofpikwakanagan.com/culture_history.php.

Blumenson, John. 1990. *Ontario Architecture: A Guide to Styles and Building Terms, 1784 to Present*. Fitzhenry & Whiteside, Toronto.

Bond, Stephen and Worthing, Derek. 2016. *Managing Built Heritage: The Role of Cultural Values and Significance*. Second Edition. John Wiley & Sons, Chichester.

Brock, Daniel and Moon, Muriel. 1972. *The History of the County of Middlesex, Canada*. Mika Studios, Belleville, Ontario.

Canadian Atlas Online, The. 2015. "Mixedwood Plains Ecozone." Electronic document: http://www.canadiangeographic.ca/atlas/themes.aspx?id=mixedwood&sub=mixedwood_basics_ecozones . Last accessed: March 11, 2019.

Canada's Historic Places. 2010. *Standards and Guidelines for the Conservation of Historic Places in Canada*. Second Edition. Canada's Historic Places, Ottawa.

Carmen, Richard A., Buehler, David, Mikesell, Stephen, and Carolyn L. Searls. 2012. *Current Practices to Address Construction Vibration and Potential Effects to Historic Buildings Adjacent to Transportation Projects*. Wilson, Ihrig and Associates, ICF International, and Simpson, Gumpertz and Heger, Incorporated for the American Association of State Highway and Transportation Officials (AASHTO), Washington, DC.

Chapman, Lyman John and Donald F. Putnam. 1984. *The Physiography of Southern Ontario*. 3rd edition. Ontario Geological Survey Special Volume 2. Ontario Ministry of Natural Resources, Toronto.

Ferris, Neal. 2009. *The Archaeology of Native-Lived Colonialism: Challenging History in the Great Lakes.* University of Arizona Press, Tucson.

Gentilcore, R. Louis and Kate Donkin. 1973. *Land surveys of southern Ontario: an introduction and index to the field notebooks of the Ontario land surveyors 1784-1859*. Cartographica Monograph No. 8. BV Gutsell. Department of Geography, York University, Toronto.

Government of Ontario. 2020. Provincial Policy Statement (2020). Ministry of Municipal Affairs and Housing, Toronto. [online]. Accessed: https://www.ontario.ca/page/provincial-policy-statement-2020

2017. Technical Bulletin: management approaches or industrial fugitive dust sources. Ministry of the Environment, Conservation and Parks, Toronto. [online]. Accessed: https://www.ontario.ca/page/technical-bulletin-management-approaches-industrial-fugitive-dust-sources

2014. Standards and Guidelines for Conservation of Provincial Heritage Properties. Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

2007. InfoSheet: Eight Guiding Principles in the Conservation of Built Heritage Properties. Ministry of Heritage, Sport, Tourism and Culture Industries, Queen's Printer for Ontario.

1990. *Environmental Assessment Act*, R.S.O. 1990, c. E.18. [online] Accessed at: https://www.ontario.ca/laws/statute/90e18

1990. The Planning Act R.S.O. 1990, c. P.13. [online]. Accessed: https://www.ontario.ca/laws/statute/90p13

1990. Ontario Heritage Act, R.S.O. 1990, c. O.18. [online]. Accessed: https://www.ontario.ca/laws/statute/90o18

Historic Scotland. 1999. Historic Landuse Assessment. Historic Scotland, Edinburgh.

Hubka, Thomas C. 2013. Houses without Names: Architectural Nomenclature and the Classification of America's Common Houses. University of Tennessee Press, Knoxville.

Indigenous and Northern Affairs Canada (INAC). 2011. A History of Treaty-Making in Canada. [online] Accessed at: https://www.aadnc-aandc.gc.ca/eng/1314977704533/1314977734895

Masters, Bernie. 2017. Australian Soil and Land Survey Field Handbook, 3rd edition. National Committee on Soil and Terrain, Collingwood, Victoria.

McGill University. n.d. County Atlas Project: Russel County Map. [online] Accessed at: https://digital.library.mcgill.ca/Countyatlas/searchmapframes.php

Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI). 2015. *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes: A Checklist for the Non-Specialist.* Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

2006. *Ontario Heritage Tool Kit: Heritage Property Evaluation – A Guide to Listing, Researching, and Evaluating Cultural Heritage Property in Ontario Communities*. Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

2006. *Ontario Heritage Tool Kit: Heritage Resources in the Land Use Planning Process*. Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

2006. *Ontario Heritage Tool Kit: Designating Heritage Properties: A Guide to Municipal Designation of Individual Properties Under the Ontario Heritage Act.* Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

2006. *Ontario Heritage Tool Kit: Heritage Conservation Districts: A Guide to Designation Under the Ontario Heritage Act.* Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

1992. *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments*. Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

1980. *Guidelines on the Man-Made Heritage Component of Environmental Assessments.* Ministry of Heritage, Sport, Tourism and Culture Industries, Toronto.

Moyer, Elizabeth A. 2017. Kilworth: The Woodhull Settlement. Pinpoint Publications Limited, London.

Parks Canada Agency. n.d. Parks Canada Directory of Federal Heritage Designations. [online] Accessed at: http://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx

1974. Canadian Historic Sites: Occasional Papers in Archaeology and History No. 10. National Historic Parks and Sites Branch, Parks Canada, Indian and Northern Affairs, Ottawa.

1980. Canadian Inventory of Historic Building Exterior Recording Training Manual. Parks Canada, Ottawa.

Ontario Council of University Libraries. n.d. Historical Topographic Map Digitization Project: St. Thomas Sheet. [online] Accessed at: https://ocul.on.ca/topomaps/collection/)

Page, H. R. and Co. 1878. *Illustrated Historical Atlas of the County of Middlesex, Ontario*. H. R. Page and Co., Toronto. [Facsimile Edition, 1972, Edward Phelps Publishing, Sarnia.]

Stantec Consulting Ltd. 2020. Heritage Impact Assessment – 14 Gideon Drive and 2012 Oxford Street West, London Ontario. File 161413678. Prepared for Orange Rock Developments Inc.

Tremaine, G.M. and Tremaine, Geo R. 1862. *Tremaine's Map of the County of Middlesex, Canada West.* Geo. R and G.M. Tremaine, Toronto.

University of Toronto Ontario Historical County Maps Project. n.d. Middlesex County Map. [online] Accessed at: https://utoronto.maps.arcgis.com/apps/webappviewer/index.html?id=8cc6be34f6b54992b27da17467492d2f

Upper Thames River Conservation Authority (UTRCA). 2013. *Upper Thames River 2012 Watershed Report Card Summary.* Upper Thames River Conservation Authority, London.

Signature Page

We trust that this report meets your current needs. If you have any questions, or if we may be of further assistance, please contact the undersigned.

Golder Associates Ltd.

Alisha Mohamed, MA
Cultural Heritage Specialist

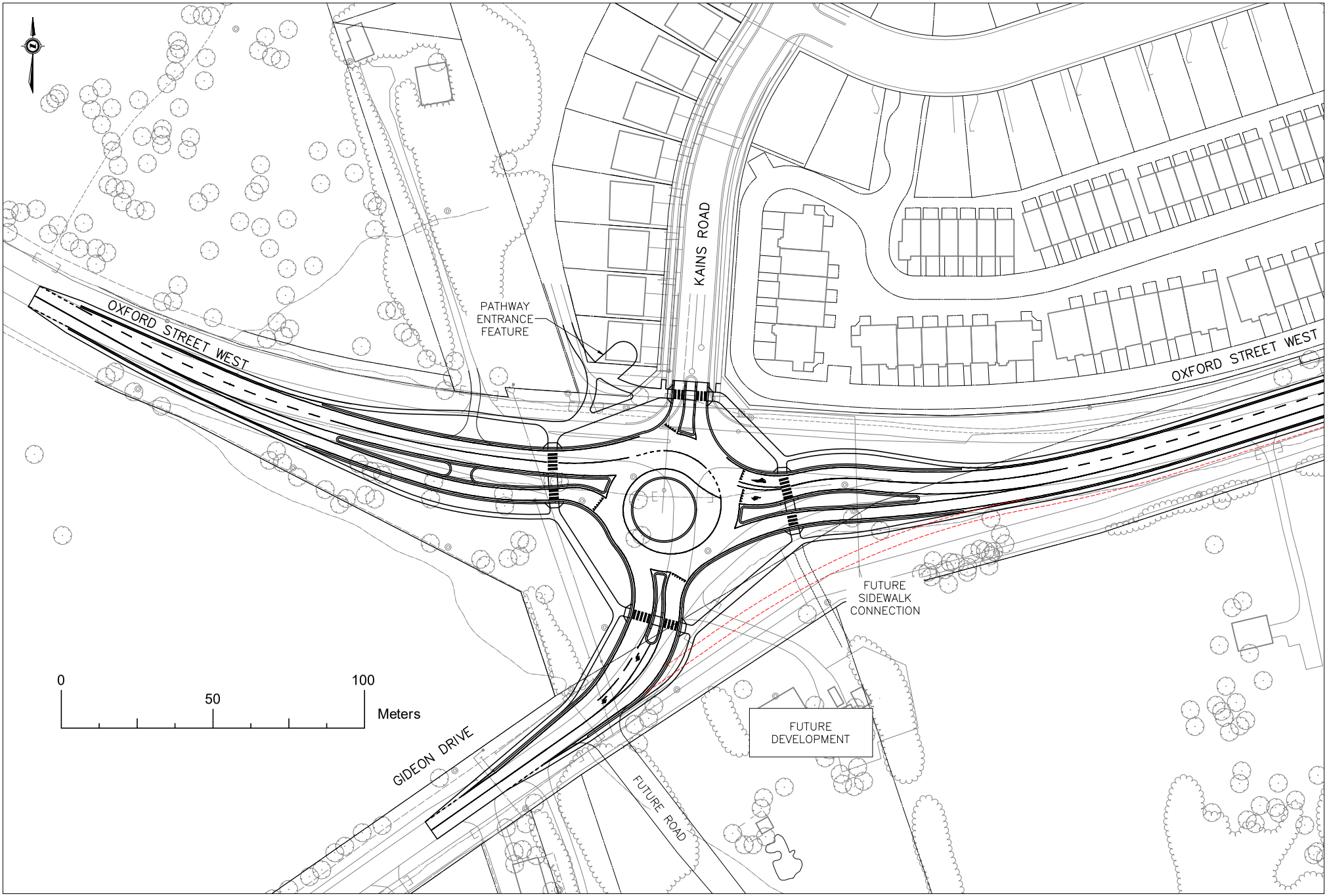
Michael Teal, MA
Associate, Senior Archaeologist

AM/JK/ca

https://golderassociates.sharepoint.com/sites/135599/project files/6 deliverables/ph 3000-heritage/final/20391051-3000-r01-rev1 01feb2022 rva oxford gideon chr.docx

APPENDIX A

Project Preliminary Design Plan


KAINS ROAD
OXFORD STREET WEST
OXFORD STREET WEST
PATHWAY
ENTRANCE
FEATURE
FUTURE
SIDEWALK
CONNECTION
FUTURE
DEVELOPMENT
FUTURE ROAD
GIDEON DRIVE
0
50
100
Meters

golder.com