Cultural Heritage Report: Existing Conditions and Preliminary Impact Assessment

Kirwin Avenue/Little John Lane Sanitary Sewers, Detailed Design and Municipal Class Environmental Assessment

City of Mississauga
Region of Peel, Ontario

Report

Prepared for:

Arcadis IBI Group
8133 Warden Avenue, Unit 300
Markham, ON L6G 1B3

Archaeological Services Inc. File: 23CH-110

December 2023 (Updated March 2024)

Executive Summary

Archaeological Services Inc. was contracted by Arcadis IBI Group, on behalf of the Region of Peel, to conduct a Cultural Heritage Report as part of the Kirwin Avenue/Little John Lane (Cooksville) Detailed Design and Municipal Class Environmental Assessment. This project involves the proposed construction and replacement of sanitary sewers along Kirwin Avenue/Little John Lane. Two options for this Municipal Class Environmental Assessment are being assessed. The Preferred Route will involve diverting flows upstream of the 300-millimetre sanitary sewer on Hurontario (at Kirwin Avenue) to a proposed 525-millimetre sanitary sewer along Kirwin Avenue and into the Cooksville Creek Trunk Sewer. This will include replacing the existing 250-millimetre sanitary sewer from Little John Lane and Kirwin Avenue that currently outlets to the Cooksville Creek with a new 250-millimetre sewer. Existing sanitary service connections are to be replaced from the property line and connected to the new sanitary sewer. The proposed 525-millimetre sanitary sewer crossing the Cooksville Creek will be a 30-metre trenchless crossing. The Not Preferred Route will involve the upgrading of the existing Jaguar Valley Drive 250-millimetre sanitary sewer to a 525-millimetre sanitary sewer as well as upgrading the existing Little John Lane sanitary sewer north of Dundas Street to a 525-millimetre sanitary sewer.

The project study area consists of approximately 660 metres of the Kirwin Avenue right-of-way from Hurontario Street to the east, approximately 120 metres of the Little John Lane right-of-way from Kirwin Avenue north to John Street, and approximately 35 metres of the Hillcrest Avenue right-of-way from Hurontario Street to the west. The project study area also consists of approximately 380 metres of the Jaguar Valley Drive right-of-way south from Kirwin Avenue, approximately 81 metres through the John C. Price Park, and approximately 79 metres of the Little John Lane right-of-way north of Dundas Street. The study area is generally surrounded by residential properties with some commercial properties at Hurontario Street and at Dundas Street. It is also bounded by the Richard Jones Park and the John C. Price Park along Cooksville Creek.

The purpose of this report is to present an inventory of known and potential built heritage resources and cultural heritage landscapes, identify existing conditions of the project study area, provide a preliminary impact assessment, and propose appropriate mitigation measures.

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with a rural land use history dating back to the early nineteenth century and an urban land use history dating to the mid- to late-twentieth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are no known B.H.R.s or C.H.L.s in the project study area. One potential C.H.L. was identified during the background information review and fieldwork.

No direct adverse impacts to the identified C.H.L. are anticipated as a result of the proposed undertaking for either the Preferred Route or the Not Preferred Route. Potential vibration impacts as a result of the proposed work associated with the Preferred Route are anticipated to result in indirect impacts to structures within C.H.L. 1. Based on the results of the assessment, the following recommendations have been developed:

1. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to the identified C.H.L. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified features, etc.

2. There is the potential for construction-related vibration impacts to potential heritage attributes of C.H.L. 1 as a result of their location adjacent to the proposed work for the Preferred Route. In particular, 3081 Kirwin Avenue is located approximately 40 metres northeast of the proposed work; however, any potential vibration impacts will be limited and temporary. The other residences within the streetscape are not within 50 metres of the proposed works. To address the potential for indirect impacts due to construction-related vibration, a baseline

vibration assessment will be undertaken during detail design to determine potential vibration impacts. Should this advance assessment conclude that the any structures will be subject to vibrations, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction.

3. Should future work require an expansion of the study area then a qualified heritage consultant should be contacted in order to confirm the impacts of the proposed work on potential B.H.R.s and C.H.L.s.

4. The report should be submitted to the City of Mississauga and the Ministry of Citizenship and Multiculturalism for review and comment, and any other local heritage stakeholders that may have an interest in this project. The final report should be submitted to the City of Mississauga for their records.

Report Accessibility Features

This report has been formatted to meet the Information and Communications Standards under the *Accessibility for Ontarians with Disabilities Act*, 2005 (A.O.D.A.). Features of this report which enhance accessibility include: headings, font size and colour, alternative text provided for images, and the use of periods within acronyms. Given this is a technical report, there may be instances where additional accommodation is required in order for readers to access the report's information. If additional accommodation is required, please contact Annie Veilleux, Manager of the Cultural Heritage Division at Archaeological Services Inc., by email at aveilleux@asiheritage.ca or by phone 416-966-1069 ext. 255.

Project Personnel

- **Senior Project Manager**: Lindsay Graves, M.A., C.A.H.P., Senior Cultural Heritage Specialist, Assistant Manager - Cultural Heritage Division
- **Project Coordinator:** Jessica Bisson, B.F.A. (Hon.), Cultural Heritage Technician, Division Coordinator – Cultural Heritage Division
- **Project Manager**: Kirstyn Allam, B.A. (Hon.), Advanced Dipl. Applied Museum Studies, Cultural Heritage Analyst, Project Manager - Cultural Heritage Division
- **Field Review**: Michael Wilcox, P.h.D., Historian - Cultural Heritage Division
- **Report Production**: Kirstyn Allam
- **Graphics Production**: Jonas Fernandez, M.S.c., Manager, Geomatics - Operations Division
- **Report Reviewer(s)**: Becca Clark, B.A. (Hon.), Adv. Dipl., Cultural Heritage Technical Writer & Researcher, Project Administrator – Cultural Heritage Division
- Lindsay Graves

Qualified Persons Involved in the Project

Lindsay Graves, M.A., C.A.H.P.
Senior Cultural Heritage Specialist, Assistant Manager - Cultural Heritage Division

The Senior Project Manager for this Cultural Heritage Report is **Lindsay Graves** (M.A., Heritage Conservation), Senior Cultural Heritage Specialist and Assistant Manager for the Cultural Heritage Division. She was responsible for: overall project scoping and approach; development and confirmation of technical findings and study recommendations; application of relevant standards, guidelines and regulations; and implementation of quality control procedures. Lindsay is academically trained in the fields of heritage conservation, cultural anthropology, archaeology, and collections management and has over 15 years of experience in the field of cultural heritage resource management. This work has focused on the assessment, evaluation, and protection of built heritage resources and cultural heritage landscapes. Lindsay has extensive experience undertaking archival research, heritage survey work, heritage evaluation and heritage impact assessment. She has also contributed to cultural heritage landscape studies and heritage conservation plans, led heritage commemoration and interpretive programs, and worked collaboratively with multidisciplinary teams to sensitively plan interventions at historic sites/places. In addition, she is a leader in the completion of heritage studies required to fulfill Class Environmental Assessment processes and has served as Project Manager for over 100 heritage assessments during her time at Archaeological Services Inc. Lindsay is a member of the Canadian Association of Heritage Professionals.

Kirstyn Allam, B.A. (Hon.), Advanced Dipl. in Applied Museum Studies
Cultural Heritage Analyst, Project Manager - Cultural Heritage Division

The Project Manager for this Cultural Heritage Report is **Kirstyn Allam** (B.A. (Hon.), Advanced Diploma in Applied Museum Studies), who is a Cultural Heritage Analyst and Project Manager within the Cultural Heritage Division. She was responsible for the day-to-day management activities, including scoping of

research activities and site surveys and drafting of study findings and recommendations. Kirstyn Allam's education and experience in cultural heritage, historical research, archaeology, and collections management has provided her with a deep knowledge and strong understanding of the issues facing the cultural heritage industry and best practices in the field. Kirstyn has experience in heritage conservation principles and practices in cultural resource management, including three years' experience as a member of the Heritage Whitby Advisory Committee. Kirstyn also has experience being involved with Stage 1-4 archaeological excavations in the Province of Ontario. Kirstyn is an intern member of Canadian Association of Heritage Professionals.

Glossary

Built Heritage Resource (B.H.R.)
Definition: "…a building, structure, monument, installation or any manufactured remnant that contributes to a property's cultural heritage value or interest 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 *Ontario Heritage Act*, or that may be included on local, provincial, federal and/or international registers" (Ministry of Municipal Affairs and Housing, 2020, p. 41).

Cultural Heritage Landscape (C.H.L.)
Definition: "…a defined geographical area that may have been modified by human activity and is identified as having cultural heritage value or interest 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 cultural heritage value or interest under the *Ontario Heritage Act*, or have been included on federal and/or international registers, and/or protected through official plan, zoning by-law, or other land use planning mechanisms" (Ministry of Municipal Affairs and Housing, 2020, p. 42).

Known Built Heritage Resource or Cultural Heritage Landscape
Definition: A known built heritage resource or cultural heritage landscape is a property that has recognized cultural heritage value or interest. This can include a property listed on a Municipal Heritage Register, designated under Part IV or V of the *Ontario Heritage Act*, or protected by a heritage agreement, covenant or easement, protected by the *Heritage Railway Stations Protection Act or the Heritage Lighthouse Protection Act*, identified as a Federal Heritage Building, or located within a U.N.E.S.C.O. World Heritage Site (Ministry of Tourism, Culture and Sport, 2016).

Impact
Definition: Includes negative and positive, direct and indirect effects to an identified built heritage resource and cultural heritage landscape. Direct impacts include destruction of any, or part of any, significant heritage attributes or features and/or unsympathetic or incompatible alterations to an identified resource. Indirect impacts include, but are not limited to, creation of shadows, isolation of heritage attributes, direct or indirect obstruction of significant views, change in land use, land disturbances (Ministry of Tourism Culture and Sport, 2006b). Indirect impacts also include potential vibration impacts (See Section 2.5 for complete definition and discussion of potential impacts).

Mitigation
Definition: Mitigation is the process of lessening or negating anticipated adverse impacts to built heritage resources or cultural heritage landscapes and may include, but are not limited to, such actions as avoidance, monitoring, protection, relocation, remedial landscaping, and documentation of the cultural heritage landscape and/or built heritage resource if to be demolished or relocated (Ministry of Tourism Culture and Sport, 2006a).

Potential Built Heritage Resource or Cultural Heritage Landscape
Definition: A potential built heritage resource or cultural heritage landscape is a property that has the potential for cultural heritage value or interest. This can include properties/project area that contain a parcel of land that is the subject of a commemorative or interpretive plaque, is adjacent to a known burial site and/or cemetery, is in a Canadian Heritage River Watershed, or contains buildings or structures that are 40 or more years old (Ministry of Tourism, Culture and Sport, 2016).

Significant
Definition: With regard to cultural heritage and archaeology resources, significant means “resources that have been determined to have cultural heritage value or interest. Processes and criteria for determining cultural heritage value or interest are established by the Province under the authority of the *Ontario Heritage Act.*

While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation" (Ministry of Municipal Affairs and Housing, 2020, p. 51).

Vibration Zone of Influence

Definition: Area within a 50-metre buffer of construction-related activities in which there is potential to affect an identified built heritage resource or cultural heritage landscape. A 50-metre buffer is applied in the absence of a project-specific defined vibration zone of influence based on existing secondary source literature (Carman et al., 2012; Crispino & D'Apuzzo, 2001; P. Ellis, 1987; Rainer, 1982; Wiss, 1981). This buffer accommodates the additional threat from collisions with heavy machinery or subsidence (Randl, 2001).

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1.0 Introduction

Archaeological Services Inc. was contracted by Arcadis IBI Group, on behalf of the Region of Peel, to conduct a Cultural Heritage Report as part of the Kirwin Avenue/Little John Lane (Cooksville) Detailed Design and Municipal Class Environmental Assessment. The purpose of this report is to present an inventory of known and potential built heritage resources and cultural heritage landscapes, identify existing conditions of the project study area, provide a preliminary impact assessment, and propose appropriate mitigation measures.

1.1 Project Overview

This project involves the proposed construction and replacement of sanitary sewers along Kirwin Avenue/Little John Lane. Two options for this Municipal Class Environmental Assessment are being assessed. The Preferred Route will involve diverting flows upstream of the 300-millimetre sanitary sewer on Hurontario (at Kirwin Avenue) to a proposed 525-millimetre sanitary sewer along Kirwin Avenue and into the Cooksville Creek Trunk Sewer. This will include replacing the existing 250-millimetre sanitary sewer from Little John Lane and Kirwin Avenue that currently outlets to the Cooksville Creek with a new 250-millimetre sewer. Existing sanitary service connections are to be replaced from the property line and connected to the new sanitary sewer. The proposed 525-millimetre sanitary sewer crossing the Cooksville Creek will be a 30-metre trenchless crossing. The Not Preferred Route will involve the upgrading of the existing Jaguar Valley Drive 250-millimetre sanitary sewer to a 525-millimetre sanitary sewer as well as upgrading the existing Little John Lane sanitary sewer north of Dundas Street to a 525-millimetre sanitary sewer.

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metres of the Jaguar Valley Drive right-of-way south from Kirwin Avenue, approximately 81 metres through the John C Price Park, and approximately 79 metres of the Little John Lane right-of-way north of Dundas Street. The study area is generally surrounded by residential properties with some commercial properties at Hurontario Street and at Dundas Street. It is also bounded by the Richard Jones Park and the John C Price Park along Cooksville Creek.

1.2 Description of Study Area

This Cultural Heritage Report will focus on the project study area with an additional 50 metre buffer (Figure 1). This cultural heritage study area has been defined as inclusive of those lands that may contain B.H.R.s or C.H.L.s that may be subject to direct or indirect impacts as a result of the proposed undertaking. Properties within the study area are located in the City of Mississauga.

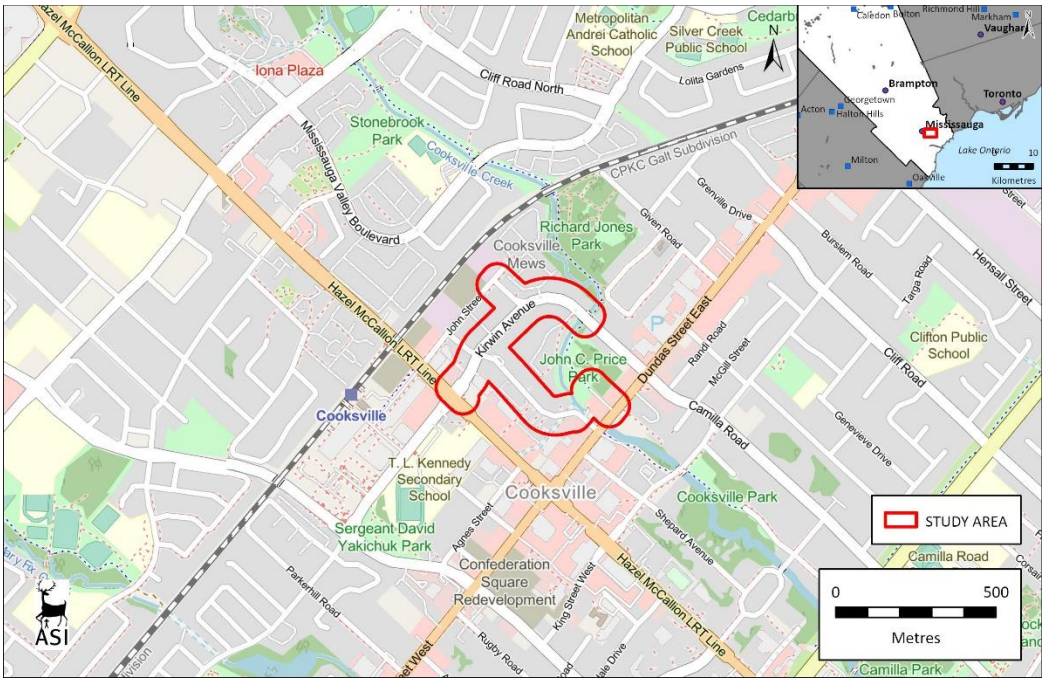

Figure 1: Location of the study area. Base Map: ©OpenStreetMap and contributors, Creative Commons-Share Alike License (C.C.-By-S.A.)

2.0 Methodology

The following sections provide a summary of regulatory requirements and municipal and regional heritage policies that guide this cultural heritage assessment. In addition, an overview of the process undertaken to identify known and potential built heritage resources (B.H.R.s) and cultural heritage landscapes (C.H.L.s) is provided, along with a description of how the preliminary impact assessment will be undertaken.

2.1 Regulatory Requirements

The *Ontario Heritage Act* (O.H.A.) (Ontario Heritage Act, R.S.O. c. O.18, 1990 [as Amended in 2021], 1990) is the primary piece of legislation that determines policies, priorities and programs for the conservation of Ontario's heritage. There are many other provincial acts, regulations and policies governing land use planning and resource development that support heritage conservation, including:

- The *Planning Act* (Planning Act, R.S.O. 1990, c. P.13, 1990), which states that "conservation of features of significant architectural, cultural, historical, archaeological or scientific interest" is a "matter of provincial interest". The *Provincial Policy Statement* (Ministry of Municipal Affairs and Housing, 2020), issued under the *Planning Act*, links heritage conservation to long-term economic prosperity and requires municipalities and the Crown to conserve significant B.H.R.s and C.H.L.s.
- The *Environmental Assessment Act* (Environmental Assessment Act, R.S.O. c. E.18, 1990), which defines "environment" to include cultural conditions that influence the life of humans or a community. Cultural heritage resources, which includes archaeological resources, B.H.R.s and C.H.L.s, are important components of those cultural conditions.

The Ministry of Citizenship and Multiculturalism (hereafter "The Ministry") is charged under Section 2.0 of the O.H.A. with the responsibility to determine policies, priorities, and programs for the conservation, protection, and

preservation of the heritage of Ontario. The *Standards and Guidelines for Conservation of Provincial Heritage Properties* (Ministry of Tourism Culture and Sport, 2010) (hereinafter "*Standards and Guidelines")* apply to properties the Government of Ontario owns or controls that have "cultural heritage value or interest" (C.H.V.I.). The *Standards and Guidelines* provide a series of guidelines that apply to provincial heritage properties in the areas of identification and evaluation; protection; maintenance; use; and disposal. For the purpose of this report, the *Standards and Guidelines* provide points of reference to aid in determining potential heritage significance in the identification of B.H.R.s and C.H.L.s. While not directly applicable for use in properties not under provincial ownership, the *Standards and Guidelines* are regarded as best practice for guiding heritage assessments and ensure that additional identification and mitigation measures are considered.

Similarly, the *Ontario Heritage Tool Kit* (Ministry of Culture, 2006) provides a guide to evaluate heritage properties. To conserve a B.H.R. or C.H.L., the *Ontario Heritage Tool Kit* states that a municipality or approval authority may require a heritage impact assessment and/or a conservation plan to guide the approval, modification, or denial of a proposed development.

2.2 Municipal/Regional Heritage Policies

The study area is located within the City of Mississauga, in the Regional Municipality of Peel. Policies relating to B.H.R.s and C.H.L.s were reviewed from the following sources:

- *City of Mississauga Official Plan* (2022)
- *Peel Region Official Plan* (Office Consolidation 2018)
- *Our Future Mississauga Strategic Plan* (City of Mississauga, 2009)
- *2019 Culture Master Plan* (City of Mississauga, 2019)
- *A Place to Grow: Growth Plan for the Greater Golden Horseshoe* (Government of Ontario, 2020)

2.3 Identification of Built Heritage Resources and Cultural Heritage Landscapes

This Cultural Heritage Report follows guidelines presented in the *Ontario Heritage Tool Kit* (Ministry of Culture, 2006) and *Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes* (Ministry of Tourism, Culture and Sport, 2016). The objective of this report is to present an inventory of known and potential B.H.R.s and C.H.L.s, and to provide a preliminary understanding of known and potential B.H.R.s and C.H.L.s located within areas anticipated to be directly or indirectly impacted by the proposed project.

In the course of the cultural heritage assessment process, all potentially affected B.H.R.s and C.H.L.s are subject to identification and inventory. Generally, when conducting an identification of B.H.R.s and C.H.L.s within a study area, three stages of research and data collection are undertaken to appropriately establish the potential for and existence of B.H.R.s and C.H.L.s in a geographic area: background research and desktop data collection; field review; and identification.

Background historical research, which includes consultation of primary and secondary source research and historical mapping, is undertaken to identify early settlement patterns and broad agents or themes of change in a study area. This stage in the data collection process enables the researcher to determine the presence of sensitive heritage areas that correspond to nineteenth- and twentieth-century settlement and development patterns. To augment data collected during this stage of the research process, federal, provincial, and municipal databases and/or agencies are consulted to obtain information about specific properties that have been previously identified and/or designated as having cultural heritage value. Typically, resources identified during these stages of the research process are reflective of particular architectural styles or construction methods, associated with an important person, place, or event, and contribute to the contextual facets of a particular place, neighbourhood, or intersection.

A field review is then undertaken to confirm the location and condition of previously identified B.H.R.s and C.H.L.s. The field review is also used to identify potential built heritage resources and cultural heritage landscapes that have not been previously identified on federal, provincial, or municipal databases or through other appropriate agency data sources.

During the cultural heritage assessment process, a property is identified as a potential B.H.R. or C.H.L.s based on research, the Ministry screening tool, and professional expertise and best practice. In addition, use of a 40-year-old benchmark is a guiding principle when conducting a preliminary identification of B.H.R.s and C.H.L.s. While identification of a resource that is 40 years old or older does not confer outright heritage significance, this benchmark provides a means to collect information about resources that may retain heritage value. Similarly, if a resource is slightly younger than 40 years old, this does not preclude the resource from having C.H.V.I.

2.4 Background Information Review

To make an identification of previously identified known or potential B.H.R.s and C.H.L.s within the study area, the following sections present the resources that were consulted as part of this Cultural Heritage Report.

2.4.1 Review of Existing Heritage Inventories

A number of resources were consulted in order to identify previously identified B.H.R.s and C.H.L.s within the study area. These resources, reviewed on 20 and 23 October, 2023, include:

- The *Heritage Register for Mississauga* (City of Mississauga, 2018);
- The *Ontario Heritage Act Register* (Ontario Heritage Trust, n.d.b);
- The *Places of Worship Inventory* (Ontario Heritage Trust, n.d.c);
- The inventory of Ontario Heritage Trust easements (Ontario Heritage Trust, n.d.a);

- The Ontario Heritage Trust's *An Inventory of Provincial Plaques Across Ontario*: a PDF of Ontario Heritage Trust Plaques and their locations (Ontario Heritage Trust, 2023);
- The Ontario Heritage Trust's *An Inventory of Ontario Heritage Trust-owned properties across Ontario*: a PDF of properties owned by the Ontario Heritage Trust (Ontario Heritage Trust, 2019);
- Inventory of known cemeteries/burial sites in the Ontario Genealogical Society's online databases (Ontario Genealogical Society, n.d.);
- Canada's Historic Places website: available online, the searchable register provides information on historic places recognized for their heritage value at the local, provincial, territorial, and national levels (Parks Canada, n.d.a);
- Directory of Federal Heritage Designations: a searchable on-line database that identifies National Historic Sites, National Historic Events, National Historic People, Heritage Railway Stations, Federal Heritage Buildings, and Heritage Lighthouses (Parks Canada, n.d.b);
- Canadian Heritage River System: a national river conservation program that promotes, protects and enhances the best examples of Canada's river heritage (Canadian Heritage Rivers Board and Technical Planning Committee, n.d.); and,
- United Nations Educational, Scientific and Cultural Organization (U.N.E.S.C.O.) World Heritage Sites (U.N.E.S.C.O. World Heritage Centre, n.d.).

2.4.2 Review of Previous Heritage Reporting

Additional cultural heritage studies undertaken within parts of the study area were also reviewed. These include:

- Conserving Heritage Landscapes Cultural Heritage Landscape Project – Volume 1 (Archaeological Services Inc., 2022a)
- Conserving Heritage Landscapes Cultural Heritage Landscape Project – Volume 2 (Archaeological Services Inc., 2022b)

- Conserving Heritage Landscapes Cultural Heritage Landscape Project – Volume 3 (Archaeological Services Inc., 2022c)

2.4.3 Community Information Gathering

The following individuals, groups, and/or organizations were contacted to gather information on known and potential B.H.R.s and C.H.L.s, active and inactive cemeteries, and areas of identified Indigenous interest within the study area:

- Paula Wubbenhorst, Senior Heritage Coordinator, City of Mississauga (email communication 3 and 6 November 2023). Email correspondence confirmed that there are no previously identified B.H.R.s or C.H.L.s within the study area.
- The Ministry of Citizenship and Multiculturalism (email communication 3 and 6 November 2023). Email correspondence confirmed that there are no properties designated by the Minister and that they are not aware of any known Provincial Heritage Properties within the study area.
- The Ontario Heritage Trust (email communication 3 and 6 November 2023). A response indicated that there are no conservation easements or Trust-owned properties within the study area.
- In late October 2023, Archaeological Services Inc. made a request to the proponent that any engagement with Indigenous communities undertaken as part of this project include a discussion about known or potential B.H.R.s and C.H.L.s that are of interest to the respective communities. At this time, a Notice of Study Commencement has been circulated; however, no feedback was received by the time of report submission.

2.5 Preliminary Impact Assessment Methodology

To assess the potential impacts of the undertaking, identified B.H.R.s and C.H.L.s are considered against a range of possible negative impacts, based on the *Ontario Heritage Tool Kit InfoSheet #5: Heritage Impact Assessments and Conservation Plans* (Ministry of Tourism Culture and Sport, 2006b). These include:

Direct impacts:

- Destruction of any, or part of any, significant heritage attributes or features; and
- Alteration that is not sympathetic, or is incompatible, with the historic fabric and appearance.

Indirect impacts:

- Shadows created that alter the appearance of a heritage attribute or change the viability of a natural feature or plantings, such as a garden;
- Isolation of a heritage attribute from its surrounding environment, context or a significant relationship;
- Direct or indirect obstruction of significant views or vistas within, from, or of built and natural features;
- 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; and
- Land disturbances such as a change in grade that alters soils, and drainage patterns that adversely affect an archaeological resource.

Indirect impacts from construction-related vibration have the potential to negatively affect B.H.R.s and C.H.L.s depending on the type of construction methods and machinery selected for the project and proximity and composition of the identified resources. Potential vibration impacts are defined as having potential to affect an identified B.H.R.s and C.H.L.s where work is taking place

within 50 metres of features on the property. A 50-metre buffer is applied in the absence of a project-specific defined vibration zone of influence based on existing secondary source literature (Carman et al., 2012; Crispino & D'Apuzzo, 2001; P. Ellis, 1987; Rainer, 1982; Wiss, 1981). This buffer accommodates any additional or potential threat from collisions with heavy machinery or subsidence (Randl, 2001).

Several additional factors are also considered when evaluating potential impacts on identified B.H.R.s and C.H.L.s. These are outlined in a document set out by the Ministry of Culture and Communications (now Ministry of Citizenship and Multiculturalism) and the Ministry of the Environment entitled *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1992). While this document has largely been superseded in some respects by more current policies and legislation, the guidance provided that continues to be of relevance to this specific project includes the following definitions:

- Magnitude: the amount of physical alteration or destruction which 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; and
- Diversity: the number of different kinds of activities to affect a heritage resource.

The proposed undertaking should endeavor to avoid adversely affecting known and potential B.H.R.s and C.H.L.s and interventions should be managed in such a way that identified features are conserved. When the nature of the undertaking is such that adverse impacts are unavoidable, it may be necessary to implement alternative approaches or mitigation strategies that alleviate the negative effects on identified B.H.R.s and C.H.L.s. Mitigation is the process of lessening or negating

anticipated adverse impacts and may include, but are not limited to, such actions as avoidance, monitoring, protection, relocation, remedial landscaping, and documentation of the B.H.R. or C.H.L. if to be demolished or relocated.

Various works associated with infrastructure improvements have the potential to affect B.H.R.s and C.H.L.s in a variety of ways, and as such, appropriate mitigation measures for the undertaking need to be considered.

3.0 Summary of Historical Development Within the Study Area

This section provides a brief summary of historical research. A review of available primary and secondary source material was undertaken to produce a contextual overview of the study area, including a general description of physiography, Indigenous land use, and Euro-Canadian settlement.

3.1 Physiography

The study area is situated within the Iroquois Plain and the South Slope physiographic regions of southern Ontario.

The Iroquois Plain is a lowland region bordering Lake Ontario. This region is characteristically flat and formed by lacustrine deposits laid down by the inundation of Lake Iroquois, a body of water that existed during the late Pleistocene. This region extends from the Trent River, around the western part of Lake Ontario, to the Niagara River, spanning 300 kilometres. The old shorelines of Lake Iroquois include cliffs, bars, beaches, and boulder pavements. The old sandbars in this region are good aquifers that supply water to farms and villages. The gravel bars are quarried for road and building material, while the clays of the old lake bed have been used for the manufacture of bricks (Chapman & Putnam, 1984).

Between Hamilton and Toronto, along the north edge of the Iroquois plain physiographic region, the ancient Lake Iroquois shoreline creates a distinct bluff of varying rocks and shales commonly known as the escarpment. The land between the ancient shoreline and the modern shoreline, which was the former bed of Lake Iroquois, is comprised of sandy soil in the Clarkson area as well as neighbouring communities from Aldershot to Humber Bay. These sandy soils were preferred by Euro-Canadian settlers over the adjoining areas which have clay and, combined with being protected from frost because of the proximity to Lake Ontario and having good road and railway facilities, this two-mile width of land became important for horticulture. The season was shorter in this area than on the south side of Lake Ontario which distinguished the crops grown which included apples, pears, bush fruits, strawberries and vegetables (Chapman and Putnam 1984).

After almost 100 years of farming, the physiography of this area supported its impressive and quick change to residential, commercial, and industrial uses. More than 15,000 acres of farms that existed in 1941 were gradually replaced over the following four decades and by the 1980s the whole of the Iroquois plain between Hamilton and Toronto was built up. The gravels were used for construction, the sand plains are excellent housing sites and the flat lake plain with bedrock is good for industrial uses (Chapman and Putnam 1984).

The South Slope region is the southern slope of the Oak Ridges Moraine. The South Slope meets the Moraine at heights of approximately 300 metres above sea level, and descends southward toward Lake Ontario, ending, in some areas, at elevations below 150 metres above sea level. Numerous streams descend the South Slope, having cut deep valleys in the till. In the vicinity of the study area, the South Slope is ground moraine of limited relief (Chapman & Putnam, 1984).

Euro-Canadian settlement began in the South Slope in the late eighteenth-century with the second wave of largely British immigrants. The area contains a variety of soils, some of which have proved to be excellent through more than a century of agricultural use. A mixed, subsistence agriculture was used in the early

settlements. As grain growing and exporting increased, so too did the prosperity of the area. Ports and the roads to them were improved and with the arrival of the railways in the mid-1850s development was encouraged further. Wheat growing did decline to be replaced with commercial mixed farming within the South Slope region (Chapman & Putnam, 1984).

In the twentieth century, the farming population of areas of the South Slope declined in number, however, the total population continued to rise. Continuous urban development in the later twentieth-century continued to influence settlement in the areas to the west, north, and east of Toronto, including the study area (Chapman & Putnam, 1984).

3.2 Indigenous Land Use and Settlement

Southern Ontario has been occupied by human populations since the retreat of the Laurentide glacier approximately 13,000 years ago, or 11,000 Before the Common Era (B.C.E.) (Ferris, 2013).[1] During the Paleo period (c. 11,000 B.C.E. to 9,000 B.C.E.), groups tended to be small, nomadic, and non-stratified. The population relied on hunting, fishing, and gathering for sustenance, though their lives went far beyond subsistence strategies to include cultural practices including but not limited to art and astronomy. Fluted points, beaked scrapers, and gravers are among the most important artifacts to have been found at various sites throughout southern Ontario, and particularly along the shorelines of former glacial lakes. Given the low regional population levels at this time, evidence concerning Paleo period groups is very limited (C. J. Ellis & Deller, 1990).

Moving into the Archaic period (c. 9,000 B.C.E. to 1,000 B.C.E.), many of the same roles and responsibilities continued as they had for millennia, with groups

[1] While many types of information can inform the precontact settlement of Ontario, such as oral traditions and histories, this summary provides information drawn from archaeological research conducted in southern Ontario over the last century.

generally remaining small, nomadic, and non-hierarchical. The seasons dictated the size of groups (with a general tendency to congregate in the spring/summer and disperse in the fall/winter), as well as their various sustenance activities, including fishing, foraging, trapping, and food storage and preparation. There were extensive trade networks which involved the exchange of both raw materials and finished objects such as polished or ground stone tools, beads, and notched or stemmed projectile points. Furthermore, mortuary ceremonialism was evident, meaning that there were burial practices and traditions associated with a group member's death (C. J. Ellis et al., 2009; C. J. Ellis & Deller, 1990).

The Woodland period (c. 1,000 B.C.E. to 1600 C.E.) saw several trends and aspects of life remain consistent with previous generations. Among the more notable changes, however, was the introduction of pottery, the establishment of larger occupations and territorial settlements, incipient horticulture, more stratified societies, and more elaborate burials. Later in this period, settlement patterns, foods, and the socio-political system continued to change. A major shift to agriculture occurred in some regions, and the ability to grow vegetables and legumes such as corn, beans, and squash ensured long-term settlement occupation and less dependence upon hunting and fishing. This development contributed to population growth as well as the emergence of permanent villages and special purpose sites supporting those villages. Furthermore, the socio-political system shifted from one which was strongly kinship based to one that involved tribal differentiation as well as political alliances across and between regions (Birch et al., 2021; Dodd et al., 1990; C. J. Ellis & Deller, 1990; Williamson, 1990).

The arrival of European trade goods in the sixteenth century, Europeans themselves in the seventeenth century, and increasing settlement efforts in the eighteenth century all significantly impacted traditional ways of life in Southern Ontario. Over time, war and disease contributed to death, dispersion, and displacement of many Indigenous peoples across the region. The Euro-Canadian population grew in both numbers and power through the eighteenth and

nineteenth centuries and treaties between colonial administrators and First Nations representatives began to be negotiated.

The study area is within Treaty 14, the Head of the Lake Purchase. On September 5, 1806, the signing of Treaty 14 confirmed the Head of the Lake Purchase between the Mississaugas of the Credit and the Crown for lands along the north shore of Lake Ontario southwest of the Toronto Purchase to what is now Oakville (Mississauga of the New Credit First Nation, 2001; Mississaugas of the Credit First Nation, 2017).

3.3 Historical Euro-Canadian Township Survey and Settlement

The first Europeans to arrive in the area were transient merchants and traders from France and England, who followed Indigenous pathways and set up trading posts at strategic locations along the well-traveled river routes. All of these occupations occurred at sites that afforded both natural landfalls and convenient access, by means of the various waterways and overland trails, into the hinterlands. Early transportation routes continued the use of existing Indigenous trails that typically followed the highlands adjacent to various creeks and rivers (Archaeological Services Inc., 2006). Early European settlements occupied similar locations as Indigenous settlements as they were generally accessible by trail or water routes and would have been in locations with good soil and suitable topography to ensure adequate drainage.

Historically, the study area is located in the former Township of Toronto, County of Peel in part of Lots 14 to 15, Concession 1 North of Dundas Street (N.D.S.).

3.3.1 Toronto Township and the City of Mississauga

The City of Mississauga is comprised of the historical communities of Clarkson, Cooksville, Dixie, Erindale, Lakeview, Lorne Park, Malton, Meadowvale Village, Port Credit and Streetsville, which formed part of the Township of Toronto.

The Township of Toronto was originally surveyed in 1806 and 1807 by Samuel Wilmot, the Deputy Surveyor of Upper Canada. The first settler in this Township was Colonel Thomas Ingersoll. Philip Cody was an early settler, who opened an inn Sydenham, later known as Fonthill and then as Dixie. The whole population of the Township in 1808 consisted of seven families, scattered along Dundas Street. The number of inhabitants gradually increased until the War of 1812 broke out, which gave considerable check to its progress. When the war was over, the Township's growth revived. The Credit River and numerous creeks provided for the establishment of saw and grist mills. Communities began to emerge, usually along the river or at crossroads along Dundas Street. Some of the villages that arose included: Clarkson, Cooksville, Dixie, Erindale, Malton, Meadowvale Village, Port Credit and Streetsville, as well as the hamlet of Lakeview and numerous other settlements which later disappeared. In 1821 the township's population was 803. By 1851 over 7,500 people lived in the township and more than 36,000 acres were being farmed to produce barley, wheat, oats, vegetables, and fruit. Small industries were located throughout the township, manufacturing products ranging from hosiery to ploughshares (Archaeological Services Inc., 2020).

During the second half of the nineteenth century, railways were built and the markets shifted. Water-powered industries in the rural areas could no longer compete with those in larger centres which were run by electricity. By 1901 the township's population had dropped considerably to 4,690. The economy did not recover until the 1950s, when new industries moved into the township and spurred massive growth. When the Township of Toronto (excluding Port Credit and Streetsville) became the Town of Mississauga in 1968, it had a population of 107,000 and covered 70,598 acres. It grew very quickly, and the rural township transformed into an urban area, with over 1,200 industries locating in Mississauga by the 1970s. In 1974, the towns of Port Credit, Streetsville and Mississauga were amalgamated to become the City of Mississauga (Mika & Mika, 1981).

3.3.2 Village of Cooksville

The historic settlement of Cooksville is located at the intersection of Hurontario Street and Dundas Street East in the City of Mississauga. The first settler of Cooksville was Daniel Harris who arrived from the United States of America in 1800. The settlement was originally named Harrisville. The name was changed in 1836 to Cooksville after local entrepreneur Jacob Cook. Cooksville was a mail hub in the region and an important waypoint on the journey between York and Niagara. Cooksville continued to prosper until 1852 when it was mostly razed by fire. The community rebounded in the late-nineteenth century with the expansion of winemaking, oil refining, and brick making industries, and by 1877 Cooksville had completely recovered. In 1873 Cooksville was chosen as the seat for Toronto Township (Heritage Mississauga, 2009a). To the north of the village, the Credit Valley Railway was constructed between 1877 and 1881. In 1883 the line was taken over by the Canadian Pacific Railway (Heritage Mississauga, 2009b; Town of Caledon, 2009).

Cooksville remained primarily residential into the twentieth century with some industries and manufacturing operations located in the village as well as in the area surrounding it (Mika & Mika, 1977). In 1968, the village joined with others in Toronto Township to form the Town of Mississauga (Heritage Mississauga, n.d.).

3.4 Review of Historical Mapping

The 1859 *Map of the County of Peel* (Tremaine, 1859) and the 1877 *Illustrated Historical Atlas of the County of Peel* (Pope, 1877), were examined to determine the presence of historical features within the study area during the nineteenth century (Figure 2 and Figure 3). Historically, the study area is located in part of Lots 14 to 15, Concession 1 N.D.S. in the former Township of Toronto, County of Peel.

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

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

Nineteenth-century mapping depicts the study area within a rural, agricultural context. Both the 1859 and 1877 mapping (Figure 2 and Figure 3) shows Hurontario Street and Dundas Street as historically surveyed roads with the village of Cooksville to the south of the study area centred on the intersection of Hurontario Street and Dundas Street. Both roads have the same orientation as their extant alignments. Cooksville Creek is depicted as intersecting with the east end of the study area. The Credit Valley Railway is illustrated to the north of the study area on the 1877 mapping. No structures are depicted within the study area in the 1859 map. A post office is illustrated within the southern portion of the study area on the 1877 map.

In addition to nineteenth-century mapping, historical topographic mapping and aerial photographs from the twentieth century were examined. This report presents maps and aerial photographs from 1909, 1954, 1975 and 1995 (Figure 4 to Figure 7).

Early-twentieth century mapping continues to depict the study area within a rural, agricultural context. On the 1909 topographic map (Figure 4) Hurontario Street is an unmetalled roadway and Dundas Street to the east of Hurontario Street is a metalled road, and unmetalled to the west. A wooden house is located on the west side of Hurontario Street within the western portion of the study area, another wooden house is to the north of the study area on the east side of Hurontario Street, and a gravel pit is to the north of the house. A stone/brick

house is located along Dundas Street and is within the southern portion of the study area. The rail line is labelled as Canadian Pacific Railway By the mid-twentieth century, a portion of Kirwin Avenue has been constructed to the north of Dundas Street and is lined with residential houses as is visible on the 1954 aerial photograph (Figure 5). Residential houses are shown along Hurontario Street within and adjacent to the study area. A structure fronting along Dundas Street is within the study area. The remainder of the study area is shown to be forested lands and open fields. Cooksville Creek appears to have been straightened somewhat from earlier mapping.

By the late-twentieth century the study area is located within an urban area. The 1975 aerial photograph (Figure 6) shows that the remainder of Kirwin Avenue has been constructed between Hurontario Street and Dundas Street to its present-day alignment. A bridge has been constructed over Cooksville Creek as part of the construction of Kirwin Avenue. A house shown in the 1954 imagery at Hurontario Street has been demolished to allow for Kirwin Avenue to extend to Hurontario Street. The former portion of Kirwin Avenue captured in the 1954 aerial is shown to have been widened by 1975 to match the new right-of-way width. Jaguar Valley Drive, John Street, and Little John Lane have also been constructed. Large apartment buildings and townhouse complexes have been constructed within and adjacent to the study area. Cooksville Creek is shown to have been channelized and straightened, no longer following its natural course in the vicinity of the study area. The 1995 aerial photograph (Figure 7) shows a continuation of the residential development surrounding the study area with additional subdivisions being constructed. A path is visible following the alignment of Cooksville Creek with parks located to the north and south of Kirwin Avenue.

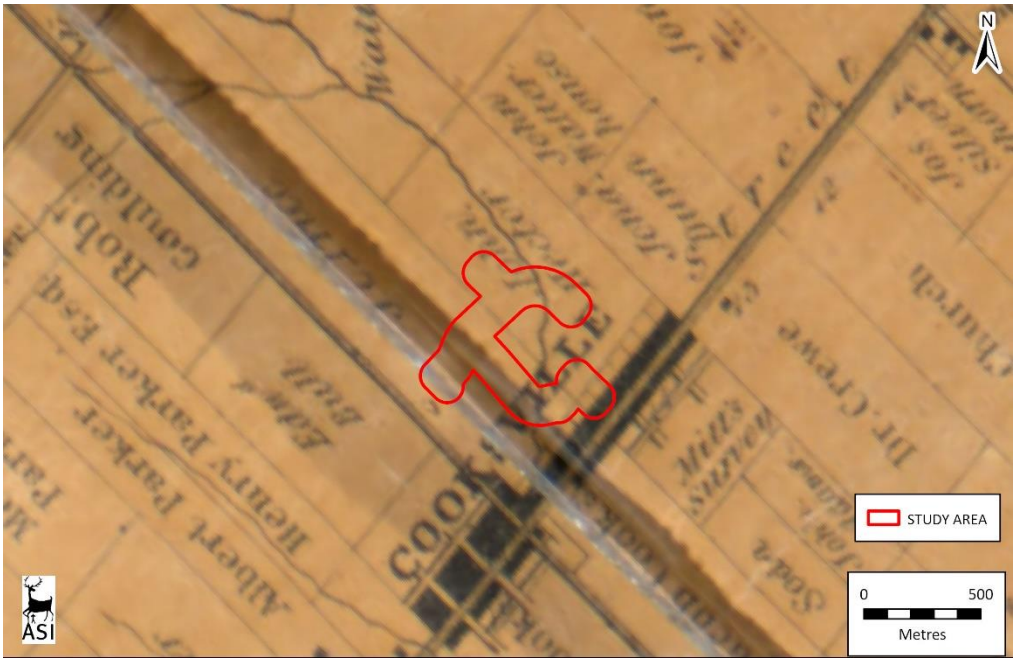

Figure 2: The study area overlaid on the 1859 *Map of the County of Peel*. Base Map: (Tremaine, 1859).

Figure 3: The study area overlaid on the 1877 *Illustrated Historical Atlas of the County of Peel*. Base Map: (Pope, 1877).

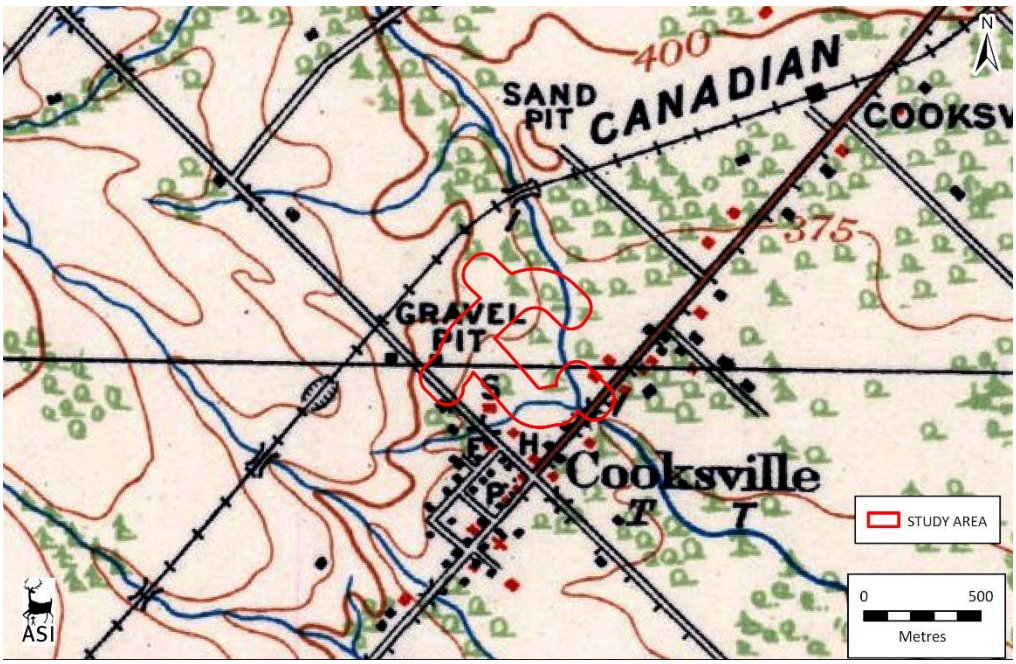

Figure 4: The study area overlaid on the 1909 topographic map of Brampton. Base Map: (Department of Militia and Defence, 1909).

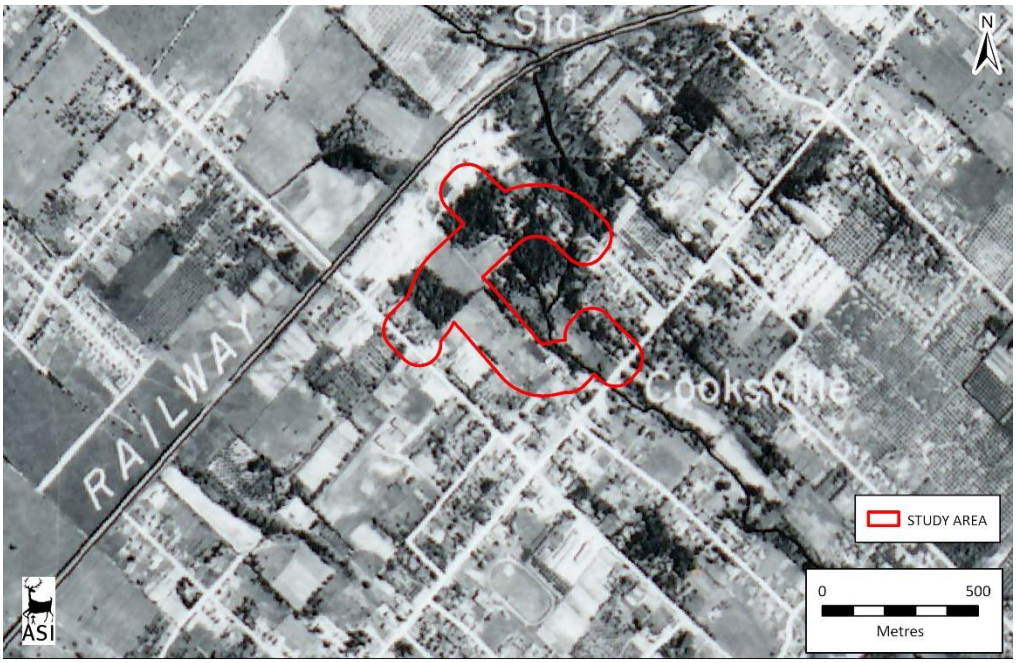

Figure 5: The study area overlaid on the 1954 aerial photograph of Southern Ontario. Base Map: (Hunting Survey Corporation Limited, 1954).

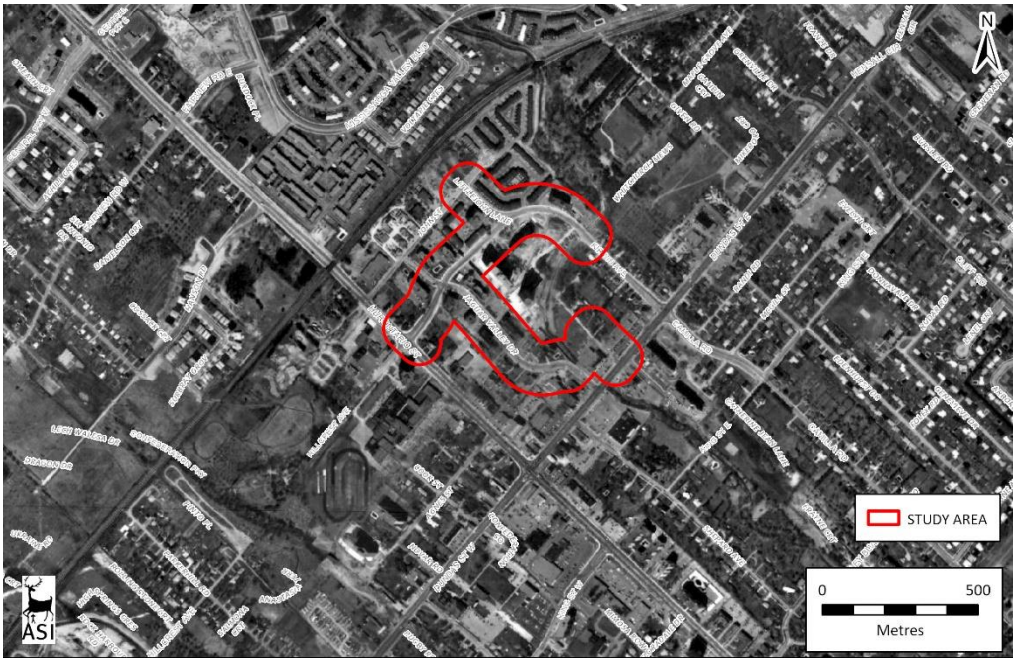

Figure 6: The study area overlaid on the 1975 aerial photograph of Mississauga. Base Map: (City of Mississauga, n.d.).

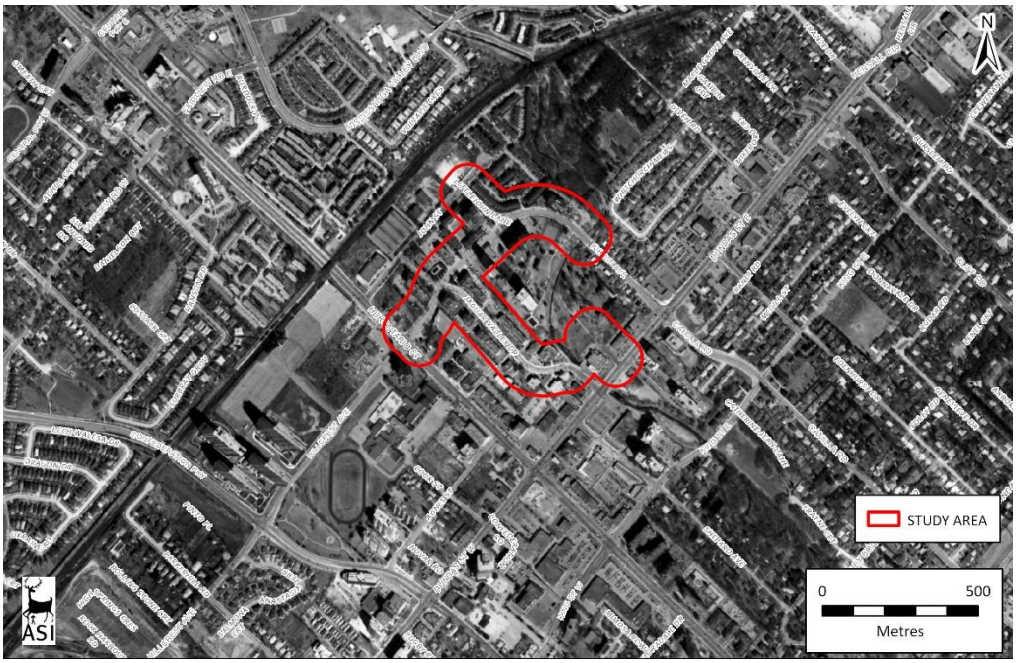

Figure 7: The study area overlaid on the 1995 aerial photograph of Mississauga. Base Map: (City of Mississauga, n.d.).

4.0 Existing Conditions

A field review of the study area was undertaken by Michael Wilcox on 19 October 2023 and Lindsay Graves on 16 November 2023, both of Archaeological Services Inc., to document the existing conditions of the study area from existing rights-of-way. The existing conditions of the study area are described below and captured in Plate 1 to Plate 12.

4.1 Description of Field Review

The project study area generally consists of the Kirwin Avenue, Jaguar Valley Drive, Little John Lane, and Hillcrest Avenue rights-of-way. Along Kirwin Avenue the study area is approximately 660 metres of the right-of-way eastwards from Hurontario Street. The study area follows approximately 120 metres of the Little John Lane right-of-way from Kirwin Avenue north to John Street. It also includes approximately 35 metres of the Hillcrest Avenue right-of-way west from Hurontario Street. The project study area also consists of approximately 380 metres of the Jaguar Valley Drive right-of-way south from Kirwin Avenue, approximately 81 metres through the John C. Price Park, and approximately 79 metres of the Little John Lane right-of-way north of Dundas Street.

Kirwin Avenue is a two-lane road, with one lane per direction of traffic. At its intersection with Hurontario Street, Jaguar Valley Drive, and Little John Lane, Kirwin Avenue has a left turn lane. Kirwin Avenue has bike lanes for each direction of traffic, and a lane for parking on the northwestern side. There are sidewalks on both sides of the road and concrete curbs. At Hurontario Street, Kirwin Avenue is bound by commercial buildings and parking lots. Between west of Jaguar Valley Drive and Lynwood Lane, the majority of Kirwin Avenue is bound by apartment buildings. There are townhouses northeast of Kirwin Avenue at Little John Lane, and tennis courts off Lynwood Lane. A concrete bridge carries Kirwin Avenue over

a straightened and naturalized portion of Cooksville Creek.[2] Richard Jones Park is to the northeast of the study area and the John C. Price Park is southwest of the study area along Cooksville Creek. South of the creek, Kirwin Avenue is bound by residential houses.

Jaguar Valley Drive is a two-lane road, with one lane per direction of traffic. Jaguar Valley Drive has a parking lane along its west side. There are sidewalks on both sides of the road and concrete curbs. Apartment buildings and parking lots for the buildings line both sides of the road. A concrete culvert carries Cooksville Creek under the roadway.[3]

In the northern portion of the study area, Little John Lane is a two-lane road with one lane per direction of traffic, and sidewalks on both sides of the road with concrete curbs. There is a lane for street parking on the northeastern side of the road. On the west side of the road is an apartment building. In the southern portion of the study area, Little John Lane is a two-lane road with one lane per direction of traffic and no sidewalks or curbs. The road transitions to a concrete pathway through the John C. Price Park. There are commercial buildings along both sides of Little John Lane at Dundas Street, fronting onto Dundas Street.

Hillcrest Avenue is a two-lane roadway, with turning lanes at its intersection with Hurontario Street within the study area. There are sidewalks on both sides of the road and concrete curbs. A commercial plaza and parking lot are on the north side of the road and an apartment building is located on the south side of the road within the study area.

[2] Given the structure's post-1956 construction date and common construction method, it was determined to not retain potential cultural heritage value or interest.
[3] Given the structure's post-1956 construction date and common construction method, it was determined to not retain potential cultural heritage value or interest.

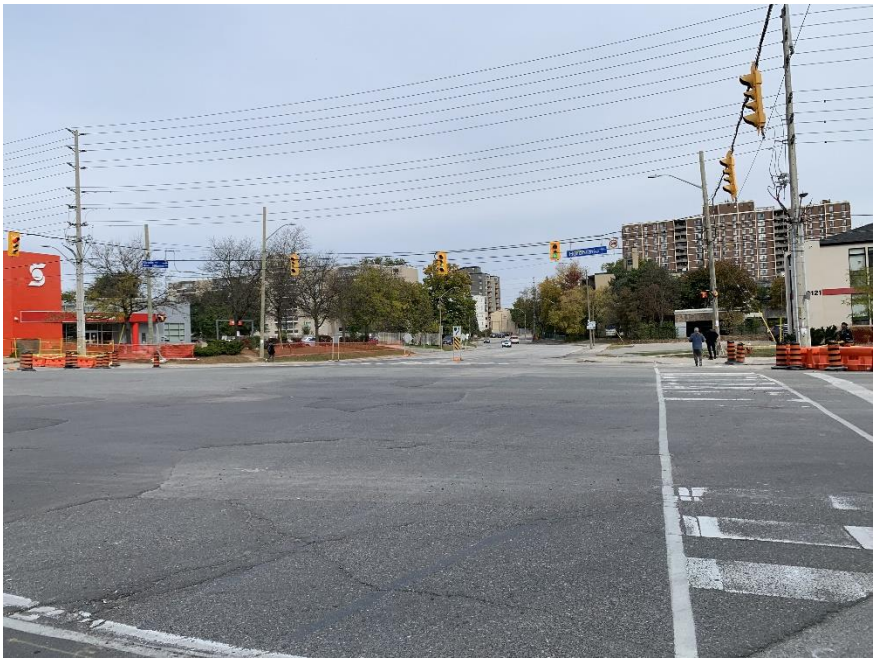

Plate 1: Intersection of Kirwin Avenue and Hurontario Street, looking east (A.S.I., 2023)

Plate 2: Kirwin Avenue, east of Hurontario Street, looking east in the western portion of the study area (A.S.I., 2023)

Plate 3: Kirwin Avenue, west of Little John Lane, looking southeast to residential properties (A.S.I., 2023)

Plate 4: Eastern portion of the study area along Kirwin Avenue, looking north (A.S.I., 2023)

Plate 5: Concrete bridge crossing Cooksville Creek (A.S.I., 2023)

Plate 6: Walking trail along Cooksville Creek, to Richard Jones Park, looking east (A.S.I., 2023)

Plate 7: Little John Lane, looking north from north of Kirwin Avenue (A.S.I., 2023)

Plate 8: Western terminus of the study area on Hillcrest Avenue, looking west from west of Hurontario Street (A.S.I., 2023)

Plate 9: Looking north along Jaguar Valley Drive from south of Kirwin Avenue (A.S.I., 2023)

Plate 10: Cooksville Creek from Jaguar Valley Drive, looking northeast (A.S.I., 2023)

Plate 11: Looking north along Jaguar Valley Drive from Dundas Street (A.S.I., 2023)

Plate 12: Looking south towards Dundas Street from within the John C Price Park (A.S.I., 2023)

4.2 Identification of Known and Potential Built Heritage Resources and Cultural Heritage Landscapes

Based on the results of the background research and field review, one potential cultural heritage landscape (C.H.L.) was identified within the study area. This C.H.L. was identified during background research and field review. A description of the potential C.H.L. within the study area is presented below in Table 1. See Figure 8 for mapping showing the location of the identified C.H.L.

Table 1: Inventory of the Potential Cultural Heritage Landscape within the Study Area

Feature I.D.	Type of Property	Address or Location	Heritage Status and Recognition	Description of Property and Known or Potential C.H.V.I.	Photographs/ Digital Image
C.H.L. 1	Post-War Streetscape	East side of Kirwin Avenue from 3061 Kirwin Avenue to 3081 Kirwin Avenue	Potential C.H.L. – Identified during background research and field review	This streetscape is located along the eastern side of Kirwin Avenue to the north of Dundas Street from 3061 Kirwin Avenue to 3081 Kirwin Avenue. The potential heritage attributes include the variety of residences which are indicative of a post-war residential design, the properties have well-proportioned massing, have similar setbacks, and incorporate different, while complimentary floor plans, roof designs, and exterior cladding materials. The 1954 aerial photograph (Figure 5) shows the streetscape with the residences along Kirwin Avenue.	 Plate 13: View of the east side of Kirwin Avenue and the streetscape (A.S.I., 2023)

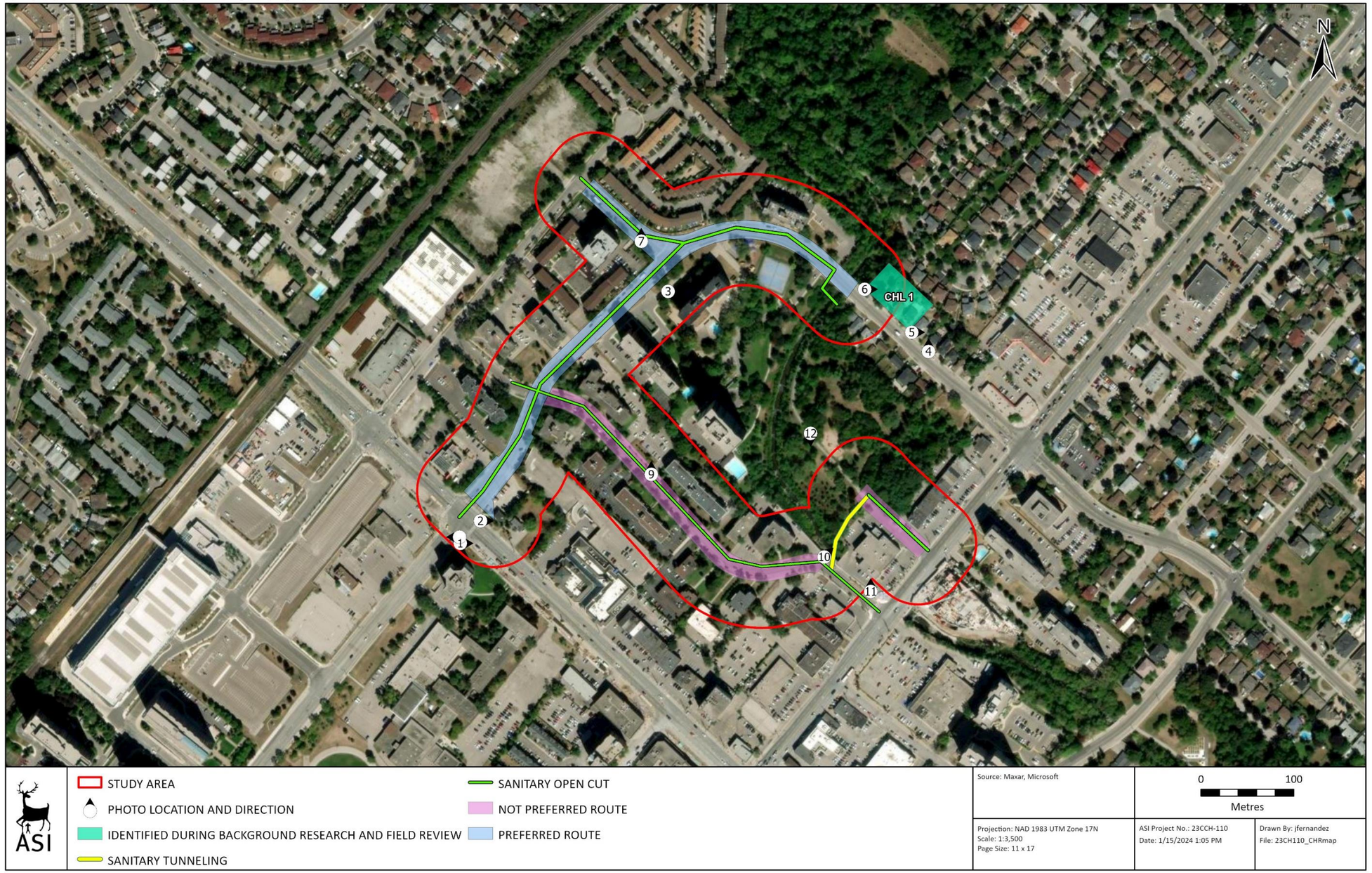

Figure 8: Location of the Identified Cultural Heritage Landscape (C.H.L.) in the Study Area along with Photographic Plates and the Proposed Routes

5.0 Preliminary Impact Assessment

The following sections provide more detailed information regarding the proposed project undertaking and analysis of the potential impacts on the identified cultural heritage landscape (C.H.L.).

5.1 Description of Proposed Undertaking

This project involves the proposed construction and replacement of sanitary sewers along Kirwin Avenue/Little John Lane. Two options for this Municipal Class Environmental Assessment are being assessed. The Preferred Route will involve diverting flows upstream of the 300-millimetre sanitary sewer on Hurontario (at Kirwin Avenue) to a proposed 525-millimetre sanitary sewer along Kirwin Avenue and into the Cooksville Creek Trunk Sewer. This will include replacing the existing 250-millimetre sanitary sewer from Little John Lane and Kirwin Avenue that currently outlets to the Cooksville Creek with a new 250-millimetre sewer. Existing sanitary service connections are to be replaced from the property line and connected to the new sanitary sewer. The proposed 525-millimetre sanitary sewer crossing the Cooksville Creek will be a 30-metre trenchless crossing. The Not Preferred Route will involve the upgrading of the existing Jaguar Valley Drive 250-millimetre sanitary sewer to a 525-millimetre sanitary sewer as well as upgrading the existing Little John Lane sanitary sewer north of Dundas Street to a 525-millimetre sanitary sewer.

5.2 Analysis of Potential Impacts

Table 2 outlines the potential impacts on the identified C.H.L. within the study area.

Table 2: Preliminary Impact Assessment and Recommended Mitigation Measures

Feature I.D.	Location/Name	Heritage Status and Recognition	Type and Description of Potential/Anticipated Impact(s) of the Preferred Route	Mitigation Strategies for the Preferred Route	Type and Description of Potential/Anticipated Impact(s) of the Not Preferred Route	Mitigation Strategies for the Not Preferred Route
C.H.L. 1	East side of Kirwin Avenue from 3061 Kirwin Avenue to 3081 Kirwin Avenue	Potential C.H.L. – Identified during background research and field review	It is understood that the limits of the proposed work for the Preferred Route will be confined to the existing Kirwin Avenue right-of-way. No direct adverse impacts to this streetscape are anticipated. Indirect adverse impacts due to construction related vibration from the Preferred Route are possible as the structure located at 3081 Kirwin Avenue is located approximately 40 metres northeast from the proposed work. These impacts are expected to be limited and temporary. The other residences within the streetscape are not within 50 metres of the proposed works. No additional indirect impacts were identified.	To address the potential for indirect impacts due to construction related vibration, undertake a baseline vibration assessment during detail design to determine potential vibration impacts.	It is understood that the proposed work for the Not Preferred Route is not adjacent to C.H.L. 1. No direct or indirect adverse impacts are anticipated.	No further work required.

5.3 Summary of Potential Impacts

No direct adverse impacts to the identified C.H.L. are anticipated as a result of the proposed undertaking for either the Preferred Route or the Not Preferred Route.

From a cultural heritage perspective, the Not Preferred Route is the preferred option because it is located further away from identified heritage resources.

Where feasible, the proposed undertaking for should be designed to avoid direct and indirect adverse impacts to the identified C.H.L. To ensure these properties are not adversely impacted, construction and staging should be suitably planned to avoid all impacts to these properties. Suitable mitigation measures could include the establishment of no-go zones with fencing and issuing instructions to construction crews to avoid the C.H.L.s.

The Preferred Roue may result in construction-related vibration impacts to C.H.L. 1 given identified heritage attributes are located within the Vibration Zone of Influence, the area within a 50-metre buffer of construction-related activities, in particular, 3081 Kirwin Avenue is located approximately 40 metres northeast of the proposed work; however, any potential vibration impacts will be limited and temporary. The other residences within the streetscape are not within 50 metres of the proposed works. To address the potential for indirect impacts due to construction-related vibration, the client has committed to undertake a baseline vibration assessment during detail design to determine potential vibration impacts (email communication 27 February 2024). Should this advance assessment conclude that the any structures will be subject to vibrations, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction.

6.0 Results and Mitigation Recommendations

The results of background historical research and a review of secondary source material, including historical mapping, indicate a study area with a rural land use history dating back to the early nineteenth century and an urban land use history dating to the mid- to late-twentieth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are no known built heritage resources (B.H.R.s) or cultural heritage landscapes (C.H.L.s) in the project study area. One potential C.H.L. was identified during the background information review and fieldwork.

6.1 Key Findings

One C.H.L. was identified within the study area:

- The C.H.L. was identified during background research and field review.
- The identified C.H.L. is historically, architecturally, and contextually associated with land use patterns in the City of Mississauga, and more specifically, representative of the post-war residential development.

6.2 Results of Preliminary Impact Assessment

- No direct adverse impacts to the identified C.H.L. are anticipated as a result of the proposed undertaking for either the Preferred Route or the Not Preferred Route.
- Potential vibration impacts as a result of the proposed work associated with the Preferred Route are anticipated to result in indirect impacts to structures within C.H.L. 1.

6.3 Recommendations

Based on the results of the assessment, the following recommendations have been developed:

1. Construction activities and staging should be suitably planned and undertaken to avoid unintended negative impacts to the identified C.H.L. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified features, etc.

2. There is the potential for construction-related vibration impacts to potential heritage attributes of C.H.L. 1 as a result of their location adjacent to the proposed work for the Preferred Route. In particular, 3081 Kirwin Avenue is located approximately 40 metres northeast of the proposed work; however, any potential vibration impacts will be limited and temporary. The other residences within the streetscape are not within 50 metres of the proposed works. To address the potential for indirect impacts due to construction-related vibration, a baseline vibration assessment will be undertaken during detail design to determine potential vibration impacts. Should this advance assessment conclude that the any structures will be subject to vibrations, a vibration monitoring plan should be prepared and implemented as part of the detailed design phase of the project to lessen vibration impacts related to construction.

3. Should future work require an expansion of the study area then a qualified heritage consultant should be contacted in order to confirm the impacts of the proposed work on potential B.H.R.s and C.H.L.s.

4. The report should be submitted to the City of Mississauga and the Ministry of Citizenship and Multiculturalism for review and comment, and any other local heritage stakeholders that may have an interest in this project. The final report should be submitted to the City of Mississauga for their records.

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