CULTURAL HERITAGE REPORT:
EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT

FERGUSON LAKE ROAD
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

TOWNSHIP OF GREATER MADAWASKA
COUNTY OF RENFREW, ONTARIO

FINAL REPORT

Prepared for:

Greenview Environmental Management
13 Commerce Court
Bancroft, ON K0L 1C0

ASI File: 20CH-009

August 2020 (Revised August 2021)

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

CULTURAL HERITAGE REPORT:
EXISTING CONDITIONS AND PRELIMINARY IMPACT ASSESSMENT

FERGUSON LAKE ROAD
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

TOWNSHIP OF GREATER MADAWASKA
COUNTY OF RENFREW, ONTARIO

EXECUTIVE SUMMARY

ASI was contracted by Greenview Environmental Management, on behalf of the Township of Greater Madawaska, to conduct a Cultural Heritage Report as part of the Reconstruction of Ferguson Lake Road Municipal Class Environmental Assessment (EA) (Ferguson Lake Road). The EA involves the rehabilitation of Ferguson Lake Road from south of Campground Sideroad to Kennelly Mountain Road. The project study area consists of the Ferguson Lake Road right-of-way from south of Campground Sideroad to Kennelly Mountain Road and is generally bounded by rural properties and forested areas.

The purpose of this report is to present an inventory of known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs), 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 mid-nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are no previously identified features of cultural heritage value within the Ferguson Lake Road study area. One CHL was identified during the fieldwork.

Based on the results of the preliminary impact 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 CHL. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified cultural heritage resources, etc.

2. Indirect impacts to CHL 1 (1356 Ferguson Lake Road) are anticipated as a result of its location adjacent to the proposed alignment. To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance monitoring assessment conclude that the structure(s) on this property will be subject to vibrations, prepare and implement a vibration monitoring plan 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 known and potential heritage resources.

4. The report should be submitted by the proponent to the Township of Greater Madawaska and the Ministry of Heritage, Sport, Tourism and Culture Industries for review and comment, and any other local heritage stakeholders that may have an interest in this project. Feedback received will be considered and incorporated into the final report, as appropriate. The final report should be submitted to the Township of Greater Madawaska for their records.

PROJECT PERSONNEL

Senior Project Manager:	Annie Veilleux, MA, CAHP Senior Cultural Heritage Specialist | Manager - Cultural Heritage Division
Project Coordinator:	Katrina Thach, Hon. BA Associate Archaeologist | Project Coordinator - Environmental Assessment Division
Project Manager:	Johanna Kelly, MSc Cultural Heritage Analyst | Project Manager - Cultural Heritage Division
	Rebecca Sciarra, MA, CAHP Partner | Director - Cultural Heritage Division
Field Review:	Johanna Kelly
Report Production:	Laura Wickett, BA (Hon), Dip. Heritage Conservation Cultural Heritage Analyst | Project Manager - Cultural Heritage Division
	Kirstyn Allam, BA (Hon), Advanced Diploma in Applied Museum Studies Cultural Heritage Technician | Technical Writer and Researcher - Cultural Heritage Division
	Johanna Kelly
Graphics Production:	Jonas Fernandez, MSc Manager, Geomatics - Operations Division
	Andrew Clish, BES Senior Archaeologist - Planning Assessment Division
Report Reviewer(s):	Lindsay Graves, MA, CAHP Senior Cultural Heritage Specialist |Senior Project Manager - Cultural Heritage Division
	Rebecca Sciarra

QUALIFIED PERSONS INVOLVED IN THE PROJECT

Annie Veilleux, MA, CAHP
Senior Cultural Heritage Specialist | Manager - Cultural Heritage Division

The Senior Project Manager for this Cultural Heritage Report is **Annie Veilleux** (MA, CAHP), who is a Senior Cultural Heritage Specialist and Manager of the Cultural Heritage Division with ASI. 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. Annie is academically trained in the fields of cultural landscape theory, history, 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 identification and evaluation of cultural heritage resources, both above and below ground. Annie has managed and conducted numerous built heritage and cultural heritage landscape assessments, heritage recordings and evaluations, and heritage impact assessments as required for Environmental Assessments and Planning projects throughout the Province of Ontario. Annie has extensive experience leading and conducting research for large-scale heritage planning studies, heritage interpretation programs, and projects requiring comprehensive public and Indigenous engagement programs. She is fully bilingual in English and French and has served as a French language liaison on behalf of ASI. Annie is a member of the Ontario Archaeological Society, the National Trust for Canada, the Ontario Association for Impact Assessment, and the Association for Critical Heritage Studies. She is also a professional member in good standing of the Canadian Association of Heritage Professionals.

Johanna Kelly, MSc
Cultural Heritage Analyst, Project Manager - Cultural Heritage Division

The Project Manager for this Cultural Heritage Report until July 2021 was **Johanna Kelly** (MSc), 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 drafting of study findings and recommendations. With over ten years of experience in the field, Johanna has focused on the identification and evaluation of cultural heritage resources both above and below ground. With a background in archaeology, her current focus is the assessment, evaluation, and protection of above ground cultural heritage resources. Johanna has been involved in numerous large scale and high profile projects in various capacities, including built heritage and cultural heritage landscape assessments under the *Ontario Environmental Assessment Act* for Class Environmental Assessments and Individual Environmental Assessments, and as required for various planning studies throughout the Province of Ontario.

Rebecca Sciarra, MA, CAHP
Partner | Director - Cultural Heritage Division

The Project Manager for this Cultural Heritage Report, as of August 2021, is **Rebecca Sciarra** (MA, Canadian Studies). She was responsible for: confirmation of technical findings and study recommendations; application of relevant standards, guidelines and regulations; and implementation of quality control procedures. Rebecca is a Partner and Director of the Cultural Heritage Division. She is

responsible for the highest-level management of a busy and diverse team of heritage professionals who apply their expertise across a broad range of public and private sector clientele. Rebecca also provides oversight and quality assurance for all deliverables, maintaining responsive and prompt client communications, and providing heritage clients with a direct connection to corporate ownership. In addition to her role as Director of the Cultural Heritage Division, Rebecca is academically trained in heritage conservation principles and practices. She has led a range of high profile and complex heritage planning and conservation management projects for public and private sector clients. Her experience in both the private and public sectors has involved providing expertise around the strategic development of policies and programs to conserve Ontario's cultural heritage resources as part of environmental and land-use planning processes. She has worked with municipal, provincial, federal and private sector clients to lead heritage evaluations and assessment as part of area planning studies, including secondary plans, heritage conservation district studies, and master plans. Rebecca is a member of ICOMOS Canada and the Canadian Association of Heritage Professionals.

Laura Wickett, BA (Hon), Dipl. Heritage Conservation
Cultural Heritage Analyst, Project Manager - Cultural Heritage Division

One of the report writers for this Cultural Heritage Report is **Laura Wickett** (BA (Hon), Diploma Heritage Conservation), who is a Cultural Heritage Analyst and Project Manager within the Cultural Heritage Division. She was responsible for day-to-day management activities, including scoping and conducting research activities and drafting of study findings and recommendations. Trained in the theoretical and technical aspects of heritage conservation, Laura has five years' experience working in the field of cultural heritage resource management. She began working in ASI's Cultural Heritage Division as a Cultural Heritage Technician in 2017, providing support for a range of cultural heritage assessment reports, including Cultural Heritage Resource Assessments, Cultural Heritage Evaluation Reports, Heritage Impact Assessments, and Secondary Plan assessments. She has also contributed to Heritage Conservation District studies, Cultural Heritage Landscape inventories and Heritage Register reviews.

Kirstyn Allam, BA (Hon), Advanced Diploma in Applied Museum Studies
Cultural Heritage Technician | Technical Writer and Researcher - Cultural Heritage Division

One of the report writers for this Cultural Heritage Report is **Kirstyn Allam** (BA (Hon), Advanced Diploma in Applied Museum Studies), who is a Cultural Heritage Technician and Technical Writer and Researcher within the Cultural Heritage Division. She was responsible for preparing and contributing to technical reporting. 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. Kirstyn also has experience being involved with Stage 1-4 archaeological excavations in the Province of Ontario.

GLOSSARY

Term	Definition
Adjacent	"contiguous properties as well as properties that are separated from a heritage property by narrow strip of land used as a public or private road, highway, street, lane, trail, right-of-way, walkway, green space, park, and/or easement or as otherwise defined in the municipal official plan" (Ministry of Tourism, Culture and Sport 2010).
Built Heritage Resource (BHR)	"…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" (Government of Ontario 2020:41).
Cultural Heritage Landscape (CHL)	"…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" (Government of Ontario 2020:42).
Cultural Heritage Resource	Includes above-ground resources such as built heritage resources and cultural heritage landscapes, and built or natural features below-ground including archaeological resources (Government of Ontario 2020).
Known Cultural Heritage Resource	A known cultural heritage resource 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 UNESCO World Heritage Site (Ministry of Tourism, Culture and Sport 2016).
Impact	Includes negative and positive, direct and indirect effects to an identified cultural heritage resource. 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 and Culture 2006). Indirect impacts also include potential vibration impacts

	(See Section 2.5 for complete definition and discussion of potential impacts).
Mitigation	Mitigation is the process of lessening or negating anticipated adverse impacts to cultural heritage resources 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.
Potential Cultural Heritage Resource	A potential cultural heritage resource 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	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" (Government of Ontario 2020:51).
Vibration Zone of Influence	Area within a 50 m buffer of construction-related activities in which there is potential to affect an identified cultural heritage resource. A 50 m buffer is applied in the absence of a project-specific defined vibration zone of influence based on existing secondary source literature and direction provided from the MHSTCI (Wiss 1981; Rainer 1982; Ellis 1987; Crispino and D'Apuzzo 2001; Carman et al. 2012). This buffer accommodates the additional threat from collisions with heavy machinery or subsidence (Randl 2001).

TABLE OF CONTENTS

List of Tables

List of Figures

List of Plates

1.0 INTRODUCTION

1.1 Report Purpose

ASI was contracted by Greenview Environmental Management, on behalf of the Township of Greater Madawaska, to conduct a Cultural Heritage Report as part of the Reconstruction of Ferguson Lake Road Municipal Class Environmental Assessment (Ferguson Lake Road). The purpose of this report is to present an inventory of known and potential built heritage resources (BHRs) and cultural heritage landscapes (CHLs), identify existing conditions of the project study area, provide a preliminary impact assessment, and propose appropriate mitigation measures.

1.2 Project Overview

The Ferguson Lake Road Municipal Class Environmental Assessment involves the rehabilitation of Ferguson Lake Road from south of Campground Sideroad to Kennelly Mountain Road, in the Township of Greater Madawaska. The project study area consists of the Ferguson Lake Road right-of-way from south of Campground Sideroad to Kennelly Mountain Road and is generally bounded by rural properties and forested areas.

1.3 Description of Study Area

This Cultural Heritage Report will focus on the project study area which consists of Ferguson Lake Road and a buffer that encapsulates a 25-metre buffer around all potential alternatives (Figure 1). This project study area has been defined as inclusive of those lands that may contain BHRs or CHLs 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 Township of Greater Madawaska.

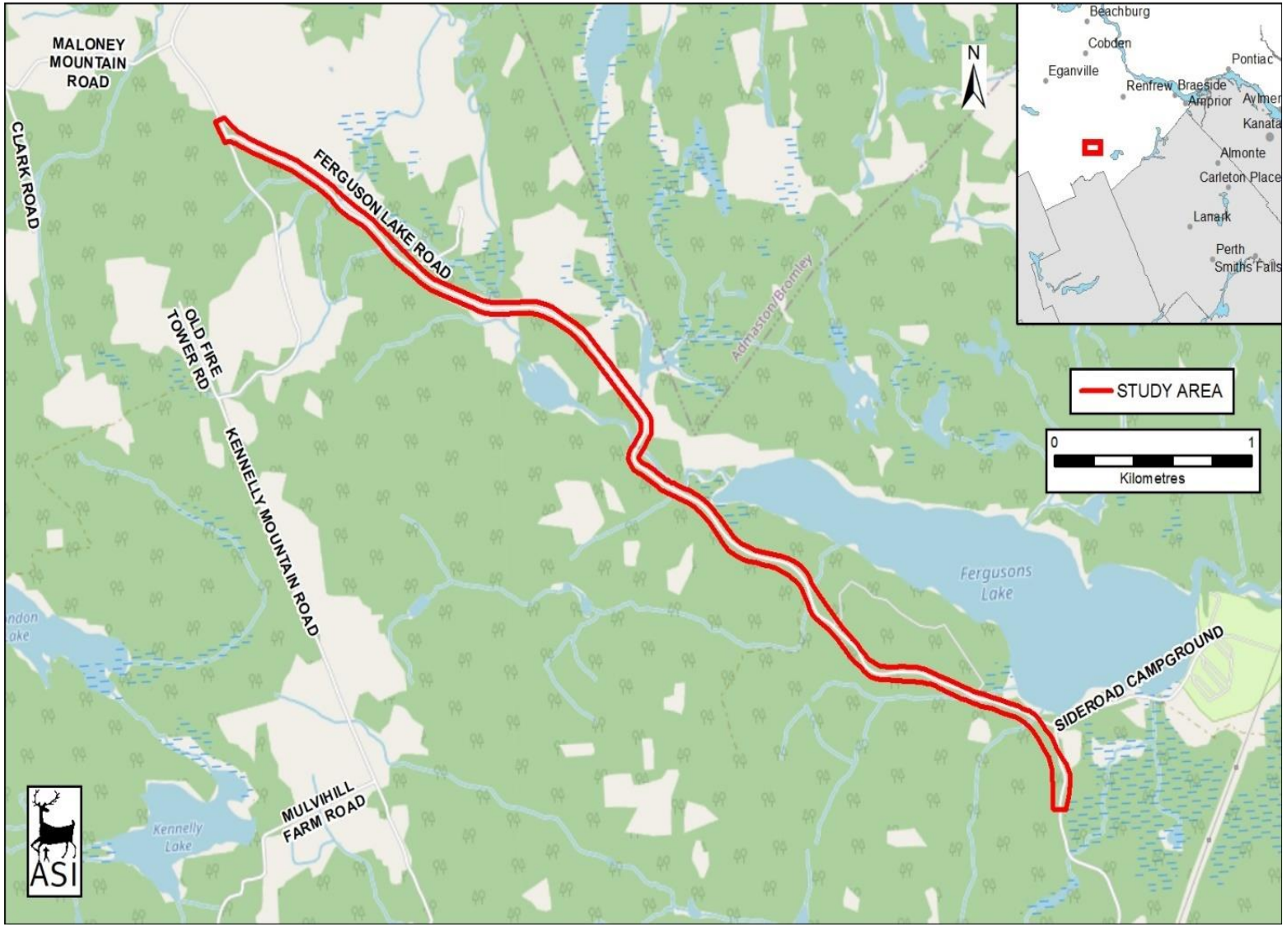

Figure 1: Location of the study area

2.0 METHODOLOGY

2.1 Regulatory Requirements

The *Ontario Heritage Act* (OHA) (Ministry of Culture 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 support heritage conservation including:

- The *Planning Act* (Ministry of Municipal Affairs and Housing 1990), which states that "conservation of features of significant architectural, cultural, historical, archaeological or scientific interest" (cultural heritage resources) is a "matter of provincial interest". The Provincial Policy Statement (Government of Ontario 2020), issued under the Planning Act, links heritage conservation to long-term economic prosperity and requires municipalities and the Crown to conserve significant cultural heritage resources.
- The *Environmental Assessment Act* (Ministry of the Environment 1990), which defines "environment" to include cultural conditions that influence the life of humans or a community. Cultural heritage resources, which includes archaeological resources, built heritage resources and cultural heritage landscapes, are important components of those cultural conditions.

The Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTCI) is charged under Section 2.0 of the OHA with the responsibility to determine policies, priorities, and programs for the conservation, protection, and preservation of the heritage of Ontario. The Ministry of Tourism, Culture and Sport (now administered by MHSTCI) published *Standards and Guidelines for Conservation of Provincial Heritage Properties* (Ministry of Tourism, Culture and Sport 2010) (hereinafter "Standards and Guidelines"). These Standards and Guidelines apply to properties the Government of Ontario owns or controls that have cultural heritage value or interest (CHVI). 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 identification of BHRs and CHLs. 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 BHR or CHL, 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 Township of Greater Madawaska in the County of Renfrew. Policies relating to cultural heritage resources were reviewed from the following sources:

- *County of Renfrew Official Plan* (2019)

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 BHRs and CHLs, and to provide a preliminary understanding of known and potential BHRs and CHLs 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 BHRs and CHLs are subject to identification and inventory. Generally, when conducting an identification of BHRs and CHLs within a study area, three stages of research and data collection are undertaken to appropriately establish the potential for and existence of BHRs and CHLs 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 BHRs and CHLs. The field review is also used to identify potential BHRs or CHLs 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 BHR or CHL based on research, the MHSTCI screening tool, and professional expertise. In addition, use of a 40-year-old benchmark is a guiding principle when conducting a preliminary identification of BHRs and CHLs. 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 cultural heritage value or interest.

2.4 Background Information Review

To make an identification of previously identified known or potential BHRs and CHLs within the study area, the following resources 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 BHRs and CHLs within the study area. These resources, reviewed on 16 July, 2020, include:

- The *Ontario Heritage Act Register* (Ontario Heritage Trust n.d.);
- The inventory of Ontario Heritage Trust easements (Ontario Heritage Trust n.d.);
- The *Places of Worship Inventory* (Ontario Heritage Trust n.d.);
- *Ontario Heritage Plaque Database* (Ontario Heritage Trust n.d.);
- *Ontario's Historical Plaques* website (Brown 2019);
- Database of known cemeteries/burial sites curated by the Ontario Genealogical Society (Ontario Genealogical Society n.d.);
- *Canada's Historic Places* website (Parks Canada n.d.);
- *Directory of Federal Heritage Designations* (Parks Canada n.d.);
- Canadian Heritage River System (Canadian Heritage Rivers Board and Technical Planning Committee n.d.); and,
- United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Sites (UNESCO 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:

- *Cultural Heritage Resource Assessment, Constant Creek Bridge Rehabilitation/Replacement Environmental Assessment Study, Renfrew Study* (ASI 2009)

2.4.3 Stakeholder Data Collection

The following individuals, groups, and/or organizations were contacted to gather information on known and potential BHRs and CHLs, active and inactive cemeteries, and areas of identified Indigenous interest within the study area:

- Luke Desjardins, Manager of Planning and Development (email communication 17 and 21 July 2020) was contacted to gather any information on potential cultural heritage resources or concerns within and/or adjacent to the study area and to inquire if the municipality maintains a heritage register. A response provided an excerpt from an archaeological assessment prepared for a subdivision plan on Ferguson Lake. It was noted that the Township does not have any additional cultural heritage information that would be useful to this study.
- The MHSTCI (email communication 17 and 21 July 2020). Email correspondence confirmed that there are no previously identified heritage resources or concerns regarding the study area.

- The Ontario Heritage Trust (email communications 17 and 21 July 2020). A response indicated that there are no conservation easements or Trust-owned properties within or adjacent to the study area.

2.5 Preliminary Impact Assessment Methodology

To assess the potential impacts of the undertaking, identified BHRs and CHLs 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 and Culture 2006). 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 BHRs or CHLs 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 BHRs and CHLs where work is taking place within 50 m of features on the property. A 50 m buffer is applied in the absence of a project-specific defined vibration zone of influence based on existing secondary source literature and direction provided from the MHSTCI (Wiss 1981; Rainer 1982; Ellis 1987; Crispino and D'Apuzzo 2001; Carman et al. 2012). 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 BHRs and CHLs. These are outlined in a document set out by the Ministry of Culture and Communications (now MHSTCI) and the Ministry of the Environment entitled *Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments* (1992) and include:

- 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 BHRs and CHLs and interventions should be managed in such a way that identified significant cultural heritage resources 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 BHRs and CHLs. Mitigation is the process of lessening or negating anticipated adverse impacts to cultural heritage resources and may include, but are not limited to, such actions as avoidance, monitoring, protection, relocation, remedial landscaping, and documentation of the BHR or CHL if to be demolished or relocated.

Various works associated with infrastructure improvements have the potential to affect BHRs and CHLs 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 located within the spillways and the shallow till and rock ridges of the Algonquin Highlands physiographic region of southern Ontario (Chapman and Putnam 1984). The Algonquin Highlands region is underlain by granite and other hard Precambrian rocks and covers approximately 4,020 hectares of land (Chapman and Putnam 1984). This region is broadly dome shaped, with the crown standing at 488-549 metres above sea level and sloping down to approximately 274 metres in the west and approximately 183 metres in the east. The local relief is rough and includes rounded knobs and ridges. There are frequent outcrops of bare rock, but they do not amount to more than 5% of the total surface area. The soils in this region are generally shallow but thickness over the bedrock can vary greatly over short distances.

Spillways are the former glacial meltwater channels. They are often found in association with moraines but in opposition are entrenched rather than elevated landforms. They are often though not always occupied by stream courses, the fact of which raises the debate of their glacial origin. Spillways are typically broad troughs floored wholly or in part by gravel beds and are typically vegetated by cedar swamps in the lowest beds.

The study area includes Constant Creek, a tributary of Calabogie Lake which is part of the Madawaska River system. The Madawaska River drains an area of 854,696 hectares and is 322 kilometres long from its source to its confluence with the Ottawa River (Chapman and Putnam 1984). The Madawaska River system was historically an alternate route to Lake Huron (Allen 2002).

3.2 Summary of Early Indigenous History in Southern Ontario

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-Indian period groups is very limited (Ellis and 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 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 (Ellis and Deller 1990; Ellis et al. 2009).

The Woodland period (c. 1,000 B.C.E. to 1650 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 (Ellis and Deller 1990; Williamson 1990; Dodd et al. 1990; Birch and Williamson 2013).

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 the Rideau Purchase, or Treaty #27¼ of the Upper Canada Land Surrenders.

[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.

Treaty #27¼ was negotiated in May of 1819 by John Ferguson representing the Crown with representatives of a Mississauga band living in the Bay of Quinte area for land to be surveyed into Torbolton, Fitzroy, Huntley, March and Goulbourn Townships. By signing, the Mississauga ceded part of the Madawaska and Mississippi Rivers watersheds, "despite abundant proof that the Algonquins and the Nipissings, from time immemorial, have considered this part of the country as their exclusive hunting grounds" (St. Louis 1951; Huitema n.d.:10–11). The Algonquin challenged the treaty in 1836 however no action was taken to recognize the treaty lands as within their traditional territory, and the government of Upper Canada and the Crown chose to recognize the Mississauga's claims within Algonquin traditional territory (ASI and Geomatics International Inc. 1999; Indigenous and Northern Affairs Canada; Hessel 1987:67; Walker and Walker 1968:7; Huitema n.d.).

This area, including the study area, is within the current Algonquins of Ontario (AOO) land claim for their unceded traditional territory. In 2016, an agreement in principle was ratified, including a transfer of $300-million to the AOO and approximately 48,000 hectares to Algonquin ownership. The Algonquin claim is one of the largest in Canadian history (Algonquins of Ontario 2013a; Algonquins of Ontario 2013b).

3.3 Historical Euro-Canadian Township Survey and Settlement

Historically, the study area is located in the former Townships of Brougham and Blythfield, County of Renfrew, in parts of Lots 26-30, Concession 4, Blythfield Township and parts of Lot 1, Concession 10, Lots 1 and 2, Concession 11, Lots 3 and 4, Concession 12, and Lot 4, Concession 13, Brougham Township.

3.3.1 Township of Brougham

The Township of Brougham was established in 1851 and was named after Lord Brougham and Vaux, Lord Chancellor of England. Early settlers in Brougham were mostly Irish immigrants. They included the Scully, Hunt, Sheedy, Lane, Kennelly and Ryan families, who settled near Mount St. Patrick, where the earliest store, post office, church, school and blacksmith shop were established. Little remains today of Mount St. Patrick. At one time Brougham had three mines producing black lead, molybdenum and iron ore. There was an abundance of hardwood and potasheries which provided much of the income of the early pioneers until sufficient farmland could be cleared (Mika and Mika 1977).

In 2001, the Township of Brougham was amalgamated with the Townships of Bagot, Blythfield, Griffith and Matawatchan to form the Township of Greater Madawaska.

3.3.2 Township of Blythfield

The Township of Blythfield was established in 1843 and was named after the English home of Sir Charles Bagot, the Governor-General of British North America at the time. The earliest settlers were likely lumbermen who conducted lumber down the Madawaska River to the Ottawa River in the 1800s. Barrett Chute, located at the south end of Calabogie Lake, was one of the overnight stops on the lumber drives and developed as the only community in the township (Mika and Mika 1977).

In 2001, the Township of Blythfield was amalgamated with the Townships of Brougham, Bagot, Griffith and Matawatchan to form the Township of Greater Madawaska.

3.4 Review of Historical Mapping

The 1863 *Map of the Counties of Lanark and Renfrew* (Walling 1863) was examined to determine the presence of historical features within the study area during the nineteenth century (Figure 2).

It should be noted, however, that not all features of interest were mapped systematically in the Ontario series of historical atlases. For instance, they were often financed by subscription limiting the level of detail provided on the maps. Moreover, not every feature of interest would have been within the scope of the atlases. The use of historical map sources to reconstruct or predict the location of former features within the modern landscape generally begins by using common reference points between the various sources. The historical maps are geo-referenced to provide the most accurate determination of the location of any property on a modern map. The results of this exercise can often be imprecise or even contradictory, as there are numerous potential sources of error inherent in such a process, including differences of scale and resolution, and distortions introduced by reproduction of the sources.

The 1863 map is in poor condition. By this time, Kennelly Mountain Road is shown to be a historically surveyed road, while Ferguson Lake Road is not shown. The area is rural with numerous empty parcels. Four structures are depicted on the south side of Ferguson Lake.

In addition to nineteenth-century mapping, historical topographic maps from the twentieth century were examined. This report presents maps from 1936, 1950, and 1987 (Figure 3 to Figure 5).

By 1936, Ferguson Lake Road has been surveyed. Two structures are shown adjacent Ferguson Lake Road. The 1950 map shows two bridges have been constructed where Ferguson Lake Road meets Constant Creek. Four structures are adjacent Ferguson Lake Road. The area continues to be rural and largely undeveloped. The study area remains relatively unchanged in the late twentieth century apart from the construction of more cottages along Ferguson Lake.

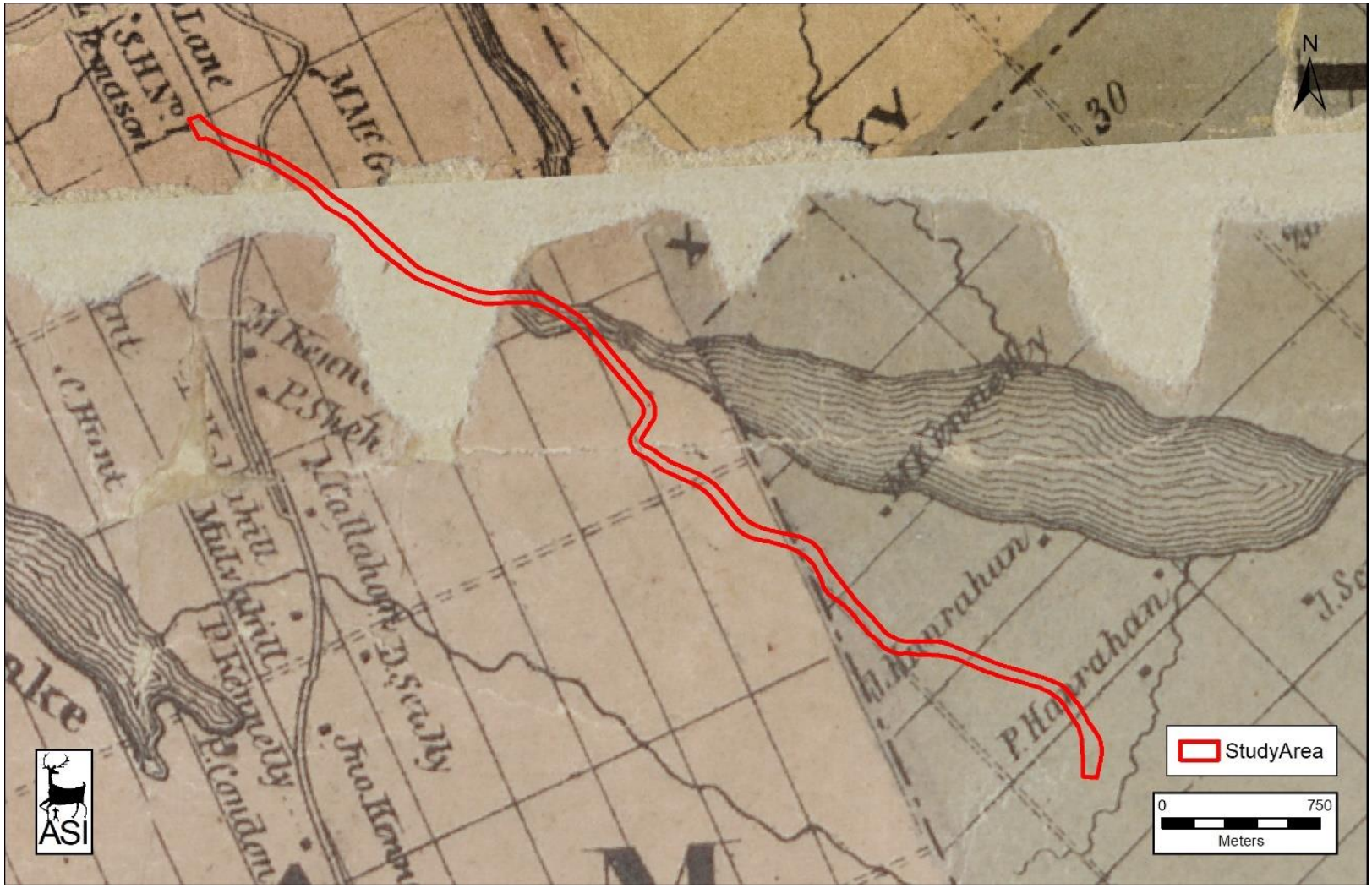

Figure 2: The study area overlaid on the 1863 Map of the Counties of Lanark and Renfrew

Base Map: (Walling 1863)

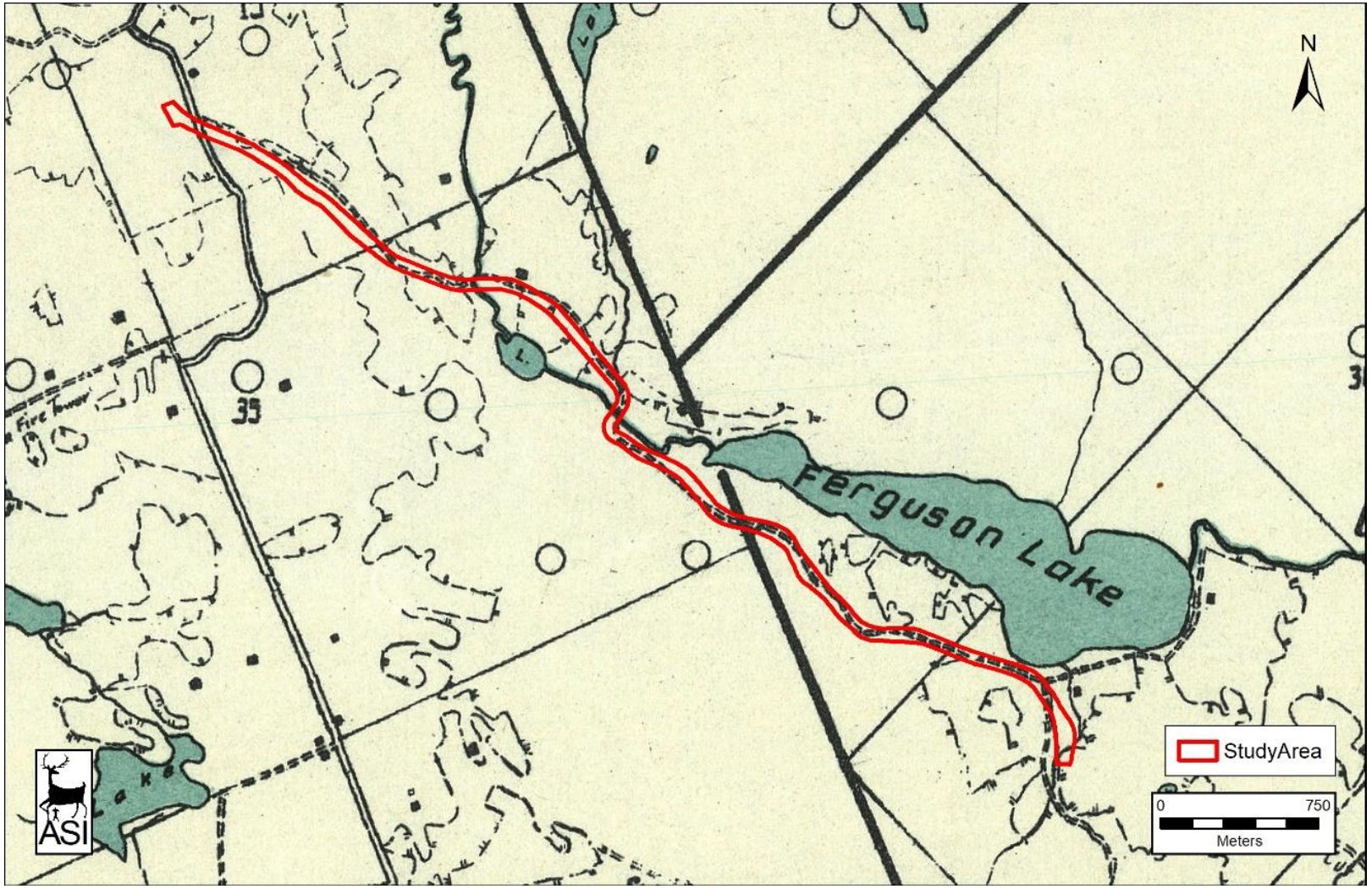

Figure 3: The study area overlaid on the 1936 topographical map of Renfrew
Base Map: (Department of the Interior, Topographical and Air Survey Bureau 1936)

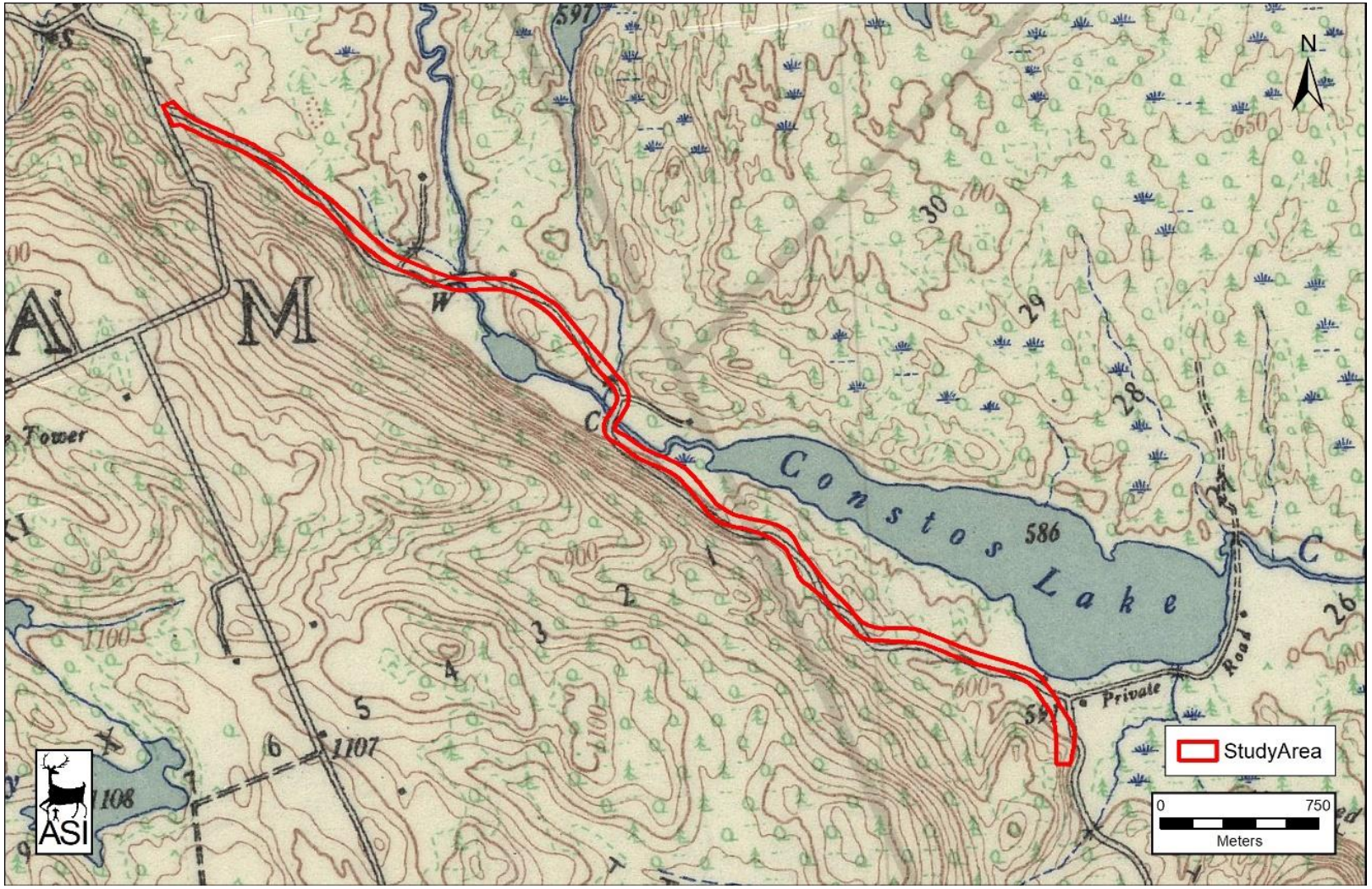

Figure 4: The study area overlaid on the 1950 topographic map of Renfrew

Base Map: (Department of National Defence 1950)

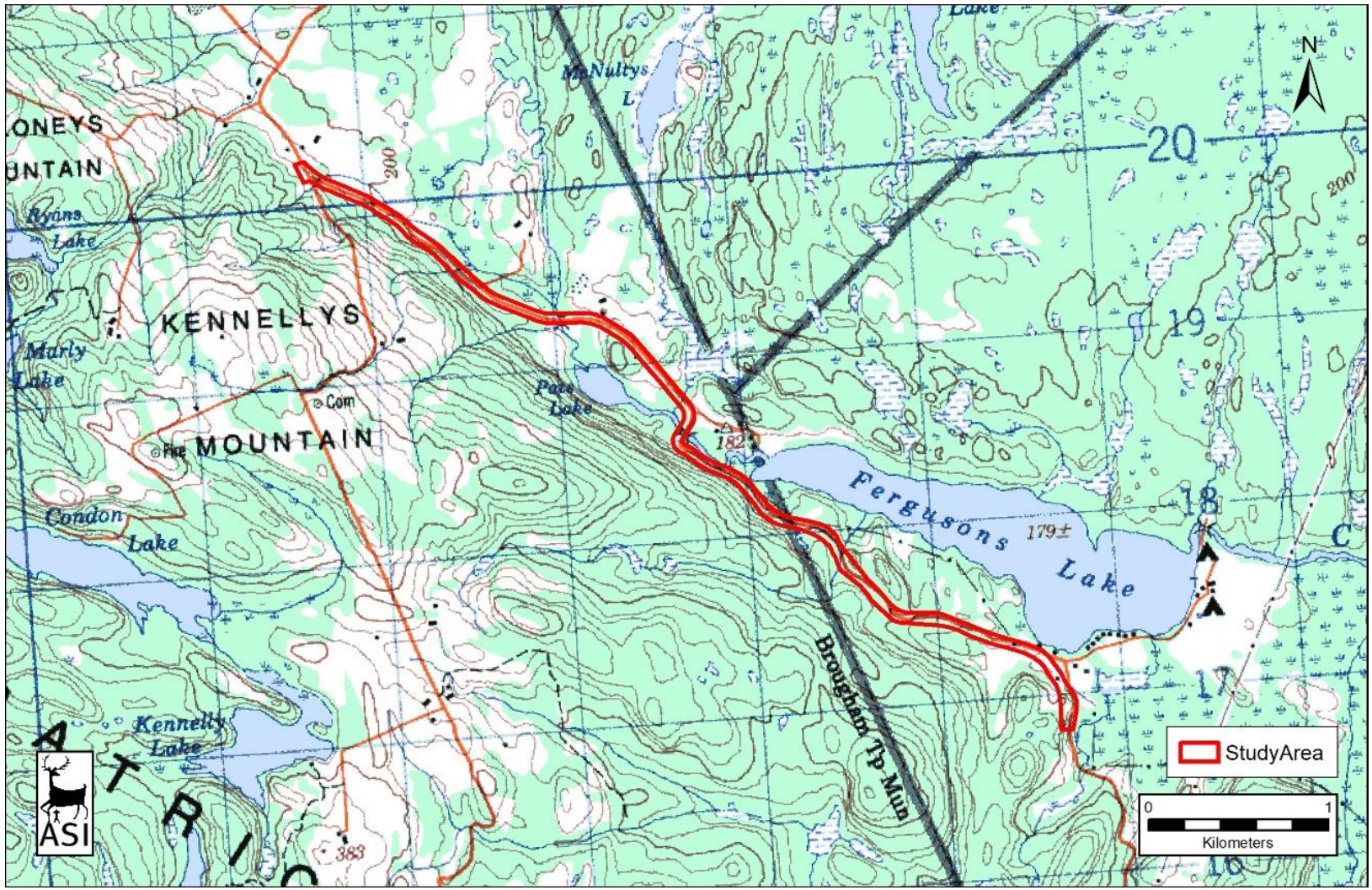

Figure 5: The study area overlaid on the 1987 topographic map of Renfrew

Base Map: (Department of Energy, Mines and Resources 1987)

4.0 EXISTING CONDITIONS

4.1 Description of Field Review

A field review of the study area was undertaken by Johanna Kelly of ASI, on 10 July 2020 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 8.

The study area is located along Ferguson Lake Road between Kennelly Mountain Road to the north and approximately 400 metres south of Campground Sideroad in the Township of Greater Madawaska, in a generally northwest-southeast direction. The right-of-way (ROW) consists of a single lane of traffic in either direction, a narrow gravel shoulder, and drainage ditches. The study area traverses rolling topography, through generally forested land.

The properties surrounding the study area are predominantly forested land. Active agricultural lands are scattered through the north half of the study area. Residential (or cottage) properties are located on the east side of Ferguson Lake Road, fronting Fergusons Lake, between Campground Sideroad to the south and Constant Creek to the north. The intersections of Ferguson Lake Road with Kellys Road and Campground Sideroad consist of two way stops with right-of-way given to vehicles travelling on Ferguson Lake Road. The Kennelly Mountain Road and Ferguson Lake Road intersection is a three-way stop. Ferguson Lake Road is carried over Constant Creek by a modern steel girder bridge. The current bridge replaced a 1926 half-through Warren truss structure, likely between 2013 and 2016 based on aerial imagery. The previous bridge was evaluated in 2009 and found to have moderate heritage significance (ASI 2009). However, no elements of the 1926 structure remain. A smaller tributary, draining into Pats Lake, flows below the study area through a modern double corrugated metal culvert between Kellys Road to the north and the Constant Creek Bridge to the south.

Plate 1: Looking northwest along Ferguson Lake Road, forested land on either side of the study area.

Plate 2: Looking northwest along Ferguson Lake Road, forested land on the left (south) and active agricultural land on the right (north).

Plate 3: Looking southeast along Ferguson Lake Road, residential/cottage properties are visible on the left (north).

Plate 4: Looking southeast along Ferguson Lake Road towards the south intersection with Campground Sideroad.

Plate 5: Looking southeast along Ferguson Lake Road across the intersection with Kellys Road.

Plate 6: Looking northwest along Ferguson Lake Road towards the intersection with Kennelly Mountain Road.

Plate 7: Looking north across the Constant Creek Bridge and Constant Creek.

Plate 8: Double corrugated metal culvert located between Kellys Road and Constant Creek.

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 CHL was identified within the Ferguson Lake Road study area. A detailed inventory of potential CHLs within the study area is presented in Table 1. See Figure **6** for mapping showing the location of the identified CHL.

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

Feature ID	Type of Property	Location	Heritage Status and Recognition	Description of Property and Known or Potential CHVI	Photographs/ Digital Image
CHL 1	Farmscape	1356 Ferguson Lake Road	Potential CHL - Identified during background research and field review	- Farmstead and fence lines are illustrated in the location of the extant house on 1936 mapping (Figure 3). - The property features a log cabin residence; several outbuildings, including a small log cabin barn; vegetative windbreak surrounding the house and fields; active agricultural fields; and wooden fence lines. - Located on the north side of Ferguson Lake Road, an early twentieth-century roadway.	 Plate 9: Looking north towards the front elevation of the house (ASI 2020).  Plate 10: Aerial view of the farmscape (Google Earth 2019).

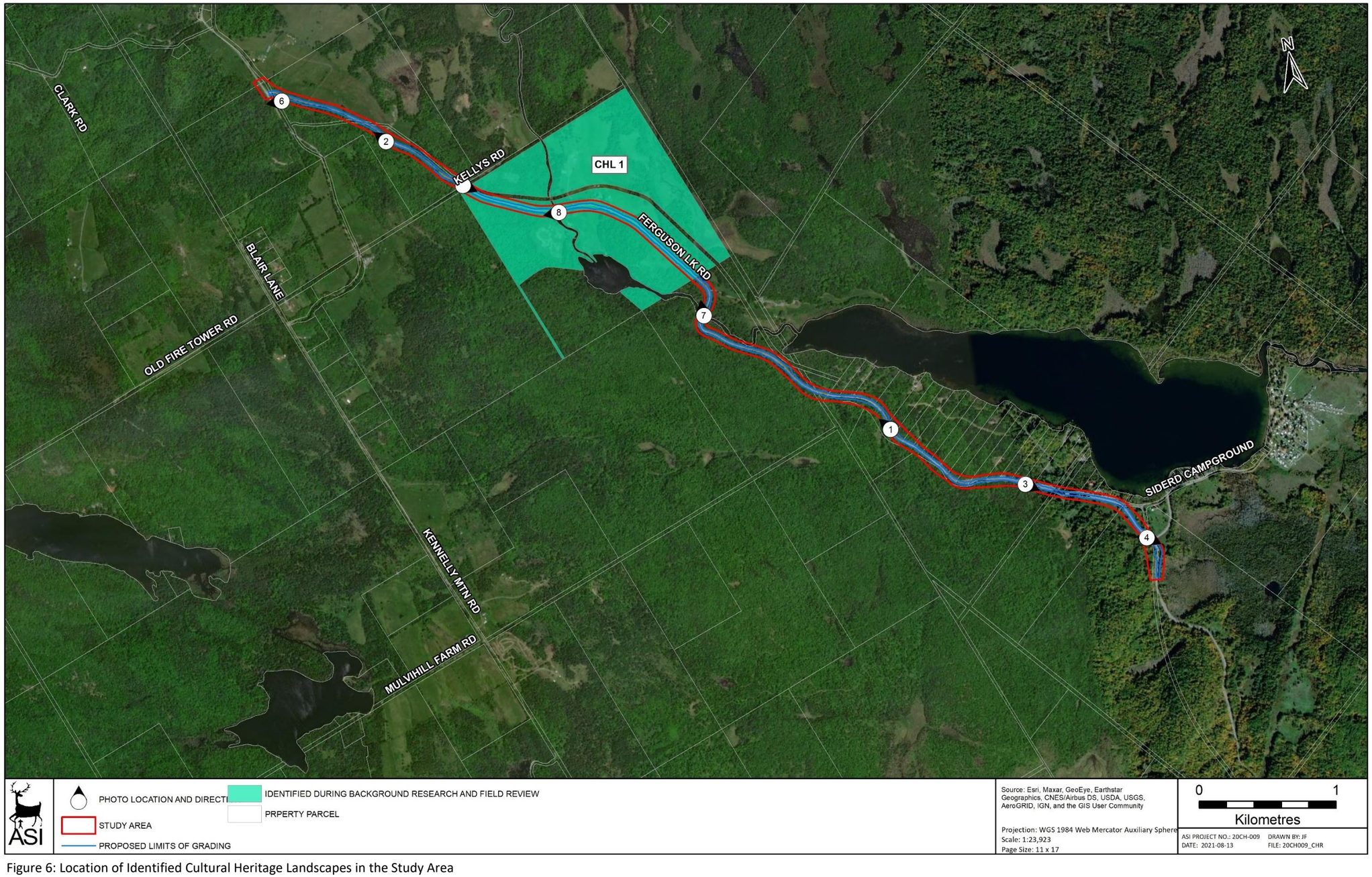

Figure 6: Location of Identified Cultural Heritage Landscapes in the Study Area

5.0 PRELIMINARY IMPACT ASSESSMENT

5.1 Description of Proposed Undertaking

The Ferguson Lake Road Municipal Class Environmental Assessment involves the rehabilitation of Ferguson Lake Road from south of Campground Sideroad to Kennelly Mountain Road, in the Township of Greater Madawaska. The project study area consists of the Ferguson Lake Road right-of-way from south of Campground Sideroad to Kennelly Mountain Road. The proposed improvements are anticipated to consist of complete rehabilitation of the roadway with improvements to drainage, granular base, and driving surface throughout the corridor.

5.2 Analysis of Potential Impacts

Table 2 outlines the potential impacts on all identified CHLs within the study area.

Table 2: Preliminary Impact Assessment and Recommended Mitigation Measures

Feature ID	Location	Type and Description of Potential/Anticipated Impact	Mitigation Strategies
CHL 1	1356 Ferguson Lake Road	• Indirect impacts to CHL 1 are anticipated to include grading within the subject property. • No direct impacts to any structures or landscape features of potential cultural heritage value or interest, including vegetative windbreaks, are anticipated.	• Suitable mitigation measures could include establishing no-go zones with fencing and issuing instructions to construction crews to avoid the cultural heritage resources. • To ensure this CHL is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed design. Should this advance monitoring assessment conclude that the structure on this property will be subject to vibrations, prepare and implement a vibration monitoring plan as part of the detailed design phase of the project to lessen vibration impacts related to construction.

Indirect impacts to CHL 1 (1356 Ferguson Lake Road) are anticipated to include grading within the subject property. No impacts to any structures or landscape features of potential cultural heritage value or interest, including vegetative windbreaks, are anticipated. To ensure the structures on this property are not adversely impacted, construction and staging in the Ferguson Lake Road ROW should be suitably planned to avoid all impacts to this property. Suitable mitigation measures could include the establishment of no-go zones with fencing and issuing instructions to construction crews to avoid the cultural heritage resources.

Indirect impacts due to construction-related vibration to CHL 1 are possible as a result of its location within 50 m of the proposed alignment. It is recommended that baseline vibration assessment should be undertaken during detailed design. Should this advance monitoring assessment conclude that the structure(s) on this property will be subject to vibrations, prepare and implement a vibration monitoring

plan 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 mid-nineteenth century. A review of federal, provincial, and municipal registers, inventories, and databases revealed that there are no previously identified features of cultural heritage value within the Ferguson Lake Road study area. One additional feature was identified during the fieldwork.

6.1 Key Findings

- A total of one CHL was identified within the study area.
- This CHL was identified during the field review.
- The identified cultural heritage resource is historically, architecturally, and contextually associated with land use patterns in the Township of Greater Madawaska and more specifically representative of the early settlement along Ferguson Lake Road, an early twentieth century rural roadway.

Results of Preliminary Impact Assessment

The proposed alignment may result in indirect impact to CHL 1, due to potential construction-related vibration to CHL 1 as a result of its location within 50 m of the proposed alignment.

- No direct impacts to any potential cultural heritage resources are anticipated as a result of the preferred alternative.

6.2 Recommendations

Based on the results of the preliminary impact 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 CHL. Avoidance measures may include, but are not limited to: erecting temporary fencing, establishing buffer zones, issuing instructions to construction crews to avoid identified cultural heritage resources, etc.

2. Indirect impacts to CHL 1 (1356 Ferguson Lake Road) are anticipated as a result of its location adjacent to the proposed alignment. To ensure this property is not adversely impacted during construction, a baseline vibration assessment should be undertaken during detailed

design. Should this advance monitoring assessment conclude that the structure(s) on this property will be subject to vibrations, prepare and implement a vibration monitoring plan 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 known and potential heritage resources.

4. The report should be submitted by the proponent to the Township of Greater Madawaska and the MHSTCI for review and comment, and any other local heritage stakeholders that may have an interest in this project. Feedback received will be considered and incorporated into the final report, as appropriated. The final report should be submitted to the Township of Greater Madawaska for their records.

7.0 REFERENCES

Algonquins of Ontario
2013a Overview of Treaty Negotiations. http://www.tanakiwin.com/our-treaty-negotiations/overview-of-treaty-negotiations/.

2013b Agreement-in-Principle. https://www.tanakiwin.com/our-treaty-negotiations/agreement-in-principle/.

Allen, W.A.
2002 Wa-Nant-Git-Che-Ang: Canoe Route to Lake Huron through Southern Algonquia. *Ontario Archaeology* 73:38–68.

ASI, (Archaeological Services Inc.)
2009 *Cultural Heritage Resource Assessment, Constant Creek Bridge Rehabilitation/Replacement, Environmental Assessment Study, Renfrew County*. Report on file at ASI.

ASI, (Archaeological Services Inc.), and Geomatics International Inc.
1999 *The Archaeological Resource Potential Mapping Study of the Regional Municipality of Ottawa-Carleton: Planning Report*.

Birch, J., and R.F. Williamson
2013 *The Mantle Site: An Archaeological History of an Ancestral Wendat Community*. Rowman & Littlefield Publishers, Inc., Latham.

Brown, A.
2019 Ontario's Historical Plaques. April 19. http://www.ontarioplaques.com/.

Canadian Heritage Rivers Board and Technical Planning Committee
n.d. The Rivers – Canadian Heritage Rivers System Canada's National River Conservation Program. *Canadian Heritage Rivers System*. http://chrs.ca/the-rivers/.

Carman, R.A., D. Buehler, S. Mikesell, and C.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, D.C.

Chapman, L.J., and F. Putnam
1984 *The Physiography of Southern Ontario*. Vol. 2. Ontario Geologic Survey, Special Volume. Ontario Ministry of Natural Resources, Toronto.

County of Renfrew
2019 Official Plan. http://www.countyofrenfrew.on.ca/_documents/development-property/official-plan/OfficialPlan.pdf.

Crispino, M., and M. D'Apuzzo
2001 Measurement and Prediction of Traffic-Induced Vibrations in a Heritage Building. *Journal of Sound and Vibration* 246(2):319–335.

Department of Energy, Mines and Resources
1987 Renfrew Sheet 31F/7.

Department of National Defence
1950 Renfrew Sheet 31F/07.

Department of the Interior, Topographical and Air Survey Bureau
1936 Renfrew Sheet 31F/7.

Dodd, C.F., D.R. Poulton, P.A. Lennox, D.G. Smith, and G.A. Warrick
1990 The Middle Ontario Iroquoian Stage. In *The Archaeology of Southern Ontario to A.D. 1650*, C. J. Ellis and N. Ferris, eds, pp. 321–360. Occasional Publication of the London Chapter OAS Number 5. Ontario Archaeological Society Inc., London, ON.

Ellis, C.J., and D.B. Deller
1990 Paleo-Indians. In *The Archaeology of Southern Ontario to A.D. 1650*, C. J. Ellis and N. Ferris, eds, pp. 37–64. Occasional Publication of the London Chapter OAS Number 5. Ontario Archaeological Society Inc., London, ON.

Ellis, C.J., P.A. Timmins, and H. Martelle
2009 At the Crossroads and Periphery: The Archaic Archaeological Record of Southern Ontario. In *Archaic Societies: Diversity and Complexity across the Midcontinent.*, T. D. Emerson, D. L. McElrath, and A. C. Fortier, eds, pp. 787–837. State University of New York Press, Albany, New York.

Ellis, P.
1987 Effects of Traffic Vibration on Historic Buildings. *The Science of the Total Environment* 59:37–45.

Ferris, N.
2013 Place, Space, and Dwelling in the Late Woodland. In *Before Ontario: The Archaeology of a Province*, pp. 99–111. McGill-Queen's University Press. http://www.jstor.org/stable/j.ctt32b7n5.15.

Government of Ontario
2020 *Provincial Policy Statement*. Toronto, Ontario.

Hessel, P.
1987 *The Algonkian Tribe. The Algonkians of the Ottawa Valley: An Historical Outline.* Kichesippi Books, Arnprior.

Huitema, M.
n.d. *Historical Algonquin Occupancy Algonquin Park*.

Indigenous and Northern Affairs Canada
Rideau Purchase Trearty 27. *Treaty Texts – Upper Canada Land Surrenders*. https://www.aadnc-aandc.gc.ca/eng/1370372152585/1370372222012#ucls20.

Mika, N., and H. Mika
1977 *Places In Ontario: Their Name Origins and History, Part I, A-E*. Vol. I. Encyclopedia of Ontario. Mika Publishing Company, Belleville.

Ministry of Culture
1990 Ontario Heritage Act, R.S.O. 1990, c.O.18 [as Amended in 2019].

2006 Ontario Heritage Tool Kit.

Ministry of Culture and Communications, and Ministry of the Environment
1992 Guideline for Preparing the Cultural Heritage Resource Component of Environmental Assessments.

Ministry of Municipal Affairs and Housing
1990 *Planning Act, R.S.O. 1990, c. P.13*.

Ministry of the Environment
1990 *Environmental Assessment Act, R.S.O.*

Ministry of Tourism and Culture
2006 InfoSheet #5: Heritage Impact Assessments and Conservation Plans.

Ministry of Tourism, Culture and Sport
2010 Standards and Guidelines for Conservation of Provincial Heritage Properties: Standards & Guidelines.

2016 Criteria for Evaluating Potential for Built Heritage Resources and Cultural Heritage Landscapes, A Checklist for the Non-Specialist. http://www.mtc.gov.on.ca/en/heritage/tools.shtml.

Ontario Genealogical Society
n.d. OGS Cemeteries. *Digitals Collections & Library Catalogue*. http://vitacollections.ca/ogscollections/2818487/data.

Ontario Heritage Trust
n.d. Ontario Heritage Act Register. https://www.heritagetrust.on.ca/en/pages/tools/ontario-heritage-act-register.

n.d. Easement Properties. *Ontario Heritage Trust*. https://www.heritagetrust.on.ca/en/property-types/easement-properties.

n.d. Places of Worship Inventory. *Ontario Heritage Trust*. https://www.heritagetrust.on.ca/en/places-of-worship/places-of-worship-database.

n.d. Provincial Plaque Program. *Ontario Heritage Trust*. https://www.heritagetrust.on.ca/en/pages/programs/provincial-plaque-program.

Parks Canada
n.d. Canada's Historic Places. www.historicplaces.ca.

n.d. Directory of Federal Heritage Designations. https://www.pc.gc.ca/apps/dfhd/search-recherche_eng.aspx.

Rainer, J.H.
1982 Effect of Vibrations on Historic Buildings. *The Association for Preservation Technology Bulletin* XIV(1):2–10.

Randl, C.
2001 Preservation Tech Notes: Protecting a Historic Structure during Adjacent Construction. U.S. Department of the Interior National Park Service, July. https://www.nps.gov/tps/how-to-preserve/tech-notes/Tech-Notes-Protection03.pdf.

St. Louis, A.E.
1951 *A Memorandum: Ancient Hunting Grounds of the Algonquin and Nipissing Indians: Comprising the Watersheds of the Ottawa and Madawaska Rivers.* Dominion Archivist, Canada, Department of Indian and Northern Affairs, Treaties and Historical Research Centre.

UNESCO World Heritage Centre
n.d. World Heritage List. *UNESCO World Heritage Centre*. http://whc.unesco.org/en/list/.

Walker, H., and O. Walker
1968 *Carleton Saga*. Carleton County Council, Ottawa.

Walling, H.F.
1863 Map of the Counties of Lanark and Renfrew, Canada West : From Actual Surveys under the Direction of H.F. Walling. D. P. Putnam, C.W. Prescott.

Williamson, R.F.
1990 The Early Iroquoian Period of Southern Ontario. In *The Archaeology of Southern Ontario to A.D. 1650*, C. J. Ellis and N. Ferris, eds, pp. 291–320. Occasional Publication of the London Chapter OAS Number 5. Ontario Archaeological Society Inc., London.

Wiss, J.F.
1981 Construction Vibrations; State-of-the-Art. *Journal of Geotechnical Engineering* 107:167–181.